Social Cognition

Some would insist that the *psychological* and the *social* are different domains, much like some would insist that the *biological* and the *cultural* are different domains. The idea that there is a *nature* from which human beings are distinct is similar.

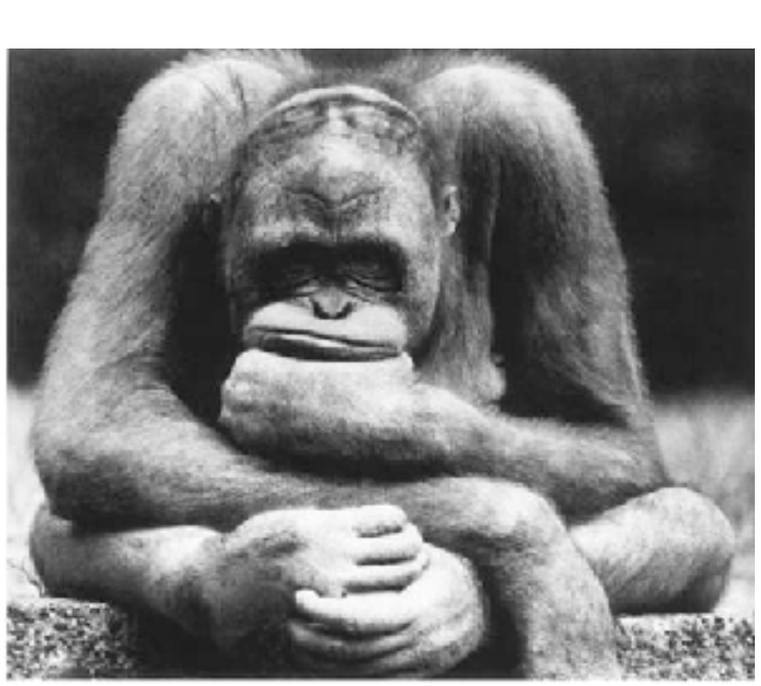
Any such ontological split is deeply problematic.

Why? When do you lean on such distinctions?

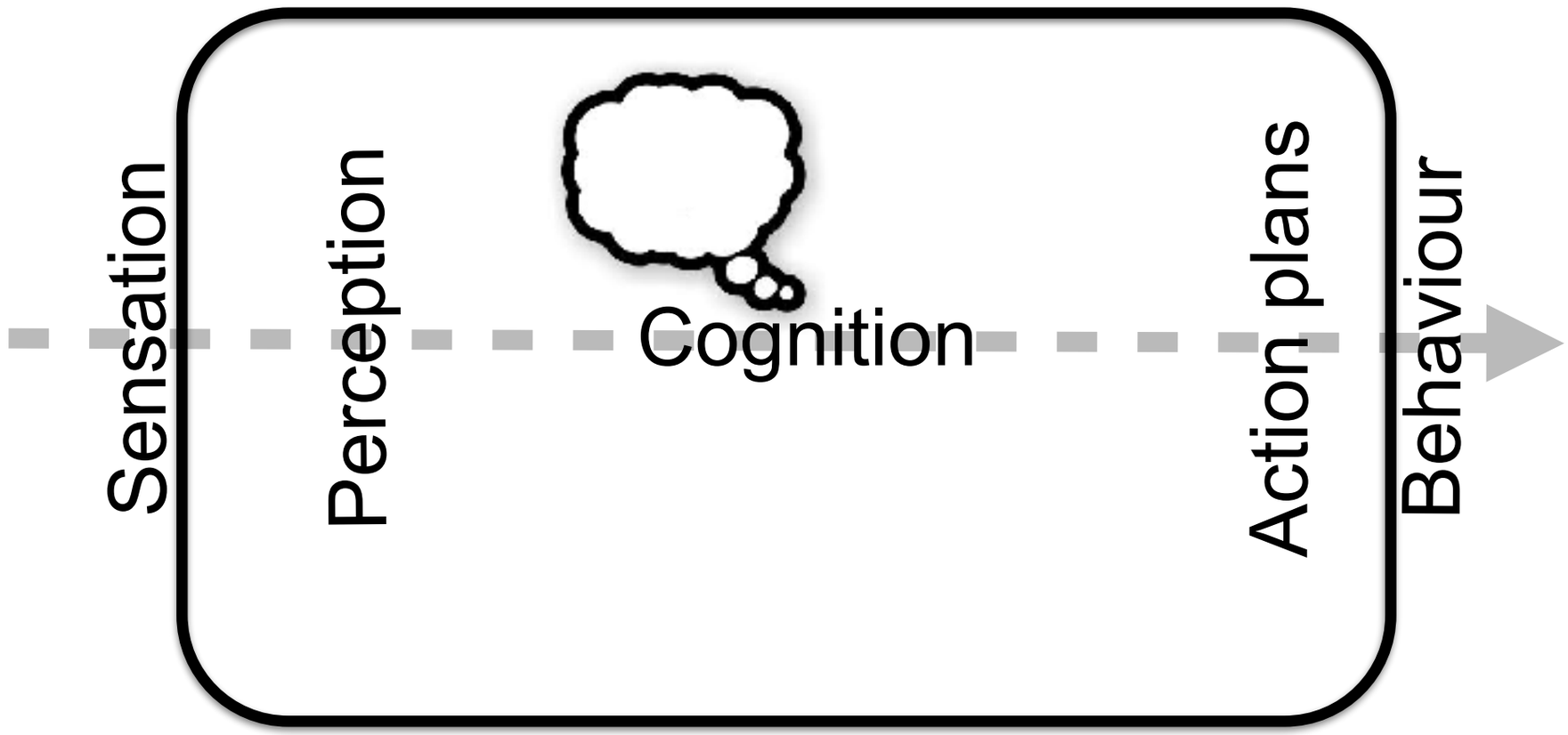
Most of our psychological theories describe the mind of an individual


Thinking cat...
...is thinking


THINKING
CAP
Whoa.
HICKS

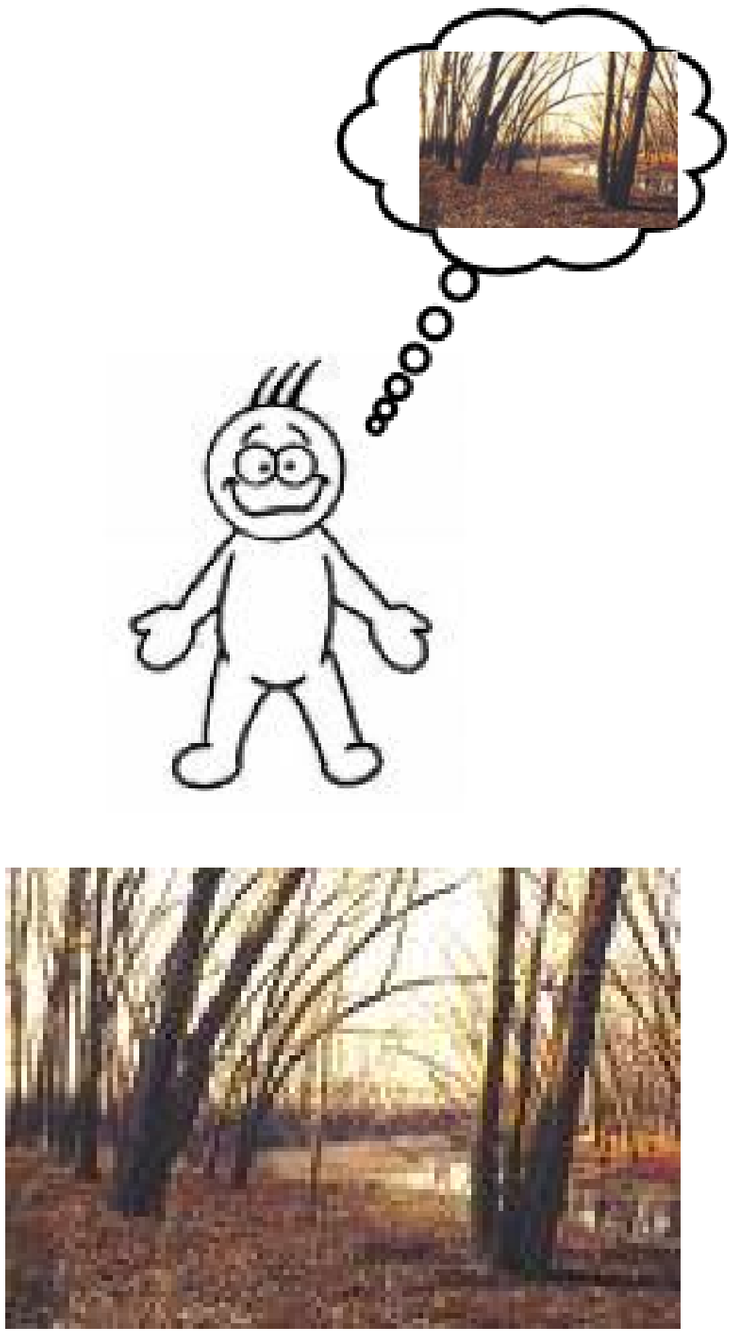


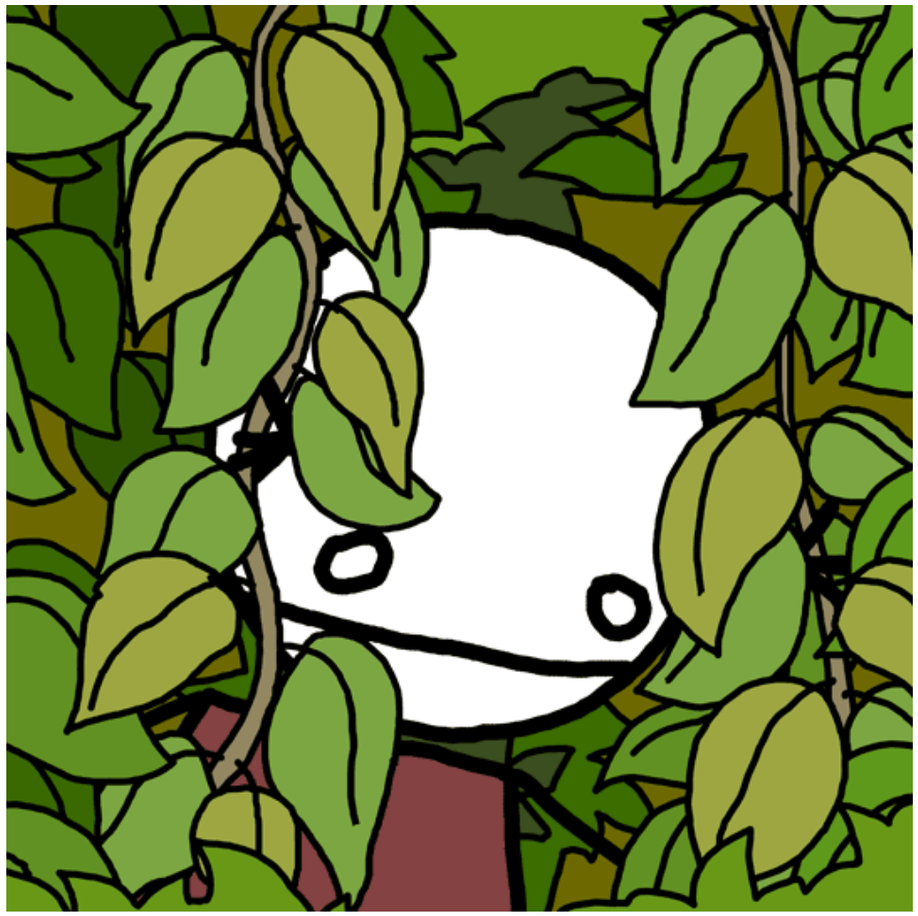
Environment



The psychological subject

Representational and Embodied approaches differ in the relation of the individual to their environment





The [external] world is its own best representation

--Rodney Brooks

What is your environment?

Surfaces designed for humans

Which elements here present the greatest challenge for you?

The most important element in the environment of a human being is other human beings (usually)

Intersubjectivity

How do we figure out other people?

How do we avoid being solipsists?

What is the basis for empathy?

How do we come to live in a common world?

Heider & Simmel, 1944

https://www.youtube.com/watch?v=VTNmLt7QX8E

Why do we attribute such complex psychologies to mere triangles and circles?

