

hc2

**Human-Computer
Confluence**



Playful Interaction

Phil Turner



- The role of *make believe* in HCC
- What does it mean to *suspend disbelief*?
- Is *pretending* a (fundamental) form of cognition?

Convergent cognition

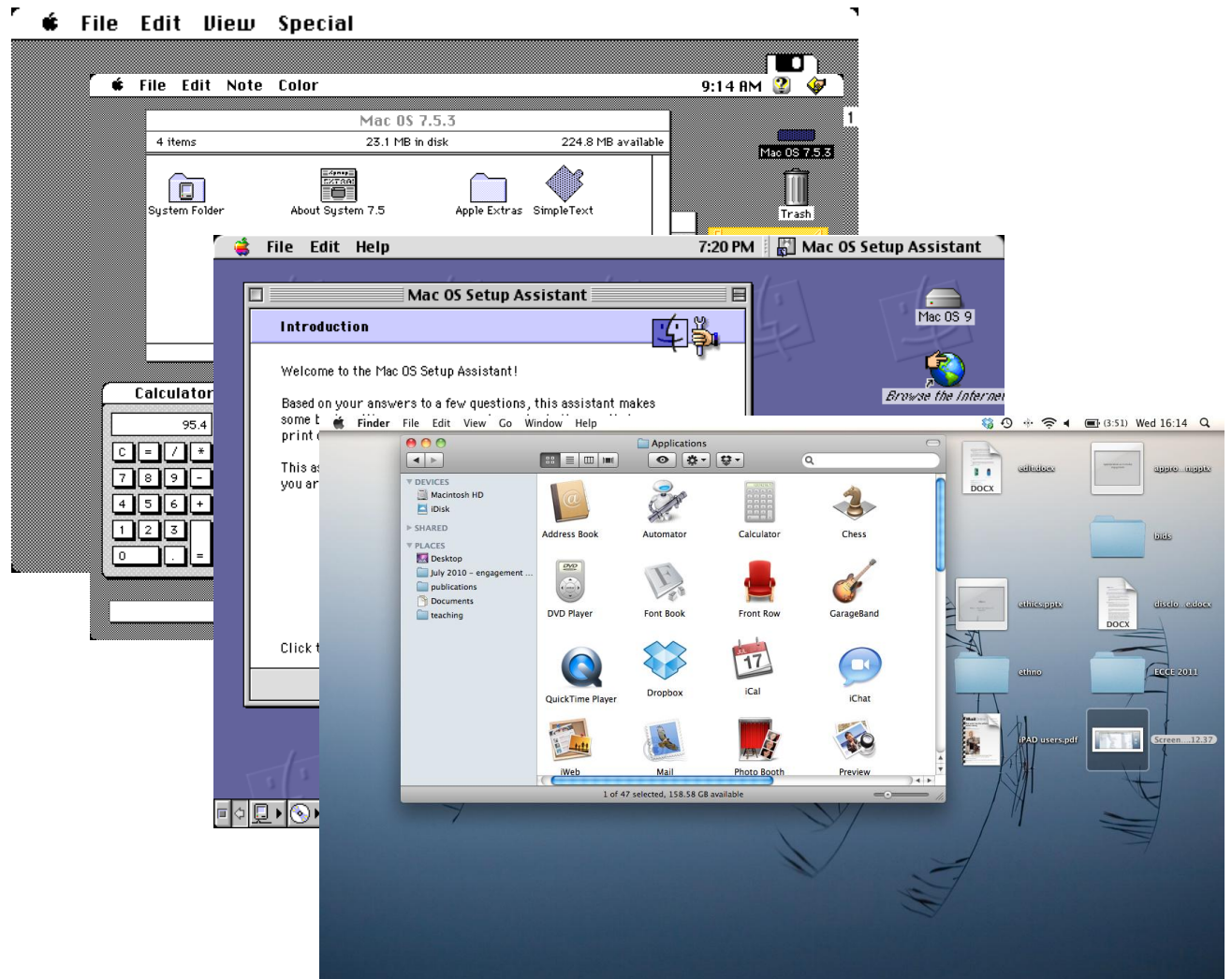
- Interaction design (at its simplest) is predicated on convergent thinking
- We are encouraged to prototype early & rapidly, to obtain “feedback”, to refine, polish, improve and then do it again

