

# RO&Ming with Lil Episode 33

## Inventing the Stuart Tactile Maps Test – Ian



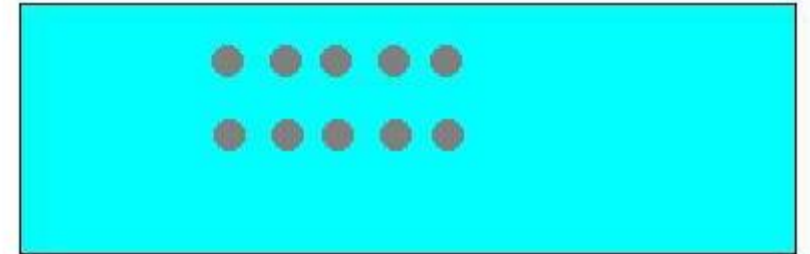
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# Introduction to Episode 33

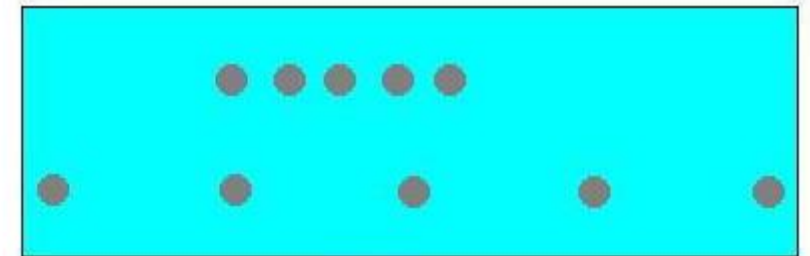
- Welcome to Dr Ian Stuart
- Began as a neuropsychologist in 1978, Melbourne
- Created the Stuart Tactile Maps test in the 1980s to assess the spatial cognition of
  - children who were congenitally blind
  - adults with acquired brain injury
- This assessment
  - shows how much practice a person needs to learn a mental map
  - predicts a person's dynamic orientation skills in O&M
  - does not rely on vision – everyone does it wearing a blindfold

# Back in the day...

- 1950s and 1960s Psychosurgery
  - Prefrontal leucotomies for schizophrenia and depression... horrors!
- 1970s Ian entered the world of the brain
  - Neurology meets psychiatry = neuropsychiatry
  - New assessment centre in Melbourne with Dr John Lloyd & Dr Stefan Sokolowski
  - Neuropsychology was new – Ian trained under Kevin Walsh @ University of Melbourne
- Ian interested in Piagetian thinking
  - Spatial conservation
  - Number conservation – if you spread out the counters are there more counters?



(a)



(b)

# Reading the literature in the late 1970s

- 1965 Brenda Milner
  - founder of neuropsychology
  - developed the Milner Maze
- Dr Suzanne Corkin: Milner's student and a leading Professor of neuroscience in USA
- HM – Henry Molaison
  - watershed case in neuropsychology
  - had neurosurgery in 1950s for debilitating epilepsy in/around hippocampi
  - **lost all ability to form new memories**
- Dr Arthur Benton – developed constructional test for visual-spatial cognition

# Neuro O&M...

- Royal Talbot Rehabilitation Hospital – Betty Hill, Speech Pathologist
- Royal Guide Dogs – Don Verlander, Neuro O&M Ax unit
  - Ian learned that Piaget and spatial understanding have practical applications in O&M!

## **Aha! – need new tests**

- There were tests for braille & IQ with blindness, but not O&M
- Visual-spatial test or tactile maps test both have arm movement in common
- Made wire map shapes in graduated complexity
- Made tactile version of Benton's 3D constructions test
- Research at Burwood school for the Blind – Principal Peter Evans
  - Gillian Gale – running assessment centre (educational, social, neuropsych Ax)

# Spatial cognition does not depend on vision

- High-functioning kids who are blind
  - Giving a guided tour of the school
  - Roller-blading!
- Low-functioning adults
  - Stuck and lost, despite lots of practice
  - Walking any route with more than one turn... completely lost

# Ian's PhD study in late 1980s

- Created 3D Constructions test and Tactile Maps test, and validated with
  - Adults with acquired brain injury
  - Congenitally blind children
  - Control group
- 3D Constructions test (with Blocks) assesses basic spatial concepts with two handed comparisons – tests fundamental skills
- 2D Tactile Maps test – assesses more developed mental mapping skills
  - It's all about reaching movements – recorded in area 5 of the parietal lobe
  - Parietal lobe responsible for integrating sense of space: lines, angles, shapes
  - Hippocampi remembers and consolidates new spatial learning and enables extension of spatial understanding

# Ambient vision (Lil)

- Ultra-low vision
  - (visual fragments, specular reflections, patches of contrast or colour)
  - + Auditory/tactile information & awareness of context
  - + Good spatial cognition
  - + Motion parallax
  - = detailed mental map and surprisingly accurate, fluid travel
- In a person with highly developed spatial cognition
  - spatial coordinates all relate to each other
  - mental map once developed, remains stable... confirmed, tested, confirmed



# Severe spatial dysfunction is uncommon

- Parietal disorder has a profound impact
  - cannot make sense of spatial relationships
- Right hippocampus damage
  - can have good sense of where things are in space (from right parietal processing), but
  - difficult to elaborate because cannot use spatial memory

# STM Assessors, Beware!

- Behaviour can be affected by all kinds of mental states
- Assessment stress/anxiety about STM test can reduce performance
  - Underplay its importance
- STM test is a screening tool – confirm everything
  - Use other tests and compare
  - Observe the client's travel
  - Look into client's history
  - Talk with family, carers – identification of spatial dysfunction can be a relief
  - Find other professionals interested in spatial cognition
  - Neuropsych assessment can show other strengths to work with, in lieu of spatial cognition

# Some juicy references

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# Contact & Credits

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