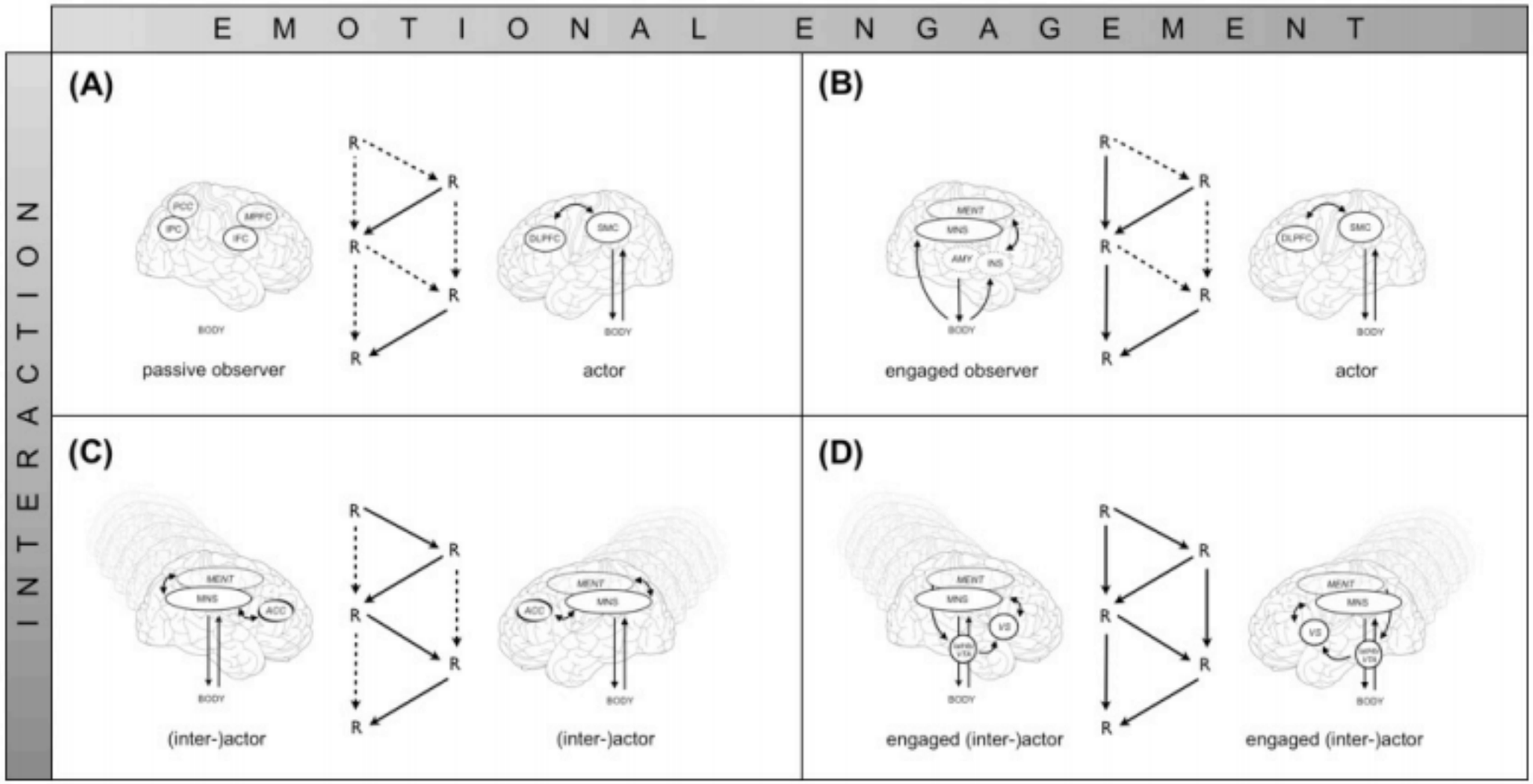
Is this the way we should think about “knowing others”

First person stance: what it is like to be me

Third person stance: looking at others as others
(works for triangles)

Second person stance?

Schilbach, L., Timmermans, B., Reddy, V., Costall, A., Bente, G., Schlicht, T., & Vogeley, K. (2013). Toward a second-person neuroscience. *Behavioral and Brain Sciences*, 36(04), 393-414.



Center: Schematic depiction of interaction contingencies for situations of (A) no (or little) social interaction and no (or little) emotional engagement, (B) no (or little) social interaction, but emotional engagement of person A with person B, (C) social interaction, but no (or little) emotional engagement and (D) social interaction and emotional engagement. Dotted lines indicate the absence or relatively decreased influence of actions on oneself (vertical arrows) or the other (oblique arrows), temporal sequence is shown from top to bottom (*schematic of interaction contingences adapted from:* Jones & Gerard 1967). Despite the suggestion of linearity in the interaction sequence, our account also stresses the importance of interaction dynamics, which may be seen as emergent properties of an interaction, and possible inter-brain effects of social interaction (see section 2.3 & 3.2.2 for details).

Three major approaches to Intersubjectivity

Theory theory

Simulation Theory

Representational
Individual

Participatory sense-making

Interactional

Theory-Theory

Theory-Theory is a general account of how we come to understand the structure of complex domains: not just the (presumed) psychology of others.

Tried to address shortcomings in category theory (exemplars vs prototpyes) and developmental theory (both Piaget & Vygotsky)

Suggests a kind of creative induction that is more powerful than mere statistical generalisation.

Suggests cognitive continuity across development, from infant-hood to adult-hood.

Theory-Theory

Theory theory (TT) claims that we explain and predict another person's behaviour by relying on an innate or acquired theory of how people generally behave and of the mental states such as beliefs or desires that cause their behaviour. On the basis of our theory of mind, we make inferences about others' mental states.

Premack, D., & Woodruff, G. (1978). Does the chimpanzee have a theory of mind? Behavioral and Brain Sciences, 4, 515–526.

Morton, A. (1980). Frames of Mind. Oxford: Oxford University Press.

Grew out of the 1950's and the idea that we have a "folk" psychology: we attribute beliefs, intentions & desires in order to understand other people.

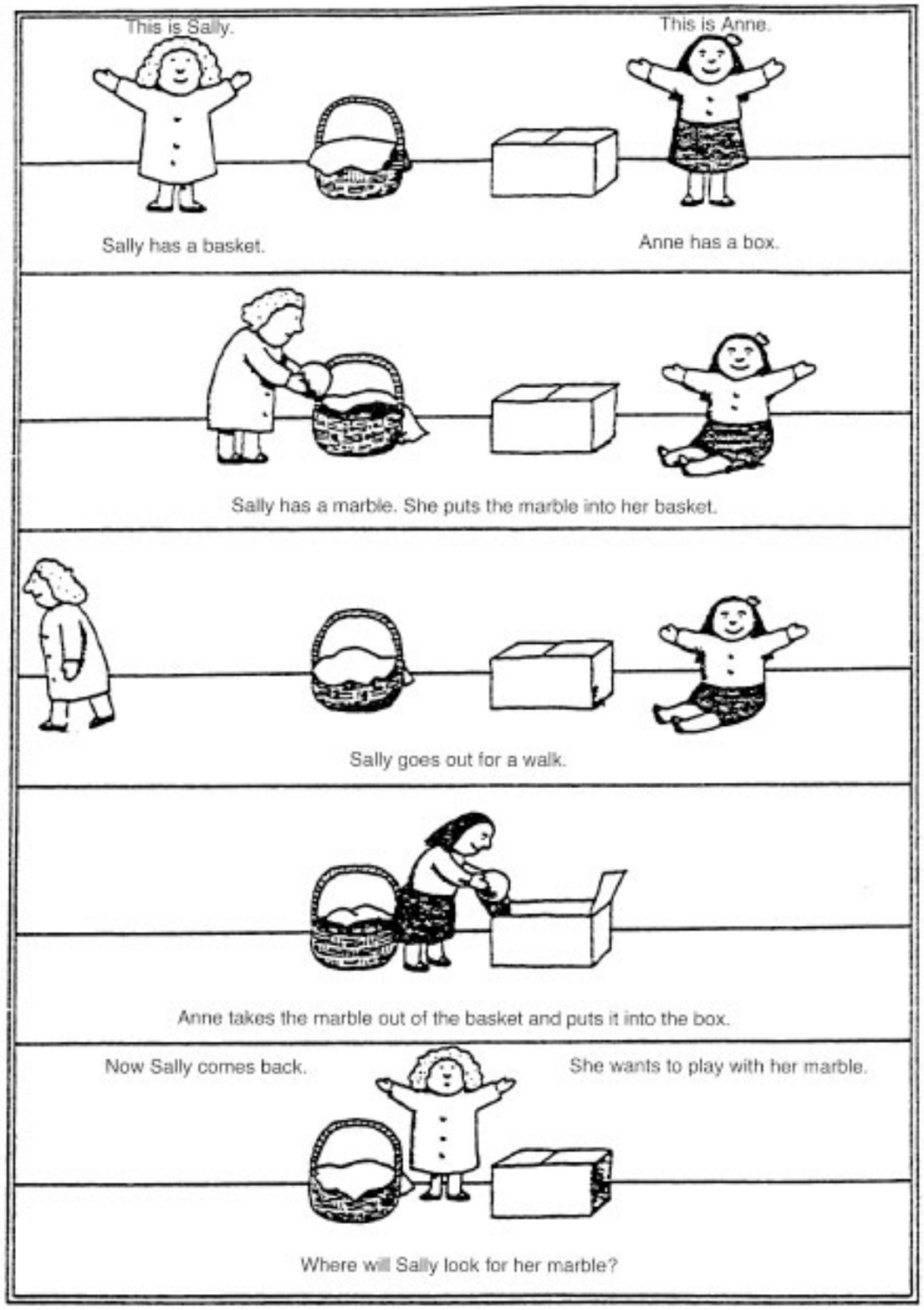
They just make more sense like that.

Gave rise to a very influential theory of Autism as a deficit in "mind reading" (Baron-Cohen and others)

At around 3 to 4 years, children master the “false belief” task

Thinking about thinking

Meta-representation



Theory-Theory has been extended to provide a parallel account of self-knowledge as inference of the causal basis of one's own behaviour.

"First person mind-reading".

Questions then arise as to just what the limits of direct self-knowledge are.

Principal theorists: Bem, Nisbett, Gopnik

Simulation Theory

Arising in the late 1980's, ST suggests an alternative to implicit theorizing.

Hypothesis: We come to know the psychological states of others by mentally simulating them.

Assumes we can co-opt computational resources normally used online, and use them offline.

Principal name: Alvin Goldman

Rather than constructing a “theory” of other minds,

we *simulate* psychological states and processes of the other

Because we are similar beings, we can bring our own cognitive apparatus and experience to bear on imagining the mental world of another.

Simulation theory got a massive boost from the discovery of mirror neurons (1990s) and the associated hype

Simulation theory and Theory theory co-exist

Some hybrid approaches have emerged, e.g. postulating low-level automatic mirroring (ST) with high level reasoning (TT).

Both approaches have been criticised as being Cartesian: relying on distinct, solipsistic, domains, and as failing to acknowledge the reciprocal *interaction* that characterises social cognition

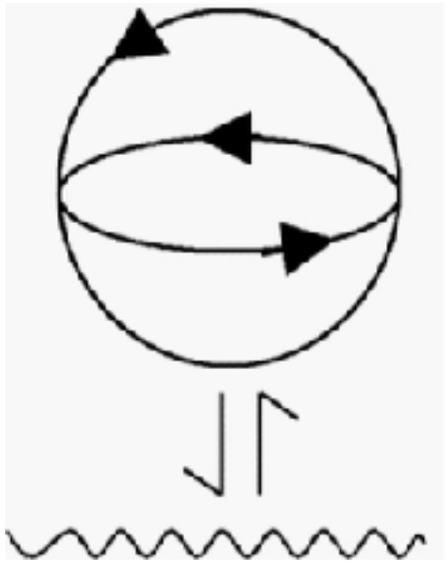

BEING
JOHN MALKOVICH


A FILM BY ALFRED HITCHCOCK
JAMES
STEWART
GRACE
KELLY
WENDELL
COREY
THELMA
RITTER
RAYMOND BURR
REAR WINDOW
TECHNICOLOR
DIRECTED BY
ALFRED HITCHCOCK


REAR WINDOW

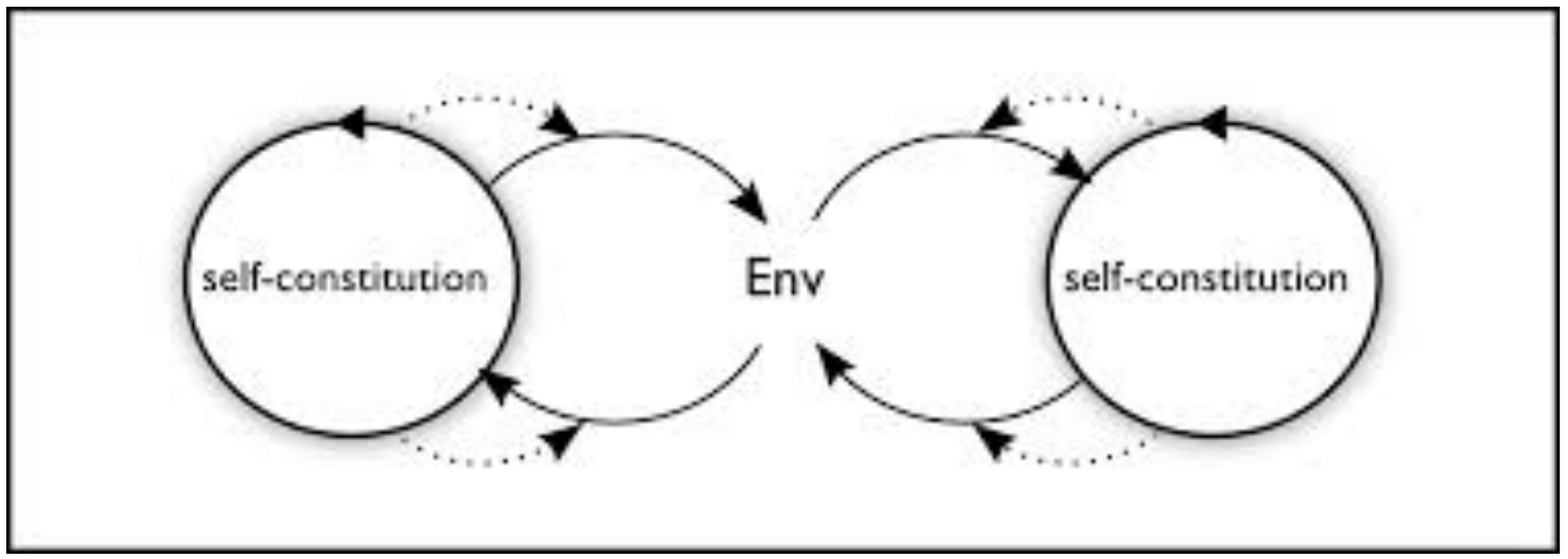
Participatory Sense-making

Mind-and-life or Enactive approaches describe *cognition* as the *interaction* between an autonomous agent and its environment