5127 prototypes

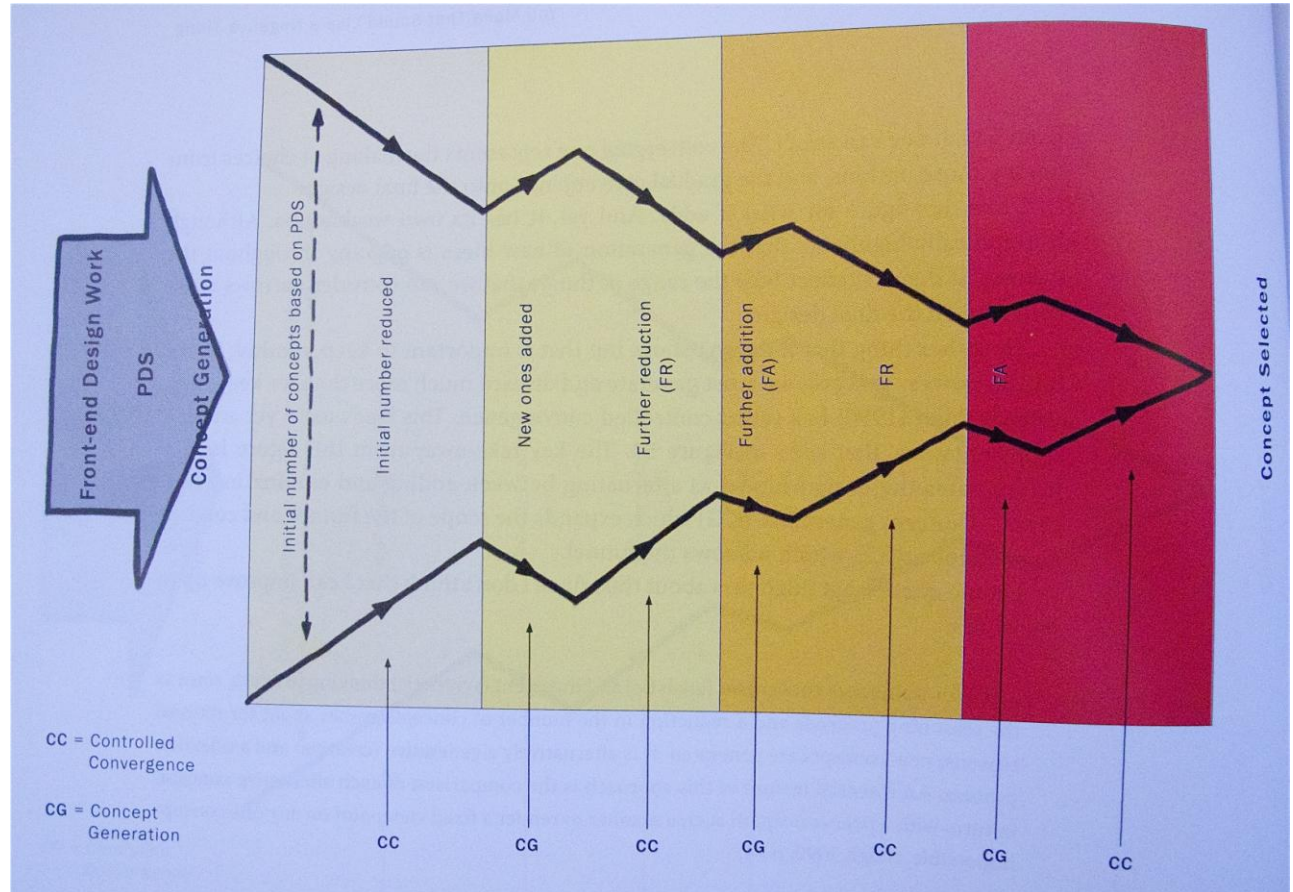
James Dyson Interview: 5,127 Vacuum Prototypes, So It Would Suck in the Right Way



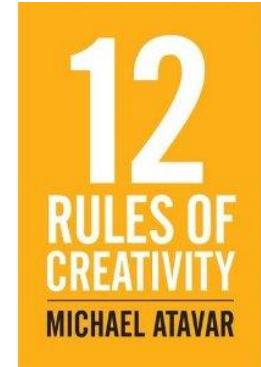
- We stop this iterative process not, when good practice suggests, but when we run out of money (time)
- Then we do it again



- A more sophisticated account of interaction design includes alternating episodes of divergent thinking (this also applies to PhDs)



