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**Investigating the Language of Learning:  
A Case Study of the New Language of  
Neuroscience**

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# Plan of Presentation

- Talk of learning in classrooms
- Overarching policy mediating education
- A 'new' language: neuroscience
- Examples: the early years
- Critical questions/implications

# Talk of Learning: Interaction

- The construction of meaning through talk is fundamental to learning (Harold Rosen)
- How classrooms and the people in them are talked about, researched and described; how they talk about themselves...
- Example: Flanders Interaction Analysis
- Resistance to formal pre-coding in light of new perspectives
- Harold Rosen, Gordon Wells, SBH etc.
- The extended/distributed mind



# The Linguistic Turn: CA and DA

- Types of classroom interaction research: the focus influences what is discovered
- Promoting learning? Local rationality?
- Different kinds of analytic frameworks
- Transcription, sampling, interpretation, pausing, pacing, overlapping speech, silence, gaze, gesture etc.
- Importance of the social context: **what is happening around the person?**

# Structures Projecting what Society Values

1. LOs, audits, testing, comparing
2. Standardization and Individualization: independent of setting (NCLB, Race to the Top, My School, SATs)
3. Self evaluation: transparency, accountability, quality enhancement
4. Convergence internationally-curriculum and assessment



# **Policies/Structures ... becoming conditions for children's learning and development**

- A hierarchy of knowledge and children as future workers: valuing of STEM, esp Maths
- Devaluing of play and informal learning: rush to early maths and literacy
- Devaluing of arts and PE
- Devaluing of Humanities and Social Sciences
- Growing emphasis on children as consumers of education e.g. Gul

# Children as Capital : Investment in Children

1. OECD's 'Starting Strong' refers to how starting early offers the highest rates of return and says learning starts at birth
2. Schoolification: earlier and earlier
3. Shift from family to state
4. To guarantee returns on investment requires high levels of monitoring



# 'Early is forever'

'The instrument assesses children's learning in 5 domains of early learning and sorts children into 3 categories: 'appropriate development', 'experiencing some difficulty', and 'evidence of significant difficulty'. Each category is represented by a colored square, green for 'appropriate development', yellow for 'experiencing some difficulty' and red for 'evidence of significant difficulty'. This traffic light metaphor appears to be intentional as children who receive a red square are certainly stopped before they ever start school while the green square indicates 'good to go'. After taking the [screening test] families are sent a Report ... coding their child as green, yellow and red 'lights', which on the basis of this approximately 30-minute screening, indicates whether they are in need of intervention prior to school... Programs are available in June for those children needing 'intensive intervention', i.e. those scoring in the 'evidence of significant difficulty' category....And the downward pressure for an even earlier start is on. (Hunt and Nason, 2012, p158)

# Early Years Foundation Stage Profile Handbook (STA, Oct. 2014)

The judgment must say whether the child's learning and development is:

- best described by the level of development expected at the end of the EYFS (expected)
- not yet at the level of development expected at the end of the EYFS (emerging)
- beyond the level of development expected at the end of the EYFS (exceeding)

# What education is for

- 1 adaptation & adjustment?
- 2 The child as a 'consumer in waiting' (Woodrow et al, 2008)
- 3 Self-regulation?
- 4 The pedagogized home (Stephen Ball)





# Enter the Brain

‘Neuro-imaging is a tool to see inside and provide a sense of the self’ (Immordino-Yang, AERA, 2013)

‘Neuroscience is perfectly positioned as a discipline not only to help explain why we are as we are, but to explore how we might change and be changed’ (Greenfield, 2008, p x Preface)



# NS is wide-ranging

- An exact, all encompassing science
- ‘It is human nature to be curious about how we see and hear; why some things feel good and others hurt; how we move; how we reason, learn, remember, and forget; the nature of anger and madness. These mysteries are starting to be unravelled by basic neuroscience research’ (Bear et al 2007, p4)





# *ds in Neuroscience and Education* (Elsevier, 2012)

- seeks to ‘bridge the gap between...neuroscience understanding of learning and the application...’
- Linking to medicine 200 years ago: ‘we believe that this (medicine) can be taken as a model for what should happen in the field of education. In many countries, education is merely a field of ideology, even though we know that how children learn is not a question of left or right political orientation (Elsevier, 2012)



# Neuroplasticity

Neurogenesis and synaptogenesis

Neuroenhancement (training? drugs?)

Emphasis on individual responsibility,  
parental responsibility for children's  
brains

Pressure to see oneself as a neuronal  
self, a biomedical self



## The Brain Activity Map – “investing in best ideas” (Obama, 2013)

What if computers could respond to our thoughts or our language barriers could come tumbling down? Or if millions of Americans were suddenly finding new jobs in these fields – jobs we haven't even dreamt up yet – because we chose to invest in this project.... That's the future we're imagining. That's what we're hoping for. That's why the Brain Initiative is so absolutely important..... It's what America has been all about. We have been a nation of dreamers and risk-takers; people who see what nobody else sees sooner than anybody else sees it. We do innovation better than anybody else – and that makes our economy stronger.....The Apollo project that put a man on the moon eventually gave us CAT scans.