Much of what is subsumed under the term *perception* in psychological approaches, is here described as *sense-making*

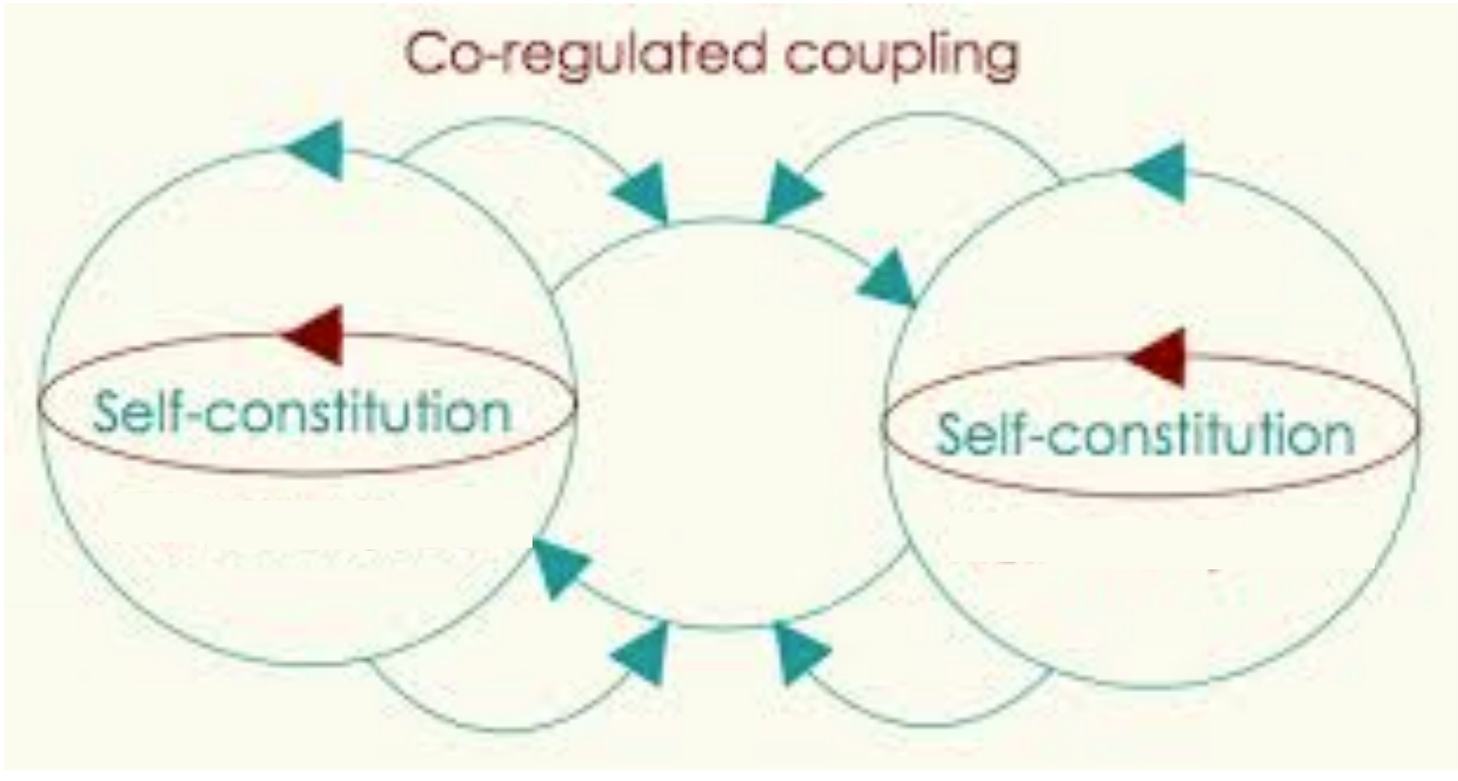
Sense-making is the process whereby a meaningful world arises in the regulated coupling of an agent with its environment.



In *participatory sense making*, the sense-making activities of the agents co-constitute each other.

Reciprocal interaction gives rise to a shared domain that is not reducible to two distinct worlds.

Viewed in this framework, subjects are not distinct and isolated.



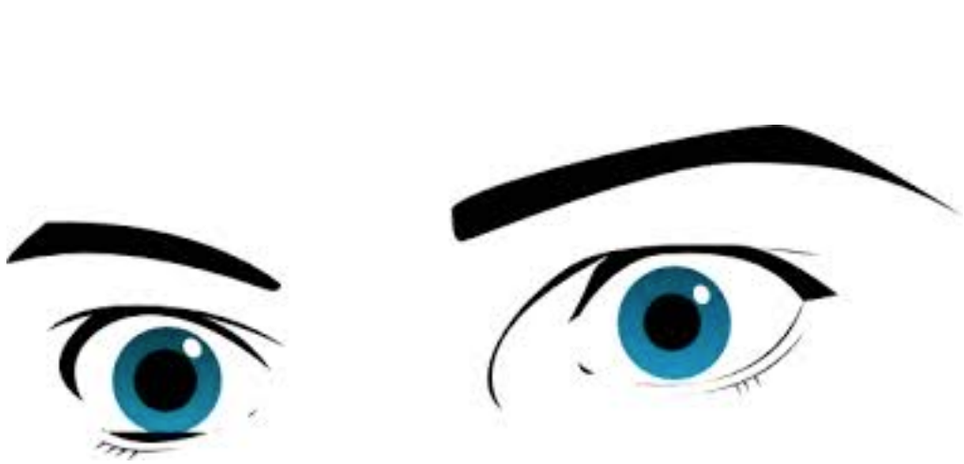
Analogy: the square soap bubble

More on this in Topics module, Semester 2.

What are the most salient characteristics of a human social world?

(Revision)

The two most important means by which humans keep track of, and interact with, other humans?



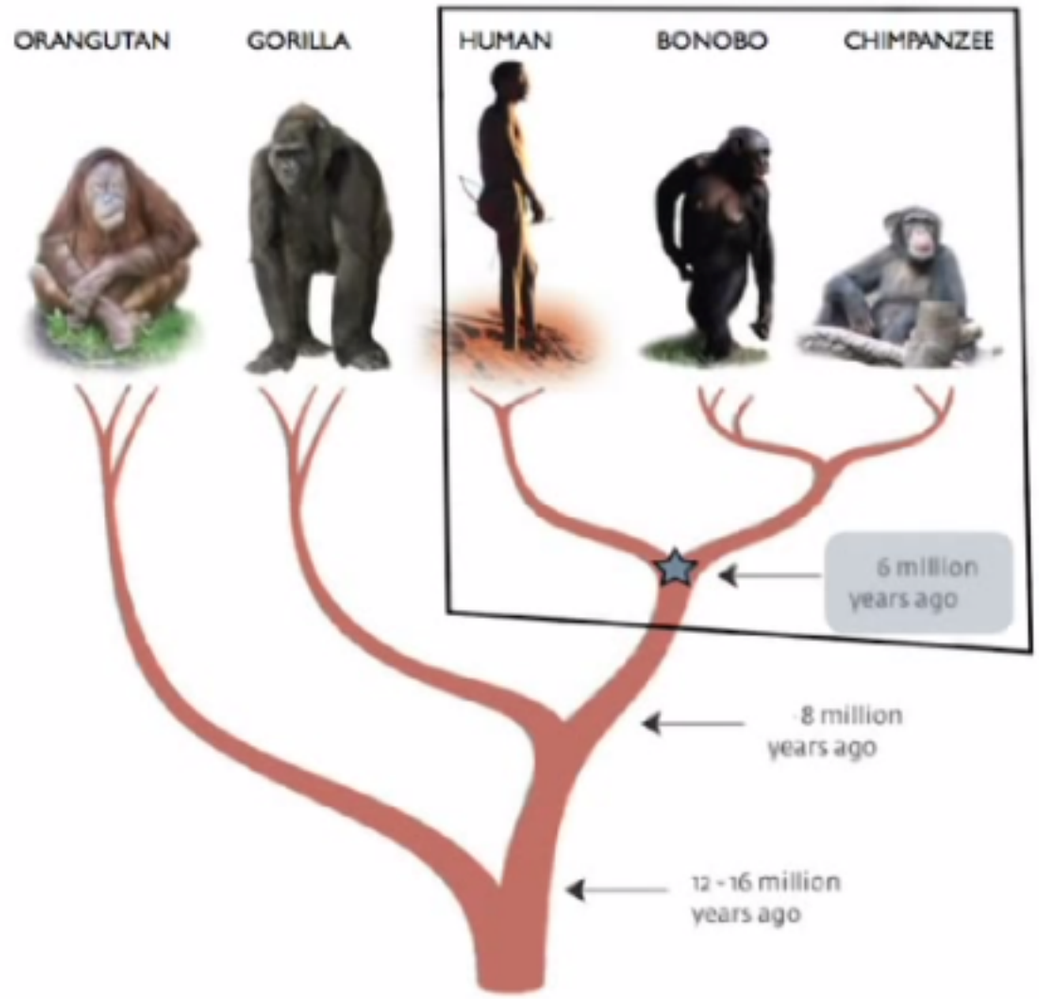
Gaze

Voice

Tomasello's Cooperative Eye Hypothesis

Sometime in the last 6 million years, some change occurred that allowed humans, with their complex cultural linguistic societies, to emerge.

Usually, this is presented as little short of a miracle.



Humans and Other Primates

- The human species is one kind of primate, a subgroup of mammals that includes lemurs, lorises, tarsiers, monkeys, and apes.
- Humans are most closely related to the great apes:
  - –chimpanzees, bonobos, gorillas, and orangutangs

★ Please don’t confuse monkeys and apes.

Hauser, Marc D., Charles Yang, Robert C. Berwick, Ian Tattersall, Michael J. Ryan, Jeffrey Watumull, Noam Chomsky, and Richard C. Lewontin. "The mystery of language evolution." *Frontiers in Psychology* 5 (2014).

Based on the current state of evidence, we submit that the most fundamental questions about the origins and evolution of our linguistic capacity remain as mysterious as ever, with considerable uncertainty about the discovery of either relevant or conclusive evidence that can adjudicate among the many open hypotheses.

Justified humility? Or unwarranted mysterianism?

Of all the apes, only humans have a clear contrast between the white of the eye (sclera) and the iris.