- Despite convergent and divergent (design) thinking appearing to be opposite (or complementary) they are actually very similar
- Iteration, feedback, (arbitrary) stopping rule ...
- ... then do it again



- Convergent and divergent thinking and even “creativity” are learned / taught as part of the problem solving, rationalistic approach to design

- But what about a post-rationalistic, playful approach? *Homo ludens* to their *homo sapiens sapiens*
- Play is older than culture, is common to all “higher animals”, is the basis of intelligence (Piaget) and of imagination (Vygotski)

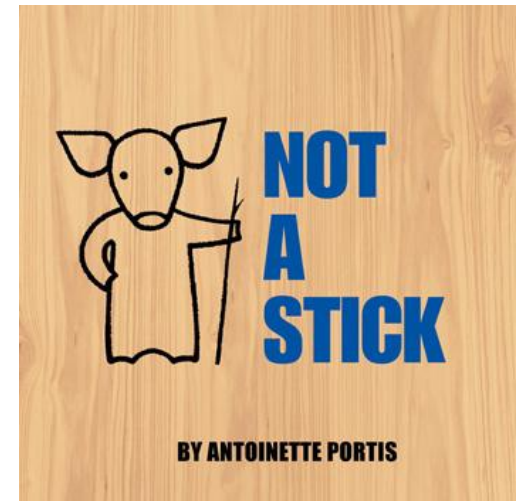
- I propose that “make believe” is an authentic mode of cognition
- It is not been formally learned (no one teaches us)
- May be actually deliberately unlearned or sidelined

- The famous example Vygotski gives is of a child who wants to ride a horse ...
 - *“play [...] the imaginary, illusory realization of unrealizable desires. Imagination is a new formation that is not present in the consciousness of the very raw young child, is totally absent in animals, and represents a specifically human form of conscious activity. Like all functions of consciousness, it originally arises from action.”* (Vygotski, 1933)
 - Available from www.marxist.org



At the crucial moment for the child, when the stick becomes a horse, i.e., when the thing, the stick, becomes the pivot for severing the meaning of horse from a real horse ...

- This is for silly parents



- So, does this kind of imaginative cognition operate in the context of HCC?
- First, we will consider an everyday example of it at work

- I suggest that this kind of cognition is at work when we *anthropomorphise*, that is, when we *pretend* that something or other has human characteristics

- Silberbauer's study (1981) of the G/wi bushmen lead him to propose that human characteristics are attributed to animals when we hunt them ...
- Thus the origins of anthropomorphise may lie with predicting the behaviour of animals – skittish, shy, cunning, aggressive and so forth