Obama, B. 2013, Presidential Address



Determinism ... the early years?  
'The early years of a child's life –  
when the human brain is  
forming – represent a critically  
important window of  
opportunity to develop a child's  
full potential' (Obama, 2013)

# How Texts Produce Space!

- *Conception to Age Two: the age of opportunity* (DfE, 2013)
- *Supporting Families in the Foundation Years* (DfE, 2011)
- *Families in the Foundation Years: Evidence Pack* (DfE, 2011)
- *The Foundation Years: Preventing poor children becoming poor adults* (2010)



# How Texts Produce Space! contd

- *The 1001 Critical Days* (2013)
- *Early Intervention: Good Parents, Great Kids* (Allen and IDS, 2011)
- *Early Intervention: The Next Steps* (Allen and IDS, 2011)
- *Early Intervention: Smart Investment and Massive Savings* (Allen and IDS, 2011)



# *Conception to Age Two: the age of opportunity* (DfE, 2013)



- Early Years Workforce to be made aware of influence of parent-child relationships on brain development
- Elizabeth Truss MP in her Forward: ‘As our understanding of the brain development of babies improves, so too must our policies, to reflect this critically important period of life’
- ‘Good quality relationships and secure attachment enable a growing brain to become socially efficient’

# *Early Intervention The Next Steps*

(Allen and IDS, 2011)

Chapter 2 takes the brain as its focus:

- Early experience determines brain architecture
- Secure attachment vs anxious attachment
- babies who fail to make the right neural connections ...linked to deviance and criminality



# *The 1001 Critical Days (2013)*



‘The first two years is a ‘critical window of opportunity’: by the the 1001<sup>st</sup> day the brain has reached 80% of its adult weight. Ensuring that the brain achieves its optimum development and nurturing during this peak period of growth is therefore vitally important, and enables babies to achieve the best start in life’

*Early Intervention: The Next Steps*  
*Early Intervention: Smart Investment*  
*and Massive Savings*

3 Year Old Children



Normal



Extreme Neglect

# *The Foundation Years: preventing poor children becoming poor adults*

- Frank Field says by the age of 3 a baby's brain is 80% formed and his or her experiences before then shape the way the brain has grown and developed'
- (Independent review on poverty and life chances!)

# *Early Intervention: good parents, great kids, better citizens*

- Justifies early intervention because:
  - Human infants arrive ready to be programmed by adults...Neuroscience can now explain why early conditions are so crucial: effectively, our brains are largely formed by what we experience in early life (Allen and IDS, 2008, 56-7)
  - An early growth promoting environment with adequate nutrients, free of toxins, and filled with social interactions with an attentive care giver, prepares the architecture of the developing brain to function optimally....(Next Steps, p14)

Notice the language  
*Understanding the Brain: The Birth  
a Learning Science* (OECD, 2007)

Can neuroscience truly improve education?  
This report suggests a complex, but  
nonetheless definite answer; “yes, but....

OECD, 2007: 21



*Understanding the Brain: The Birth of a Learning Science (OECD, 2007)*

In the early life period, interactions and experiences determine whether a child's brain architecture provides a strong or a weak foundation for their future health, wellbeing and development. OECD (2007)



# A Prescription for Learning: inclusions and exclusions

- Educational neuroscience is generating valuable new knowledge to inform educational policy and practice
- Neuroscientific insights can be employed to contribute to our understanding of learning disorders such as dyslexia, dyscalculia and dementia.
- Key areas identified for further research include the “better understanding of such matters as the optimal timing for different forms of learning, emotional development and regulation, how specific materials and environments shape learning, and the continued analysis of language and mathematics in the brain” OECD, 2007: 6 which “would, if realised, be well on the way to the birth of a trans-disciplinary learning science” OECD, 2007: 6
- Absence of insights and research from other lines of inquiry: SCT and even developmental psychology





# Issues, Questions, Implications

- Have we become ‘neurochemical selves’ understanding thought and action as mediated by the brain?
- What new regimes of surveillance?
- Emphasis on individual problems vs attention to economic conditions of children’s lives
- Social inequalities=determinants
- NS in its infancy but...



## Issues contd.

- Colonization and the potential demise of other perspectives; its time has come?
- What has to be explained- the brain or what the person does
- What can be ignored and allowed fall out of the account? Only some of the social world gets represented in the brain's networks
- **What is happening around the person?**

*Networks of Mind:  
Learning, Culture, Neuroscience*  
(Routledge, 2013)



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