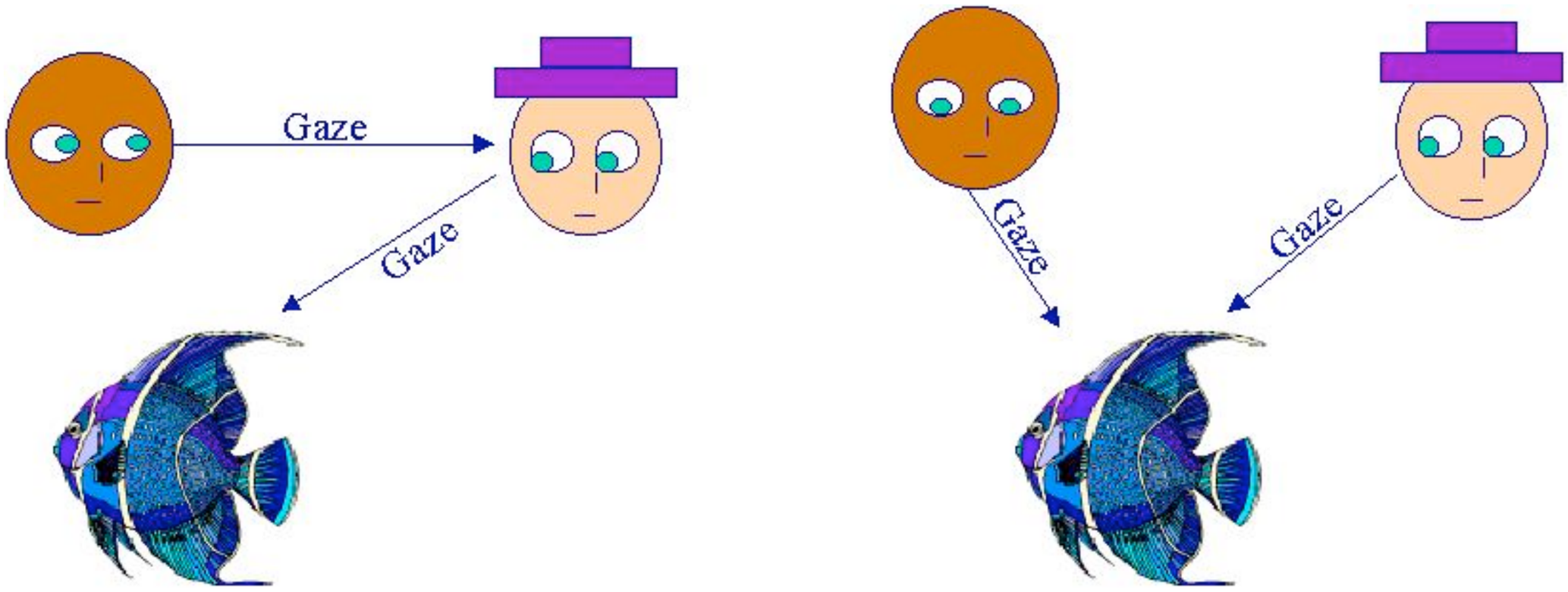
What might the effect of this contrast be?

Human

Ape

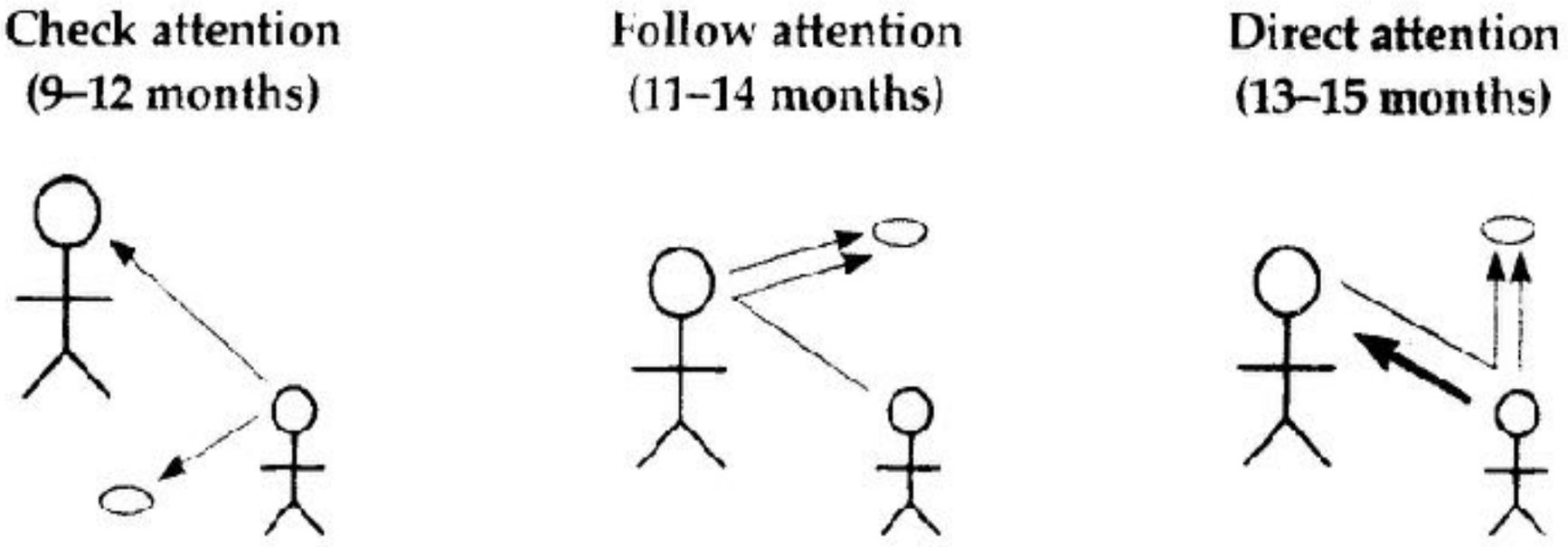
Ape in Planet of the Apes

Joint Attention



Situations of joint attention characterize our social interactions from the earliest of ages

- Joint attention serves to share an experience
  - IJA: *Initiating* joint attention via eye contact or gestures
  - RJA: *Responding* to the direction of gaze or pointing of another individual
  - CJA: *Coordinating* initiations and responses with another individual



Joint Attention
and language evolution

- Michael Tomasello:
  man and ape share
  99% of genetic material
- Yet enormous difference
  in cognitive skills (language!)
- Solution: Joint Attention
  enables cultural learning
- Only one biological adaptation needed!

Some Sad Stories from Social Psychology

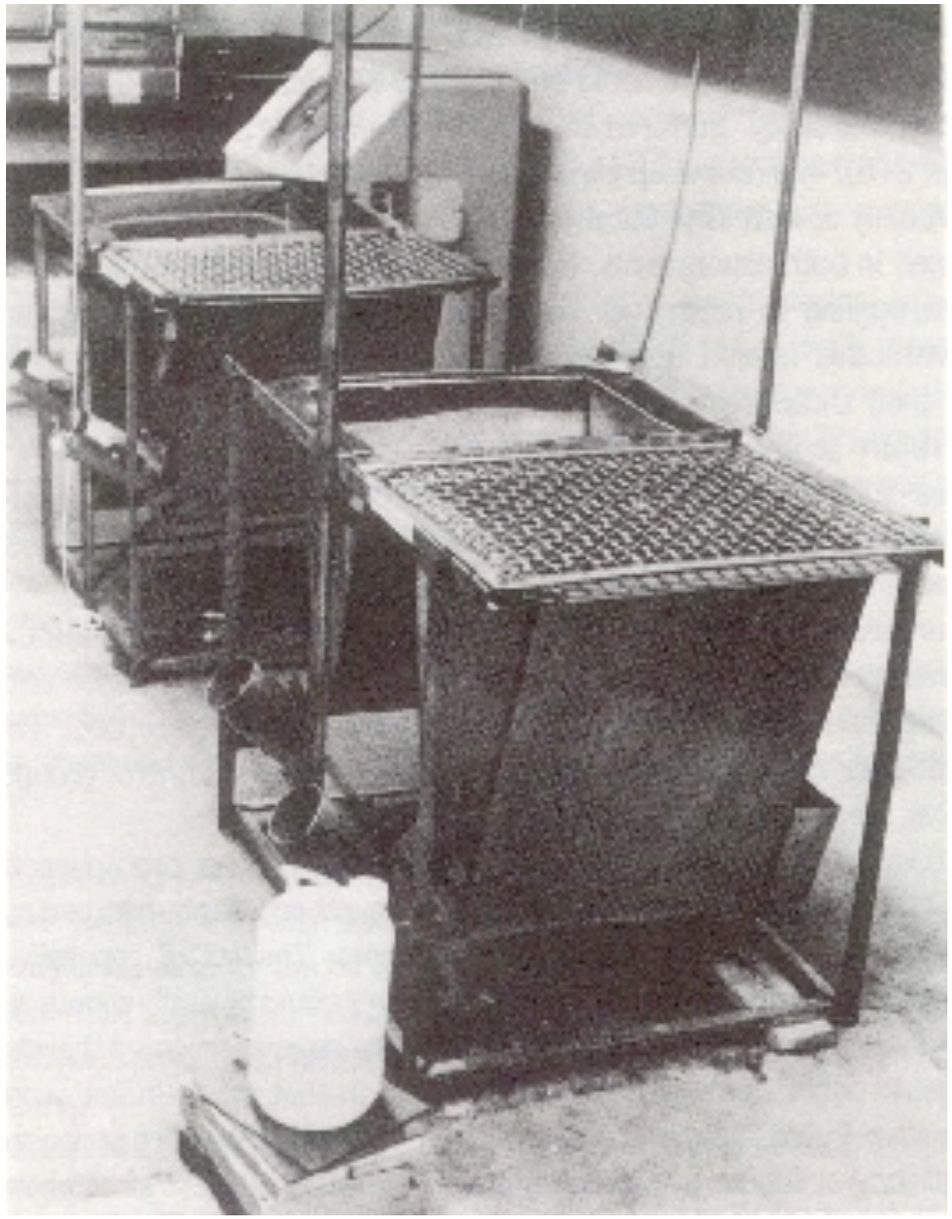
Harry Harlow: Creepy Scientist….

Provided monkey babies with 2 surrogate mothers: 1 wire frame, hard, unlovely, with milk. One soft, attractive, but dry.

Demonstrated that monkeys need social touch and affection (duh).

Used creepy terms like “the pit of despair”, “the rape rack”, etc in his work.

Figure 3. Cloth mother surrogate.



The pit of despair……

Harlow's experiments on social bonding, maternal separation, isolation, etc. fed a hunger from the public for advice on how best to interact with human infants.

Psychology often seems to play this odd role.

His experiments may have contributed to the creation of the animal liberation movement in the USA.

A pop-up robot used to scare small monkeys in Harlow's lab

His experiments may have contributed to the creation of the animal liberation movement in the USA, and to the development of the awareness of ethical issues in research using animals.

Some of his work may also have informed the development of A*ttachment Theory* (mainly John Bowlby and Mary Ainsworth).

This is a useful field that inquires into the consequences of a rupture to the early infant/mother relationship.

What social fears was Harry Harlow's work responding to?

Why did people feel they needed to be told by scientists how to be parents?

We need to understand this research as positioned in the USA after the 2nd World War. This is where the suburbs emerged and attracted millions, drawn there by societal and commercial pressures and the dream of a modern consumerist future.

There was heightened anxiety due to the falling away of the extended family, which had been the norm but which was not supported by suburban living.

Suburban nuclear families made the transmission of parenting skills difficult.

There was an appetite for instruction in matters that had previously been simply passed on in practice.

Classics in social psychology:

(1) The Milgram studies

Public Announcement

WE WILL PAY YOU $4.00 FOR ONE HOUR OF YOUR TIME

Persons Needed for a Study of Memory

*We will pay five hundred New Haven men to help us complete a scientific study of memory and learning. The study is being done at Yale University.

*Each person who participates will be paid $4.00 (plus 50c carfare) for approximately 1 hour's time. We need you for only one hour: there are no further obligations. You may choose the time you would like to come (evenings, weekdays, or weekends).

*No special training, education, or experience is needed. We want:

Factory workers	Businessmen	Construction workers
City employees	Clerks	Salespeople
Laborers	Professional people	White-collar workers
Barbers	Telephone workers	Others

All persons must be between the ages of 20 and 50. High school and college students cannot be used.

*If you meet these qualifications, fill out the coupon below and mail it now to Professor Stanley Milgram, Department of Psychology, Yale University, New Haven. You will be notified later of the specific time and place of the study. We reserve the right to decline any application.

*You will be paid $4.00 (plus 50c carfare) as soon as you arrive at the laboratory.

TO:
PROF. STANLEY MILGRAM, DEPARTMENT OF PSYCHOLOGY, YALE UNIVERSITY, NEW HAVEN, CONN. I want to take part in this study of memory and learning. I am between the ages of 20 and 50. I will be paid $4.00 (plus 50c carfare) if I participate.

NAME (Please Print). . . . . .

ADDRESS . . . . . .

TELEPHONE NO. . . . . Best time to call you . . . . . .