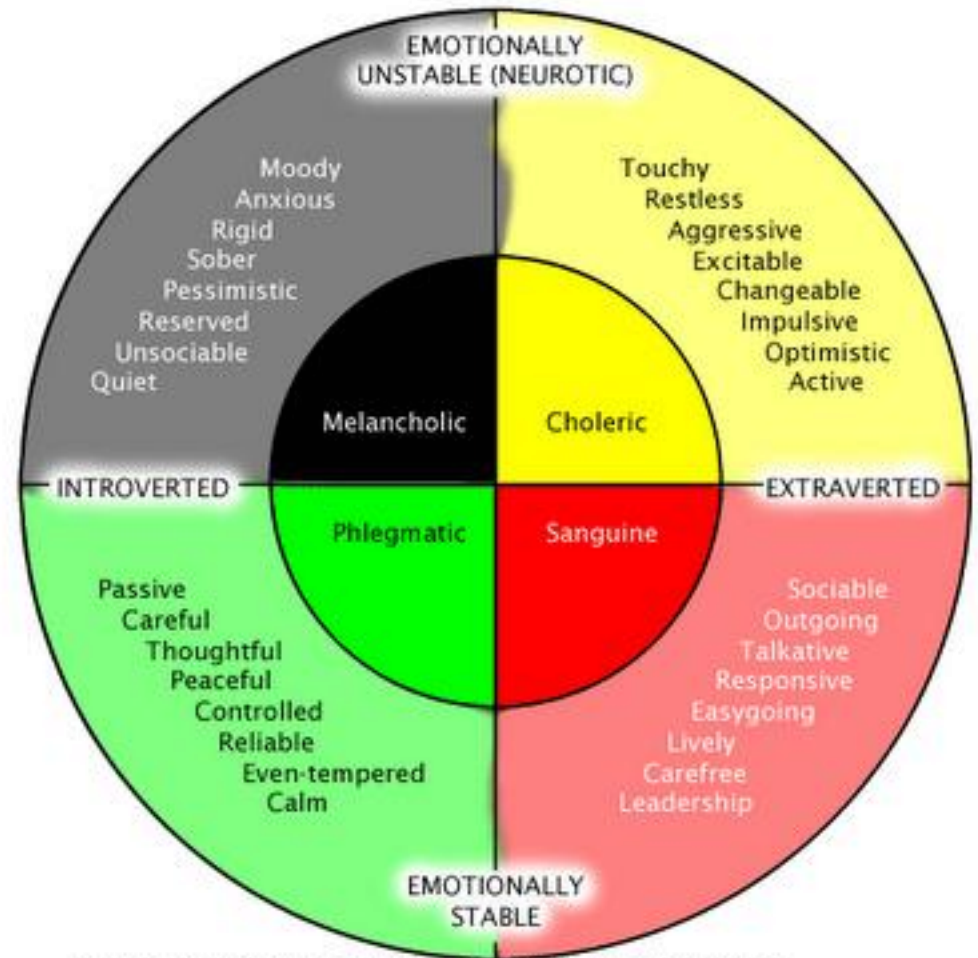


- This may also apply to predicting the behaviour of each other ...



- Here it is reflexive (human → bull → human)
- ... astrology & the psychology of personality

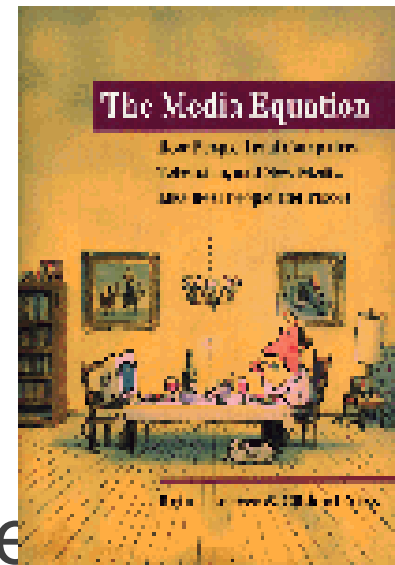




Eysenck, H.J and Eysenck, M.W. *Personality and Individual Differences*. Plenum Publishing, 1958.

- ... and subsequently to mythological figures, gods and goddesses, cartoon characters, household and digital technology

- Reeves and Naas avoid the term, preferring to call it “the media equation”
- *The Media Equation: How People Treat Computers, Television, and New Media Like Real People and Places (1996)*





- Review of the VW Sirocco, *“There's no denying that the Sirocco is one of the most striking cars in its class and, although it's not what you might regard as a pretty car, its strong face and muscular rear flanks give it great road presence”*.



- People tended to prefer cars with "angry" faces.
- Auto designers have known this for sometime, as the vast majority of cars available today have "faces"

Pikachu (Pokémon) Car



- Mugge *et al.* (2009) found that people could reliably attribute the following traits:

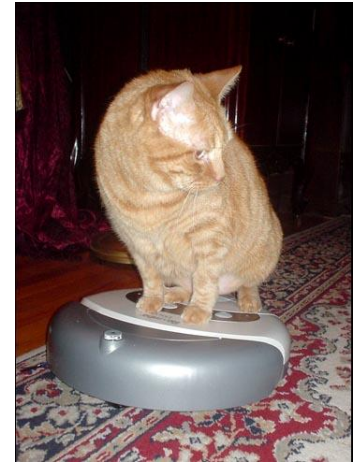
aloof, boring, cheerful, childish, cute, dominant, easy-going, honest, idiosyncratic, interesting, lively, modest, obtrusive, open, pretty, provocative, relaxed, serious, silly and untidy

- ... to cars & vacuum cleaners

Mugge, R., Govers, P. C. M., & Schoormans, J. P. L. (2009). The development and testing of a product personality scale. *Design Studies*, 30(3), 287-302.

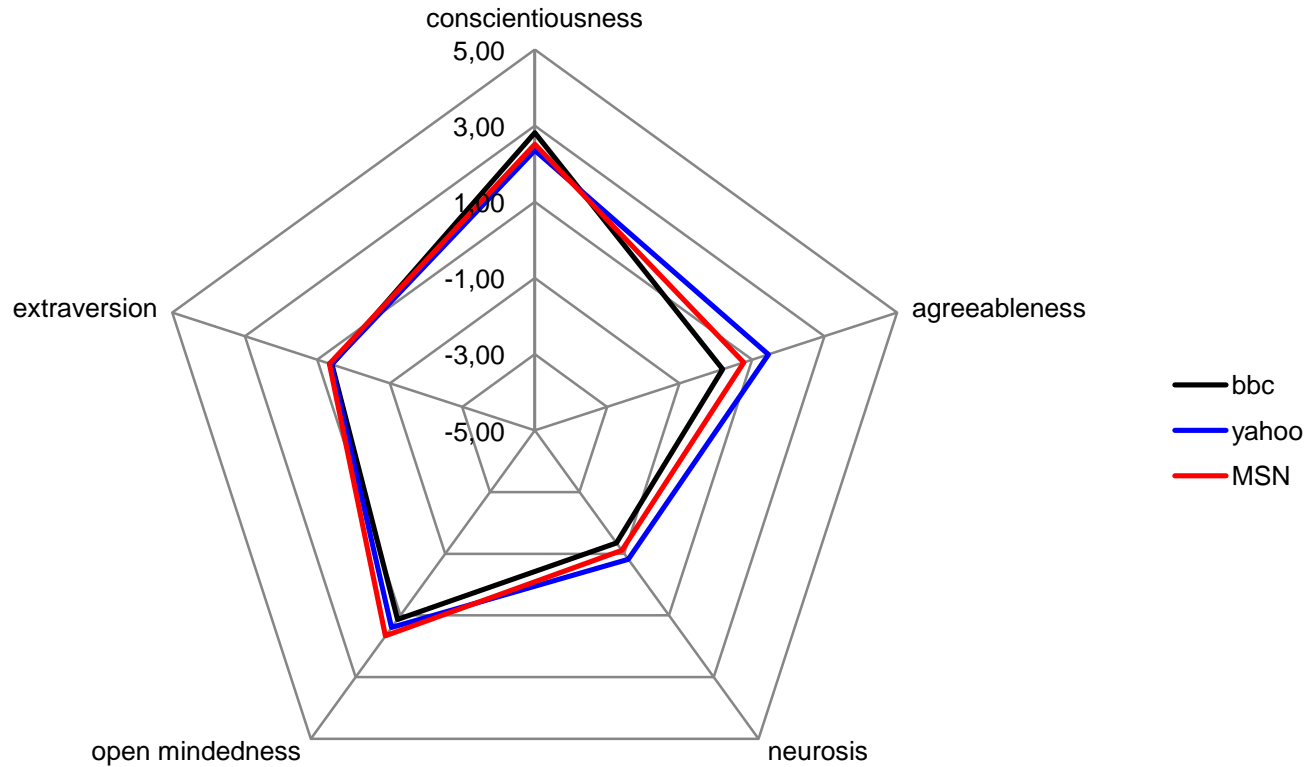
Please imagine that these products were persons and envisage the following features for them:

	Sophie	Joan.	Clive.	Anita	Jeremy.
Product	A	B	C	D	E
1 Age	30	70.	45.	40	25.
2 Gender	Female.	female.	Male.	Female.	Male.
3 Occupation	office worker	retired	Stockbroker.	working mother - Sales rep.	city Banker.
4 Accommodation	flat	Bungalow.	4 bed detached	3 bed semi right end of terr	Docklands flat.
5 Car	Small - fiat iyne.	None wakes.	4 door family top of range.	4 door but goodergie style.	Fast, sporty 2 seater.
6 Personality	outward going party animal.	Staid old fashioned.	Secure focused, stable.	efficient, hard working, hard earned	Arrogant.
7 Holidays	Tunisia.	with family members	Europe.	Townie Britain.	Caribbean
8 Home Environment	uncluttered.	Spartan.	Neat but not ultra tidy.	very tidy. everything in its place.	Minimalist.



■ Trials with Roomba, a robot vacuum cleaner, have revealed “Not only have his owners dressed him [the vacuum cleaner] up, they have also given him a name and gender.”

Sung, J.Y., Grinter, R.E., Christensen, H.I., Guo, L (2008). Housewives or Technophiles?: Understanding Domestic Robot Owners. Proceedings of the 3rd ACM/IEEE international conference on Human robot interaction. (pp. 129-136).