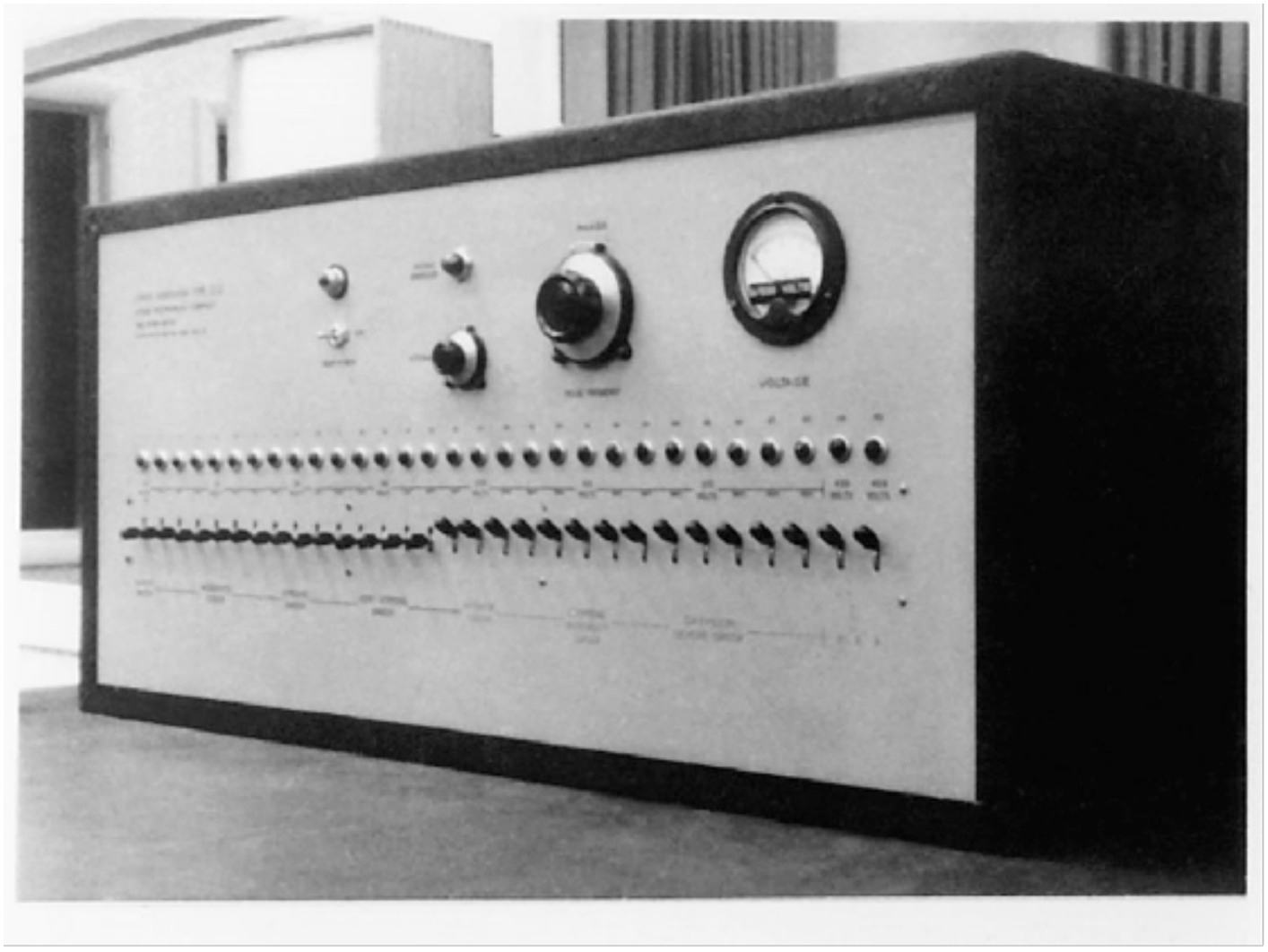
AGE . . . . . OCCUPATION. . . . . SEX . . .

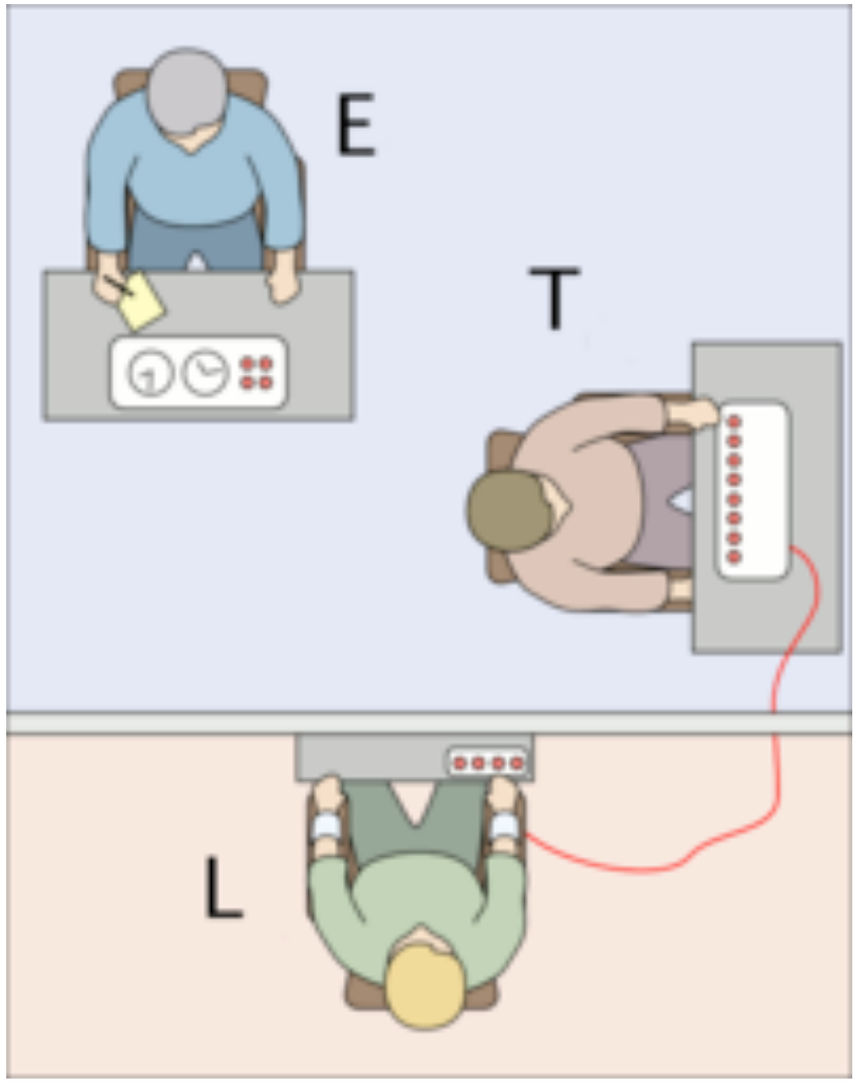
CAN YOU COME:

WEEKDAYS . . . . . EVENINGS . . . . . WEEKENDS. . . . . .

The Milgram Studies

Increasing Shocks for Errors



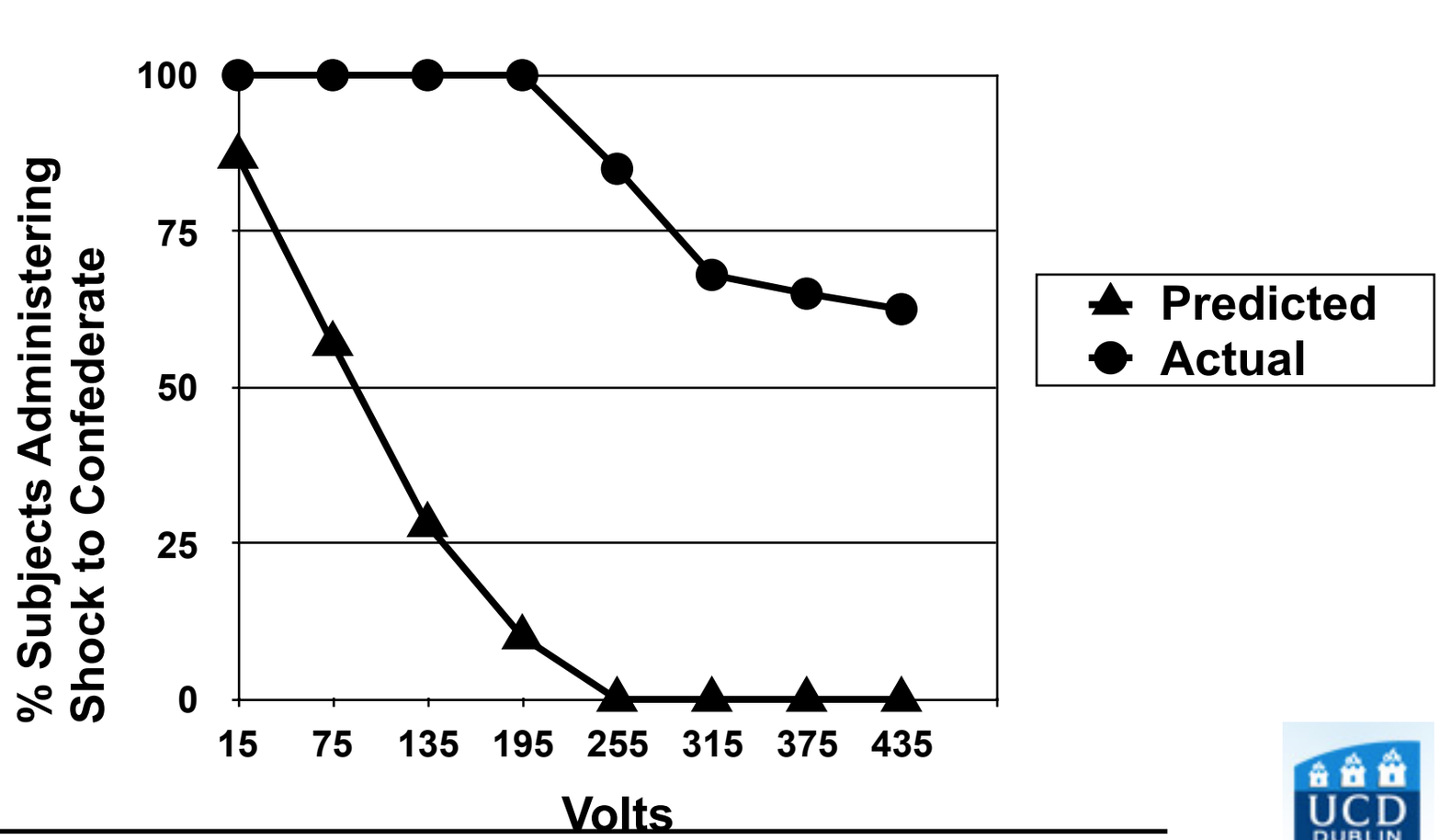


The Milgram Studies

- 15 volts to 450 volts (“XXX”)
- At 120 volts learner shouts in pain
- At 150 volts learner asks to stop
- At 300 volts learner pounds on wall
- At 330 volts learner stops responding
- Question: how far will teachers go?

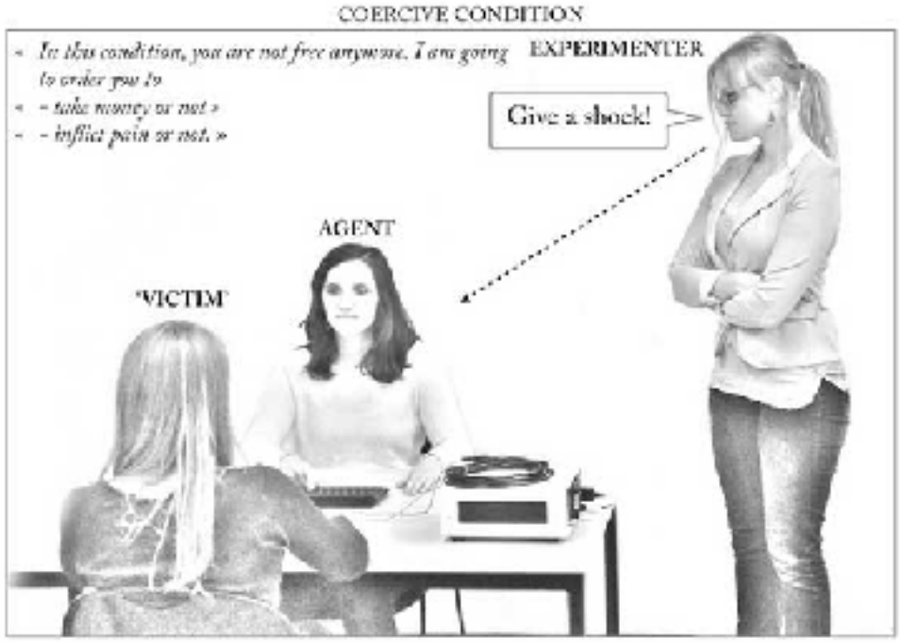
The Milgram Studies

- Psychologists predicted
  - 2% would go to maximum level
- Actual results
  - 65% of teachers went to the maximum level
- Other factors
  - Lab coat
  - Proximity
  - poorly educated
- Ethical issues



Introduction to Cognitive Science, COMP 20090

The required reading for this week includes a recent (non) replication of the Milgram study.



See what you think. Be careful of drawing very serious conclusions from very little (and complex) evidence!

What social fears was Milgram's work responding to?

The Nuremberg trials are going to be relevant to this discussion (1945/1946) but also the trial of Adolf Eichmann (1961/1962)

Confronted with the horrors of WW2 and the Nazi state, it was important to ask how the structures of authority interact with individual will or conscience.

Social Psychology Classics:

Stanford Prison Experiment

- Conducted in 1971 by Philip Zimbardo and others in the basement of the Stanford Psychology Department.

- Volunteers were randomly assigned to play the role of guards and prisoners in a mock prison in the basement.