Turner, P., Wilson, L. and Turner, S. (2009) Do Web Pages Have Personalities? *Proc. European Conf on Cog Erg.* 62-70.

- Johnson *et al.* (2008. p.169), tell us, “*The ascription of human-like characteristics to computing technology has become integral to our design, use, training, and communications with regard to computing technology and it has been argued to be the most common metaphor used in computing discourse*”

Johnson, J. D., Marakas, G. M., & Palmer J. W. (2008). Beliefs about the social roles and capabilities of computing technology: Development of the computing technology continuum of perspective. *Behaviour and Information Technology*, **27**, 169–181.

- Nass and Moon (2000, p.82) remind us, “All computers users know a fundamental truth: *the computer is not a person and does not warrant human treatment or attribution.*”

- The next question is, “does pretending extend to other aspects of digital technology?”

- yes, it applies
everywhere

- Think about the techniques which require you/ or a user to *imagine, suppose, or suspend disbelieve*

- Scenario-based design
- Personae-based design
(fantasy girl friend design)
- Any kind of simulation e.g.
WoZ
- Virtual reality / presence

- So, the design of any kind of merging between the digital and the organic (or meaty) relies on *make believe*, or *pretence*

- Divergent thought is pretending (imagining)
- Convergent thought continues until the prototype looks how we imagined (going from sketch to design)

- So, how does pretending work?

Intentionality?

- The word – pretend is from the Latin *praetendere* “**stretch forth, claim**” from *prae* ‘before’ + *tendere* ‘stretch.’
- This stretching may be related to *intentionality* – the ascription of of-ness, about-ness and agency to stuff

- St. Thomas Aquinas having introduced the concept in the 13th century, by recognising that most of our mental states are directed towards things and events in the world.
- *Cf* Anthropomorphism as a means of predicting behaviour

Pretending as an epistemic action?

- Pretending offers an epistemic scaffold while designing (and so forth)
- Kirsh and Maglio (1994) described epistemic actions as those which involve people changing their environment to, “*search for a solution or strategy to perform a certain task rather than to move closer to an external goal state*”. That is, we often change the nature of the task to make it easier for ourselves.

Neural simulation?

- It works (directly) through neural simulation
- Common neural basis for action, imagining, dreaming ...

TABLE 2
Brain Areas Activated during S-States

Brain regions and Brodman areas (Ba)	Conditions				
	Execute	Intend	Imagine	Observe actions	Observe objects
Precentral gyrus Ba 4	4, 8, 10, 12, 13		9, 10, 13	15	
Precentral gyrus (dorsal) Ba 6	1, 8, 10, 14		4, 8, 9, 10, 14	5, 9	
Precentral gyrus (ventral) Ba 6	1, 14		4, 14	2, 5	3
SMA (rostral) Ba 6	6, 10, 13		8, 9, 10	5, 9	
Cingular gyrus Ba 24	1, 8, 10, 12, 4	7	4, 8, 10, 14		
Superior frontal gyrus Ba 10			4, 8		
Middle frontal gyrus Ba 9, 46		7	4, 8, 9	5	
Inferior frontal gyrus Ba 44, 45			4, 8, 9	2, 5, 9, 12	11
Inferior parietal lobule Ba 40	1, 6, 10, 12, 14		4, 8, 9, 14	2, 5, 9	3

Note. Brodman areas (Ba) activated during action execution and several different S-states have been listed. Numbers in the table are those of the references listed below. Each time a number appears, it indicates that the authors of the corresponding study have described activation in this particular area during a particular state. 1, Binkofski *et al.* (1999); 2, Buccino *et al.* (2001); 3, Chao and Martin (2000); 4, Decety *et al.* (1994); 5, Decety *et al.* (1997); 6, Faillenot *et al.* (1997); 7, Frith *et al.* (1991); 8, Gerardin *et al.* (2000); 9, Grafton *et al.* (1996); 10, Lotze *et al.* (1999); 11, Perani *et al.* (1995); 12, Rizzolatti *et al.* (1996); 13, Roth *et al.* (1996); 14, Stephan *et al.* (1995); 15, Hari *et al.* (1998).

Jeannerod, M. (2001) Neural Simulation of Action: A Unifying Mechanism for Motor Cognition, *NeuroImage* **14**, S103–S109

Last slide

- Vygotski and motor behaviour
- I have presented a case for *pretending as underpinning (just about) every aspect of design thought in HCC*
- And perhaps those it doesn't, it scaffolds