- The project was planned to run for 14 days, but was ended prematurely after 6 days, after Zimbardo's girlfriend raised concerns about the well-being of the volunteers

The Stanford Prison Experiment

was NOT a scientific experiment (though it is often mistakenly treated as if it were)

was NOT conducted in a manner that could ever have informed science

did NOT lead to any conclusions we may rely upon

We need to cleanly separate

1. The events that took place in 1971

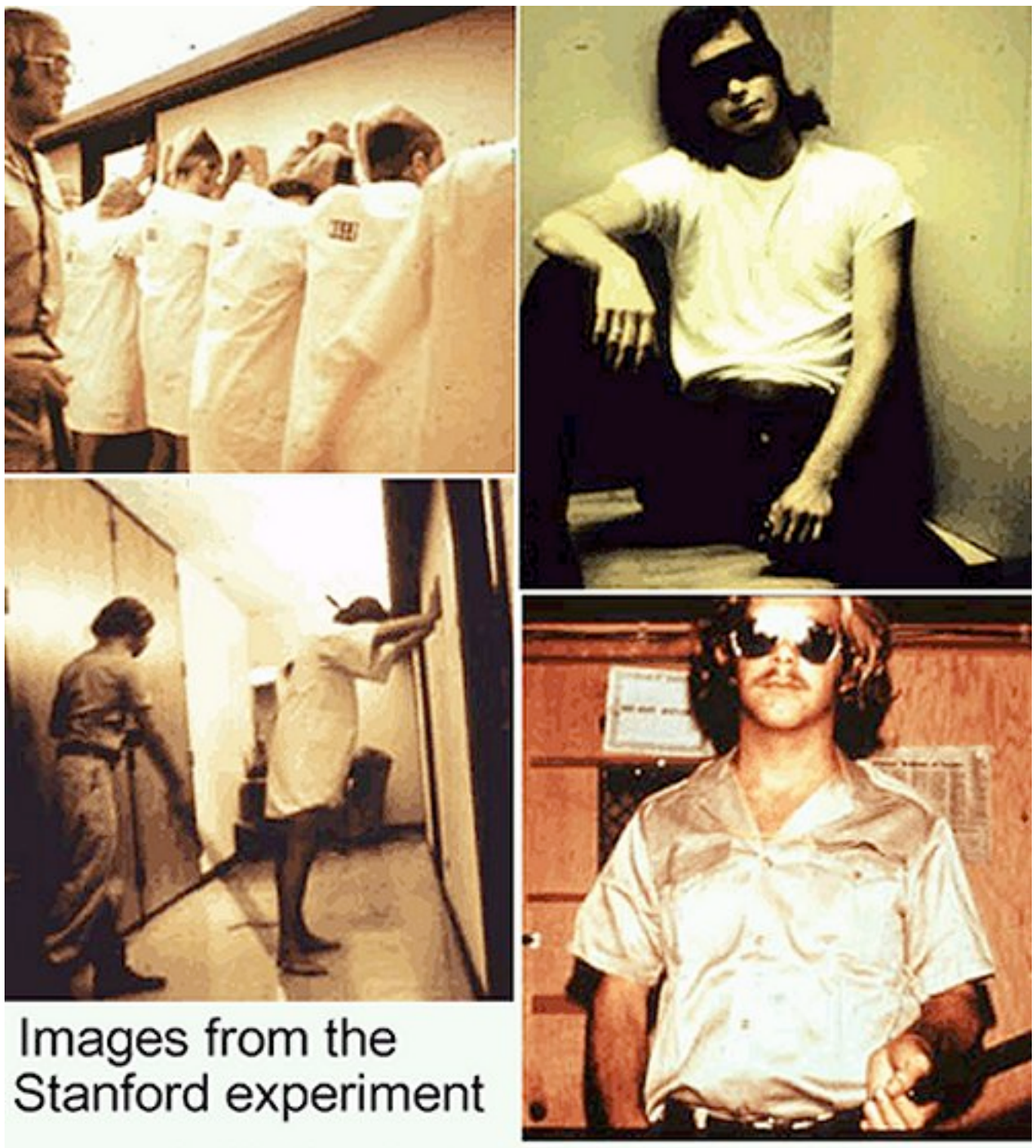
2. The myths and stories around that event, expecially as propagated by Phillip Zimbardo himself, and

3. The social consequences of such myths

1. Events

- Entire basement of Stanford University Psychology Department used to setup a 'mock' prison
- Prisoners were 'arrested' at their residences, made to wear prison issue uniforms ('dresses'), placed in cells, limited freedom to exercise, interact
- Conditions deteriorated. Some guards acted in abusive manners. Some prisoners exhibited signs of anxiety or trauma.
- Zimbardo was on the floor most of the time, egging the volunteers on and manifestly affecting their behaviour
- After 6 days, the project was called off

2. Myths



Images from the Stanford experiment

(with thanks to Philip Zimbardo)

The main source of documentation we have available is a website that is curated by Zimbardo himself.

This website perpetuates all the known myths about the "experiment"

One of the original guards from SPE did an “I-am-a” on Reddit

https://www.reddit.com/r/IAmA/comments/2y5sbt/iwasa_guard_in_the_1971_stanford_prison

This is essential reading if you want to understand the whole sorry story

- One interpretation, often repeated, asserts that brutality of the ‘guards’ and suffering of the prisoners resulted in the experiment being abandoned after only 6 days”

- With that framing, it has been suggested that guards were depersonalised in the group and their ‘role’ losing their individuality.
- One popular interpretation was that ‘tyranny’ was ‘embedded’ in the psychology of powerful groups – group of people in ‘social roles’ create ‘group norms’ and comply with them. Other interpretations exist. Do not treat this story uncritically!
- Group norms = acceptable beliefs and behaviours in a group

These assertions are not supported by any scientific evidence, and are pushed by Zimbardo himself

SPE has been very heavily criticized:

1. Findings not been reported in scientific publications, can only be evaluated through limited footage and website material. No experimental design, no data, no analysis …

2. Evidence of resistance by the prisoners and some of the majority of the guards did not act tyrannically has largely been ignored

3. Zimbardo was among the participants, egging them on. His role is absolutely not neutral and he greatly influenced all behaviours observed.

   Example of an inappropriate claim from this sorry affair: "Guard aggression was emitted simply as a consequence of being in the uniform of a guard and asserting the power inherent in that role" (Haney et al., 1973, p. 62)

Consequences:

Claims like these, made with authority, can be expolited politically.

Philip Zimbardo gave evidence on behalf of one of the accused in the Abu Grahib scandal. Why?

It may be convenient for higher persons in the command chain to claim that the "group norms" or the "situational factors" were responsible for the terrible behaviour in Abu Grahib

Some sources report a partial replication in 2006 (The Experiment) did not reproduce the findings.

But there were significant differences between the two.

The "replication" lay in the domain of reality TV, and cannot be taken seriously

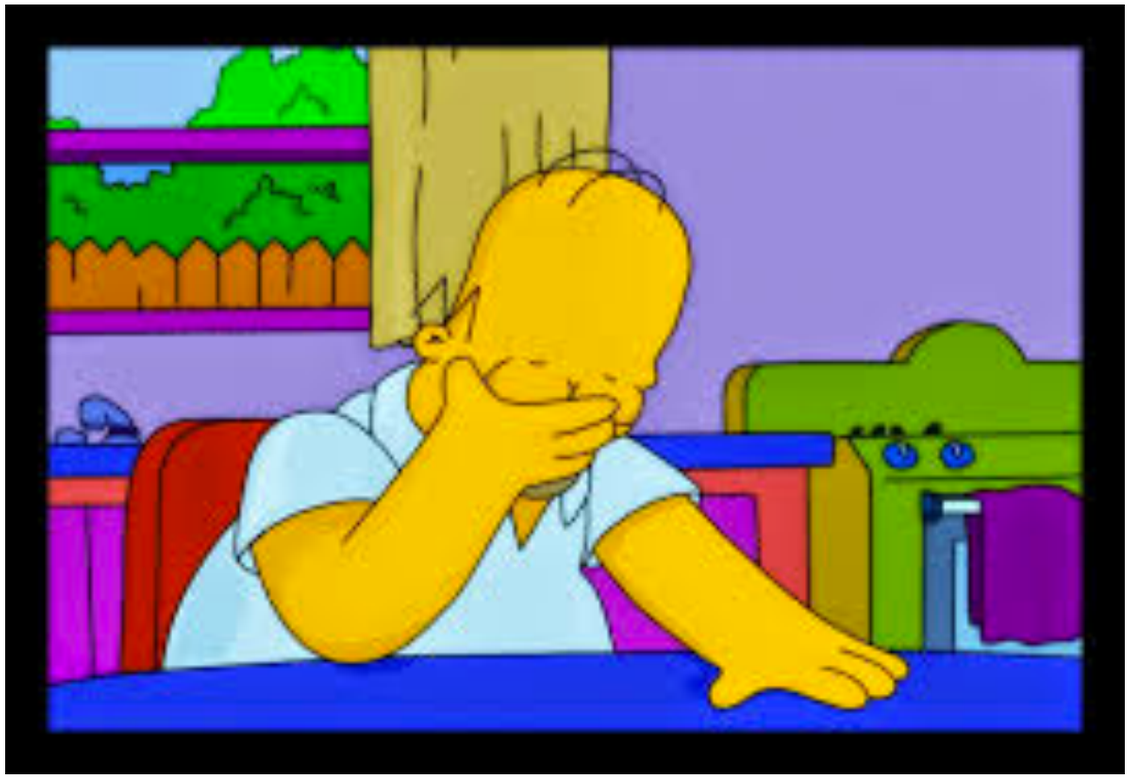
The Stanford Prison Experiment was not a scientific experiment, it has been widely misreported, and it has been politically exploited.

What social fears was Zimbardo's work responding to (or exploiting)?

The civil rights movement and civil disorder around 1970 will be relevant here. Between the emergence of a civil rights movement championing the rights of African Americans, and a population bitterly opposed to the Vietnam War, American society was very fragile, marked by violent protest, and media images regularly featured citizens vs figures of authority in uniform.

Against that backdrop, some of the motivation for the study should be clear.

If “social psychology” is not doing very well, maybe making it “evolutionary social psychology” might make things better?



Case 4: Dunbar's number and social networking?

BRITISH SCIENCE FESTIVAL

Falling in love puts friendships at risk

DICK AHLSTROM
Science Editor
in Birmingham

IF YOU fall in love, expect to lose some friends. You can only maintain about five very close friendships, but two will be displaced by your new love interest, according to research into how men and women use social media such as Facebook.

Both genders expect something completely different from social media, according to Prof Robin Dunbar of the University of Oxford. "We only discovered the sex differences by accident," he said yesterday at the British Science Festival in Birmingham.

He and his team have been studying these differences over the past two years and yesterday released some of the findings. They initially looked at social media used by women, but it immediately became apparent that women wanted something completely different from the technology than men.

"Men and women seem to use completely different mechanisms to maintain relationships," Prof Dunbar said.

"For girls it is talking together. For boys it is doing things together. For girls the technology is perfectly designed for what they want to do, networking." This predisposes men and women to use mobiles and social media differently, he added. Use of social networking also has a strong numbers element to it.

Some Facebook users claim to have up to 1,000 "friends" but this was an unrealistic view, according to Prof Dunbar.

Your actual circle of friends was much smaller and could not physically exceed a maximum of 150 due to a limit set by the brain, he said. This figure has become known as "Dunbar's number".

He said, however, that while social networking lets people stay in touch, only direct person-to-person contact cements friendships. "Facebook helps you keep in contact with people, but it doesn't help you maintain relationships," Prof Dunbar said. Friendship tended to disintegrate if you don't maintain direct contact with people.

Yet we maintain only a tiny handful of genuine friendships and these occur in layers, he suggested. There is the core group of about five, those you would see every week and go to if you had problems.

The next layer of 12-15 are good friends you would see at least monthly and whose death you would find upsetting.

"Quite literally we have only just discovered that," Prof Dunbar said.

But with a close-friend limit of five, something has to give if you become romantically attached. "If you go into a romantic relationship you lose two friends," he said. Your new love knocks out one and typically causes a second to fall out of the core group.

"Your attention is so wholly focused on the new partner you don't have time to see the others."

Science Today: page 14

Your actual circle of friends was much smaller and could not physically exceed a maximum of 150 due to a limit set by the brain, he said. This figure has become known as "Dunbar's number".

Irish Times, Sept 16, 2010

That is TERRIBLE JOURNALISM!

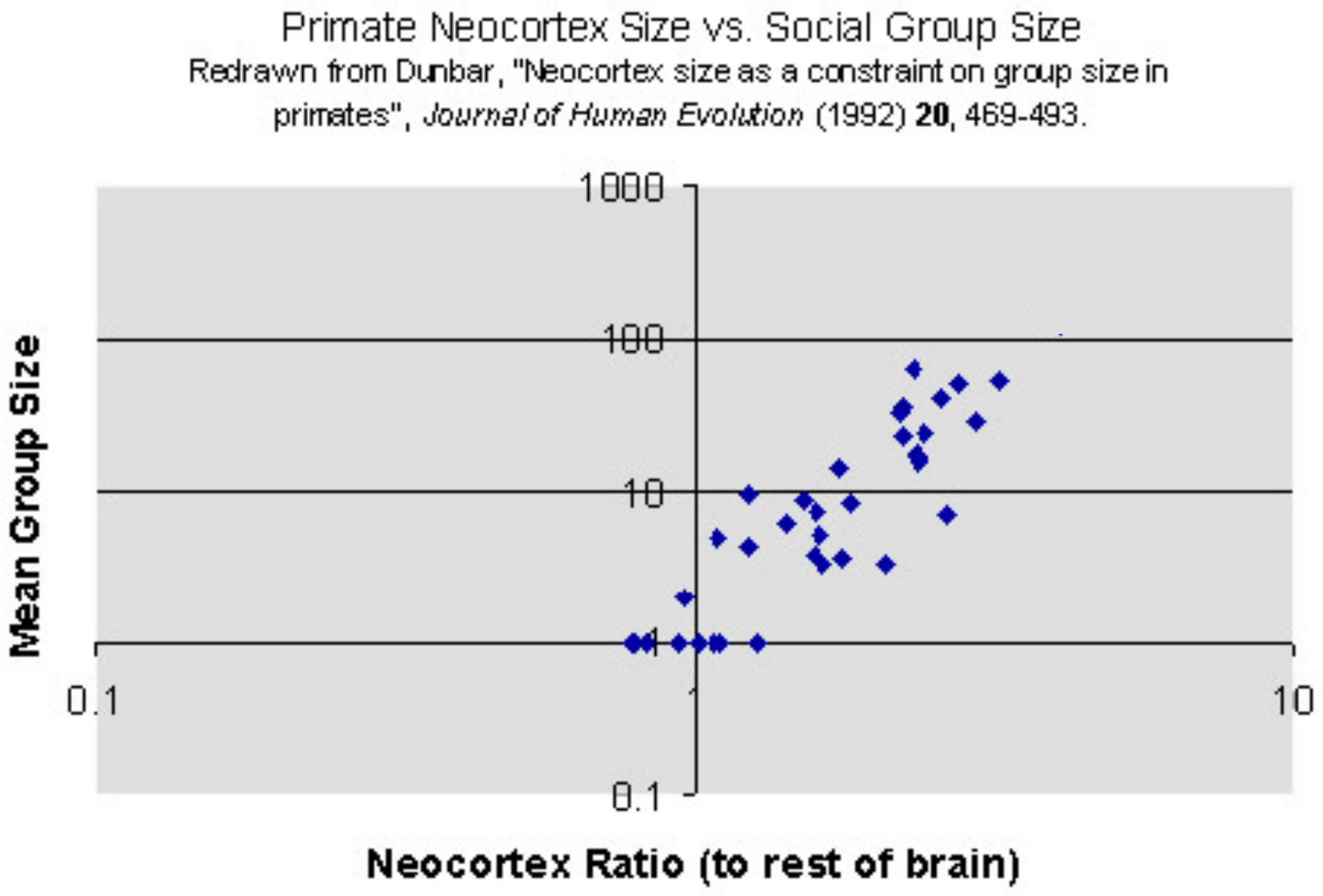
Brains, and Journalists do not mix well.

Critical Thinking Exercise: What is wrong with that report? If you think it is ok, you are not thinking critically.

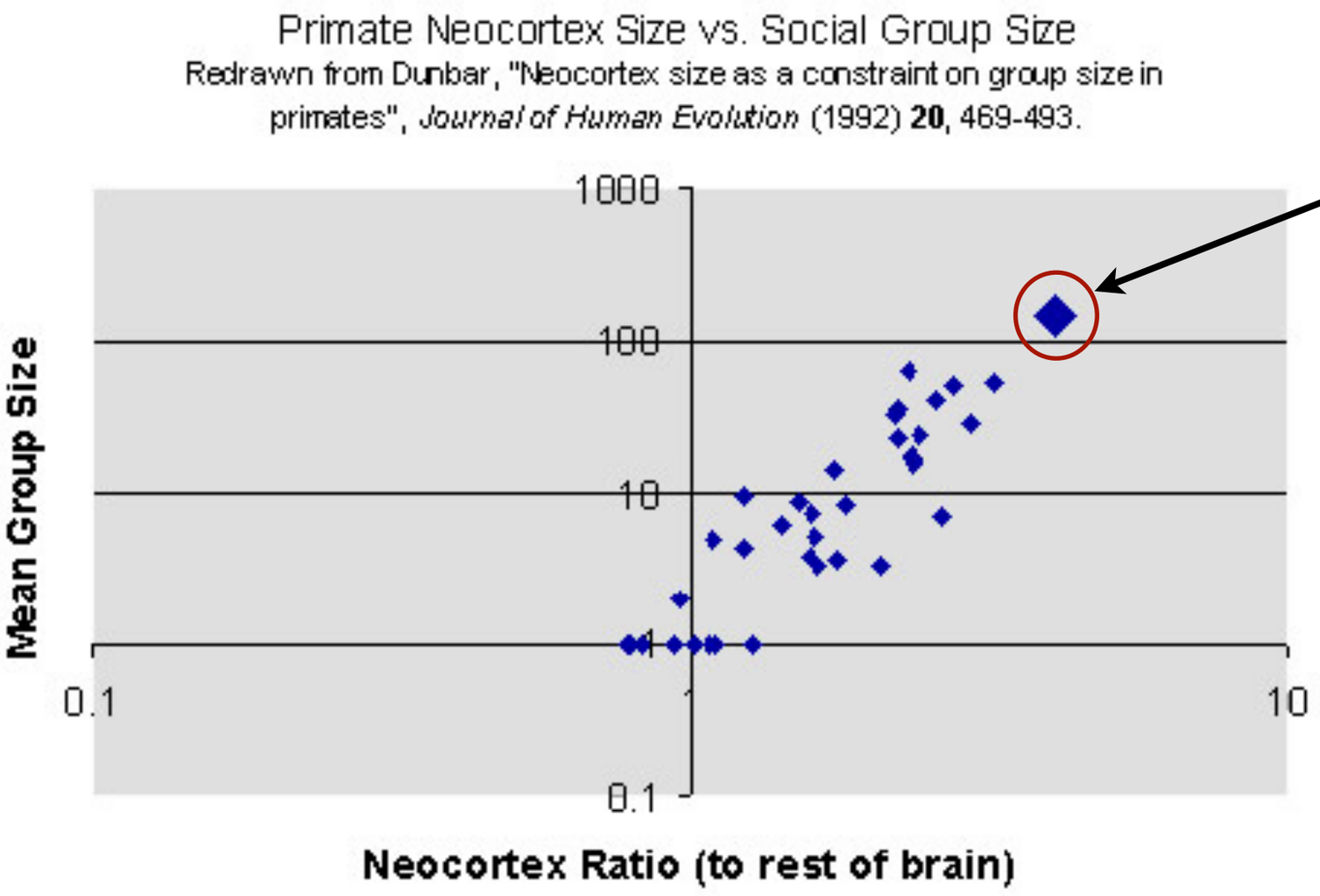
The idea that your brain (a piece of meat) could set a "physical limit" to your number of "friends" is so utterly bananas that it is hard to know where to start. I leave it to you, dear student, to recognise this as complete nonsense.

What is the science behind this rubbish?

In 1992, Robin Dunbar compared a measure of brain volume (ratio of neocortex to the rest of the brain) to the typical size of the groups in which 36 different primates lived. He found a roughly linear relationship (on a log-log plot)



In a follow up study, he took the brain measure for humans, and added it to the plot, to "deduce" an optimal group size for humans.



prediction for humans

Reminder: the scales on this plot are log scales, so that human point is much much further out from the others than it appears.

This is spectacularly bad science.

The x-axis variable is entirely anthropocentric.

The y-axis variable is specious. Group sizes were cherry picked. In retro-fitting his account to humans, Dunbar made liberal use of random selections from the past that suited his hypothesis

The addition of the humans to the plot is absolutely not allowed in any scientific analysis (the correaltion was established over a specific range. Humans lie WAY outside that range. No extrapolation of the relationship beyond that range is justified.

The whole exercise is used to draw *normative* conclusions about how you *should* be. It is finger-wagging by a grumpy old man.

Problems with the X-axis variable

Most species have something slightly odd or individual. Giraffes have long necks, penguins withstand the cold, birds of paradise dance. Humans have big forebrains. This gives us a HUGE ratio of neocortex to the rest of the brain.

Imagine a study where Giraffes started to interpret other animals based on their neck length. Would that make sense?

No they are outliers. They don't fit a regular pattern. So too with us.

Problems with the Y-axis variable

The Y-axis variable is "natural group size", but many primates do not have clear group sizes. Dunbar excluded primate groups living in interaction with humans. This is a very strange view of nature indeed. He omitted species for whom the data did not fit his view.

In making sense of the human group size that he "predicted", he helped himself to a fanciful interpretation of the human past that ignored all of civilization, thus revealing a romantic yearning for some pre-industrial natural state. This is a religious or romantic vision, not a proper framing for a scientific study.

Problems with adding the human data point to the plot

If we gather some data on two variables, and find the relationship to be roughly *linear*, we have established a linear *correlation* (nothing about causal relations, obvs)

If we want to use this insight to make predictions about new cases, those cases *must* lie within the range of our original observations. We can say *nothing* about cases that lie outside that range.

Dunbar's work starts with a corrleation observed in other species, then uses this to make predictions about "group size" in the human case. This extrapolates *far beyond the range allowed*.

Robin Dunbar's conclusions about human group size are

* commonly reproduced in the press
* used to justify normative claims (telling people what they "ought" to do or be)
* This is not exemplary "science"

What social fears is Dunbar's work responding to?

Once more, we find social psychology being used to address widespread anxiety, this time about changing patterns of interaction (among the young!!) and changing relationships to technology.

More here: http://pworldrworld.com/fred/?p=275

Sometimes, interesting findings take control of our imaginations, and lead to wild interpretations

Eager readers like to draw *normative* conclusions

Beware!

Normative Social Psychology? Just say NO!

Collective Behavior

If we no longer attribute all cognition to individual minds, then we might ask whether we also need an alternative framework for understanding behaviour, especially when more than one person is involved.

Exercise: provide examples of collective behaviour that might benefit from such an approach.

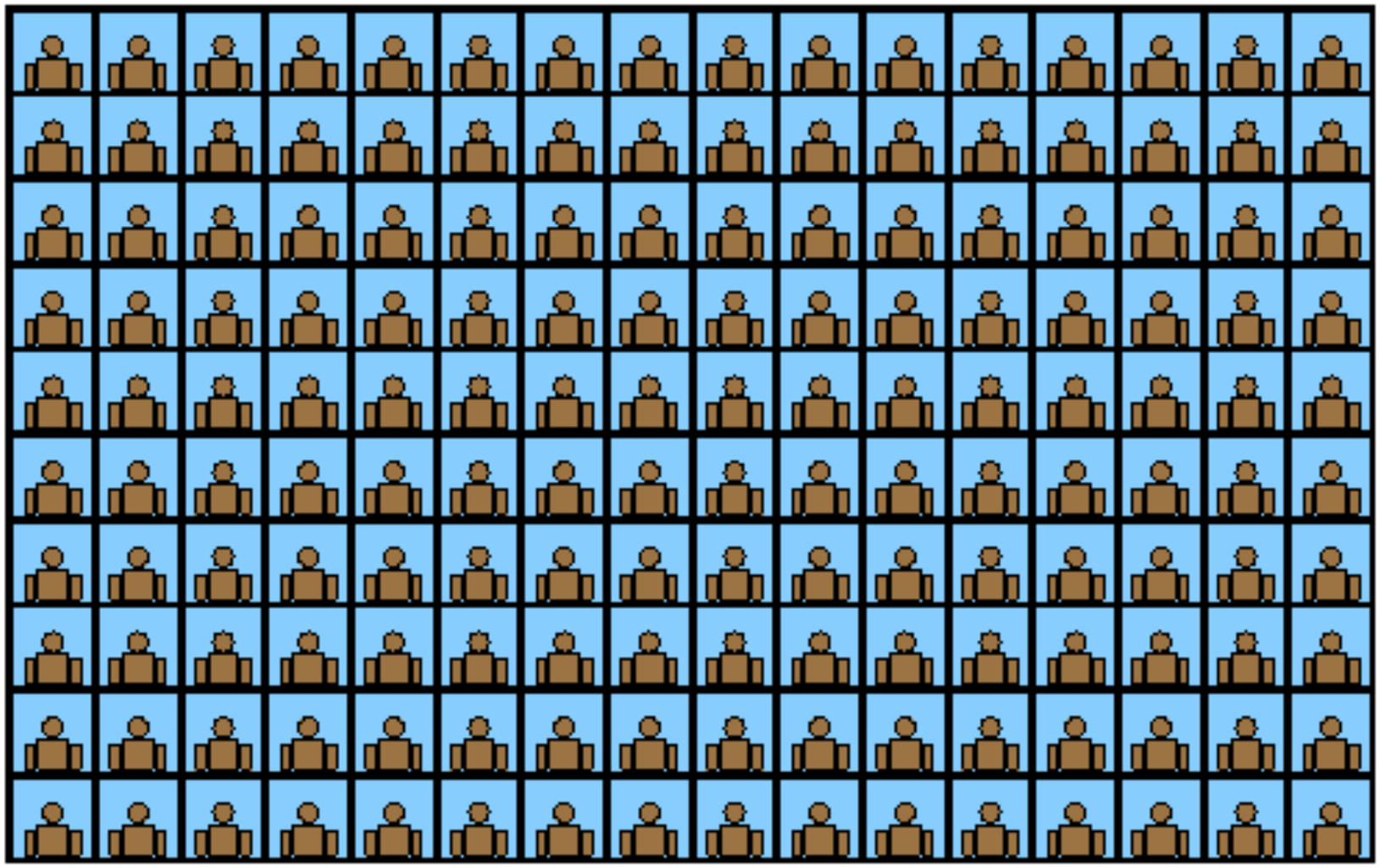
Collective Behaviour

Simulated Mexican Wave

Illés Farkas, graduate student
Eötvös University (Budapest, Hungary)

Dirk Helbing, professor
Technische Universität Dresden (Dresden, Germany)

Tamás Vicsek, professor
Eötvös University (Budapest, Hungary)



Mathematical model of the Mexican Wave:

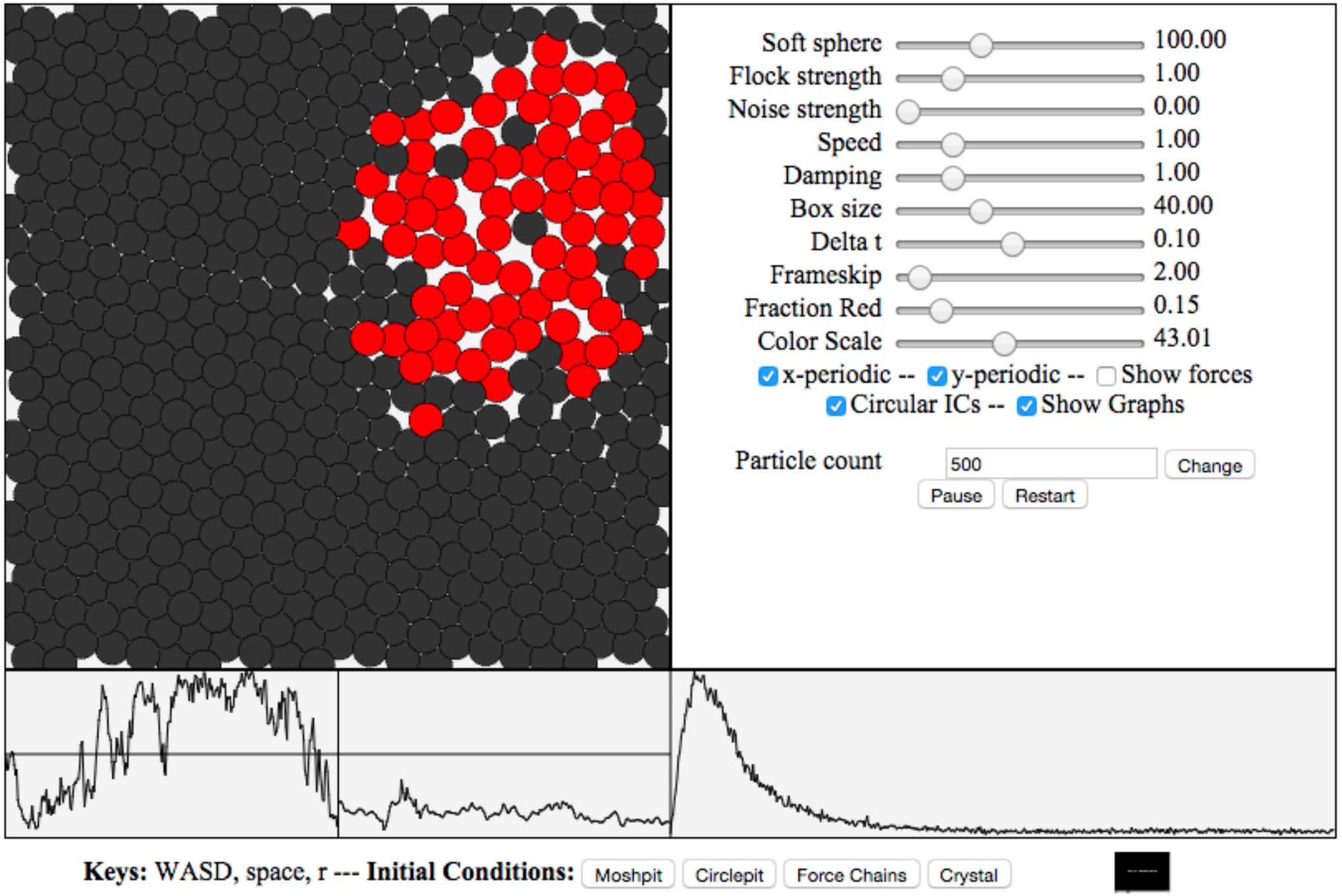
Tamás Vicsek (2002)

Based on a model of electrical propagation in heart tissue

Role of the individual is small: individuals are simple

Interactions among individuals are key!

Moshpits Simulation



http://mattbierbaum.github.io/moshpits.js/

Modelling collective behaviour requires:

A model of the individual AND

A model of the interactions among individuals AND

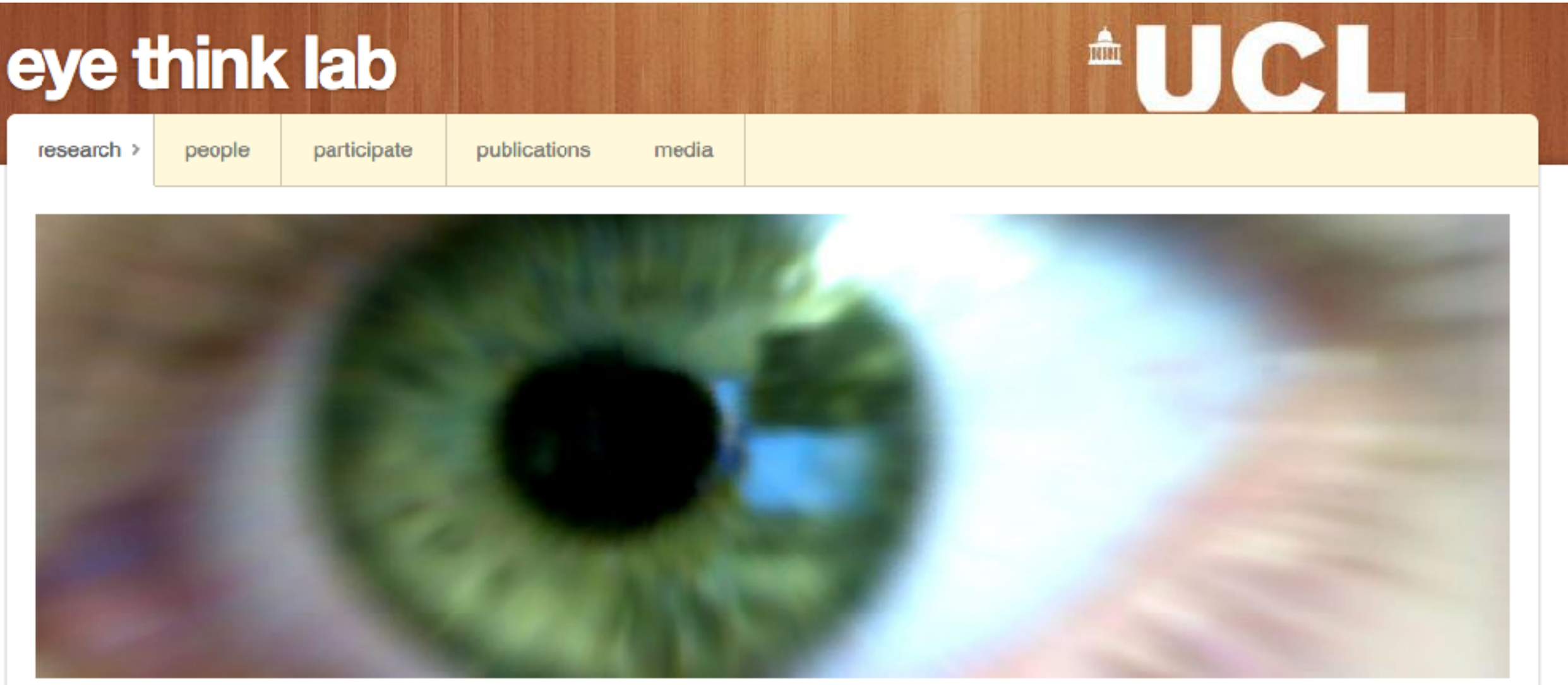
A model of the circumstances in which those interactions take place.

Economists, politicians, psychologists please take note!

Good social psychology will be alert to both intra- and inter-individual contributions to observed phenomena

Flexibility with respect to the role given to each is essential!

Sample from contemporary social psychology: Daniel Richardson's EyeThink lab at UCL



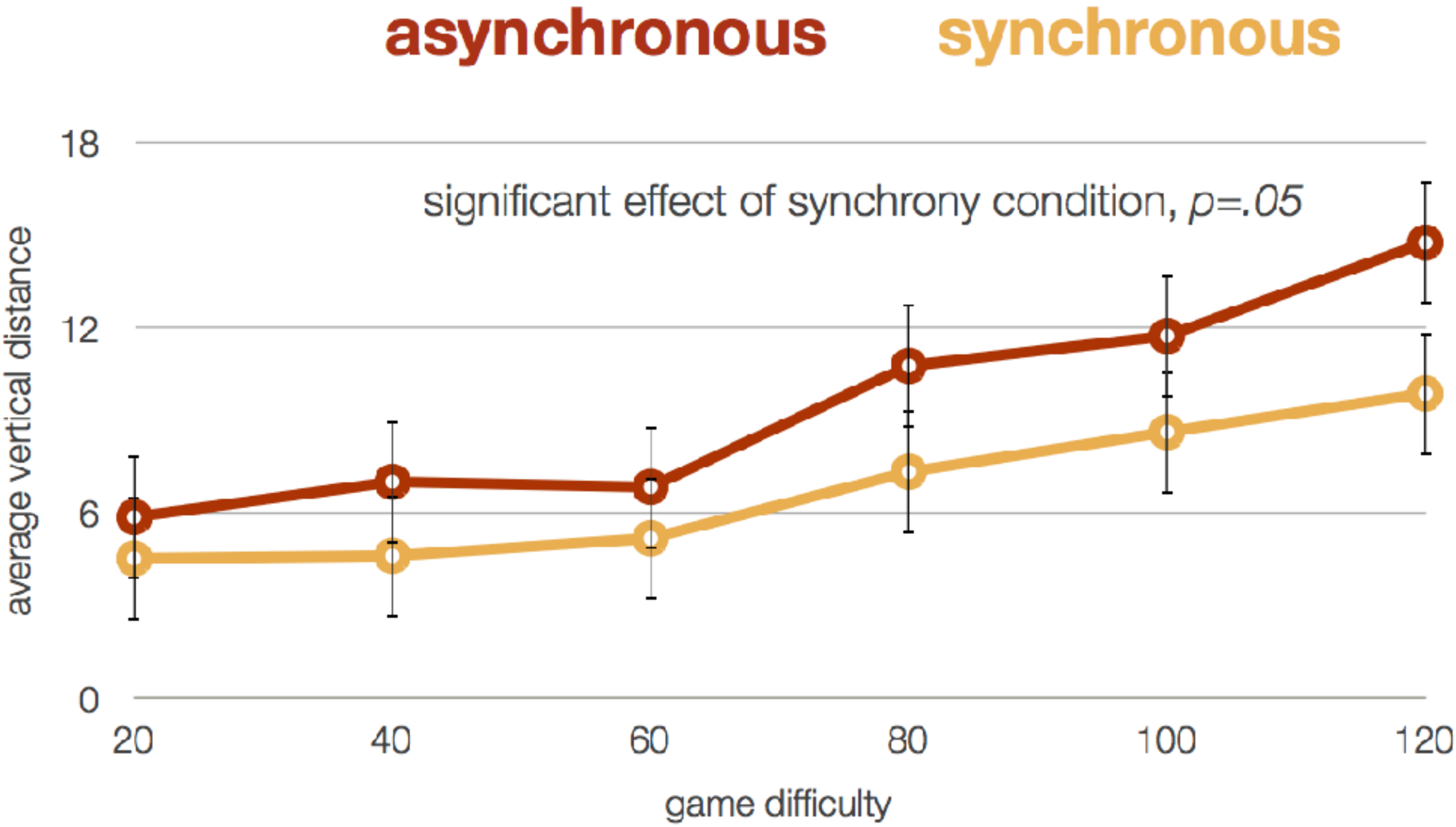
Big Bob.

What factors affect group level behaviour?

If we manipulate the perception of cohesiveness within the group, will the aggregate behaviour change?

Employed collective chanting as a means of engendering group cohesiveness.

Asynchronous: participants read word lists in an uncoordinated fashion
Synchronous: participants read word lists in unison


asynchronous
synchronous
significant effect of synchrony condition, p=.05
average vertical distance
18
12
6
0
20
40
60
80
100
120
game difficulty

Subjects in the synchronous condition also enjoyed the game more, and recalled more words correctly.