

Identity and Experience – an evolving story

One researcher's journey towards understanding the role of affect in teaching and learning about evolution in science

“the ultimate organizational framework”

(Rutledge and Warden, 2000)



Department
for Education

Science programmes of study: key stages 1 and 2

National curriculum in England



Year 6 Programme of Study

Evolution and inheritance

Statutory requirements

Pupils should be taught to:

- recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
- recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
- identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

The controversy

Education

US school's evolution teaching goes on trial

Staff and agencies

Monday 26 September 2005 13:16 BST



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Supporters of the theory of evolution go head-to-head with proponents of "intelligent design" in a Pennsylvania court today in what is being billed as a crucial cultural battle for American education.

A group of parents in the small town of Dover, backed by the American Civil Liberties Union (ACLU), is seeking to overturn a decision by the local school board insisting that intelligent design - the claim that complex organisms have been designed rather than evolved in response to natural selection - must be included in the curriculum.

The case, to be heard in the US district court in nearby Harrisburg, will revisit the clash between creationism and Darwinism in the 1925 [Scopes Monkey trial](#) and highlight the growing influence of the religious right.

Any verdict in the case could end up before the supreme court because of the importance of the issues at stake.

The 11 parents challenging the Dover school board will argue that intelligent design is a cover for creationism and therefore an attempt to impose religion in schools.

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Nine British medics

A worrying concept?

- Change
- Death: The struggle for existence
- Extinction
- Uncertainty
- Purpose and meaning versus random events
- Our identity: Animal? Ape?

The tangled bank: Darwin, C. 1859

*"It is interesting to contemplate a tangled bank, clothed with many plants of many kinds, with birds singing on the bushes, with various insects flitting about, and with worms crawling through the damp earth, and to reflect that these elaborately constructed forms, so different from each other, and dependent upon each other in so complex a manner, have all been produced by laws acting around us.**Thus, from the war of nature, from famine and death**, the most exalted object which we are capable of conceiving, namely, the production of the higher animals, directly follows."*

Research

- The role of affect/emotional responses to people's attitude to evolution
 - Research Qs
 - Why is evolution difficult to teach?
 - Does affect have a role in resistance to evolutionary thinking beyond that of religious beliefs?
- Novice educators, scientists and non – scientists
- Visual stimulus materials to stimulate discussion

Theoretical framework: methods and methodology

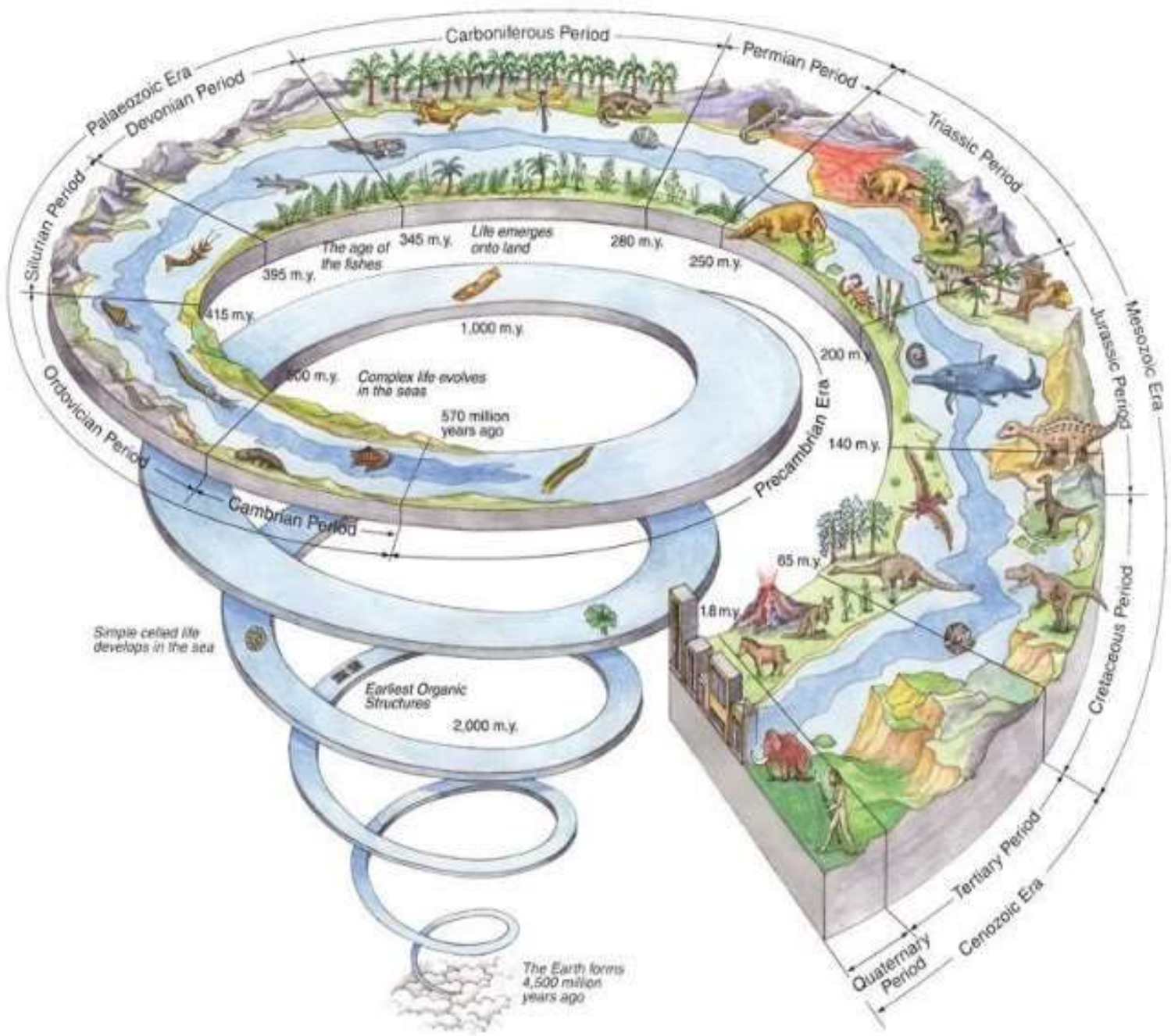
- A “range on unexamined meanings” (Holloway and Jefferson, 2000)
- Hidden meanings, hidden agendas - what are people imagining?
- What are the common discourses?
Fundamentalism?
- Investments

Theoretical framework: methods and methodology

- To understand a particular person's reaction, attitude, feelings we need to examine their lives: Biographical narrative interviewing.
- Narrative is “the primary form by which human experience is made meaningful.” (Polkinghorne, 1988)
- Defended subjects: Free Association Narrative Interviewing (FANI)

Free Association

- Open ended questions
- Elicit stories (choices)
- Avoid why questions (discursive investments)
- Following up – responses that show *Gestalt*



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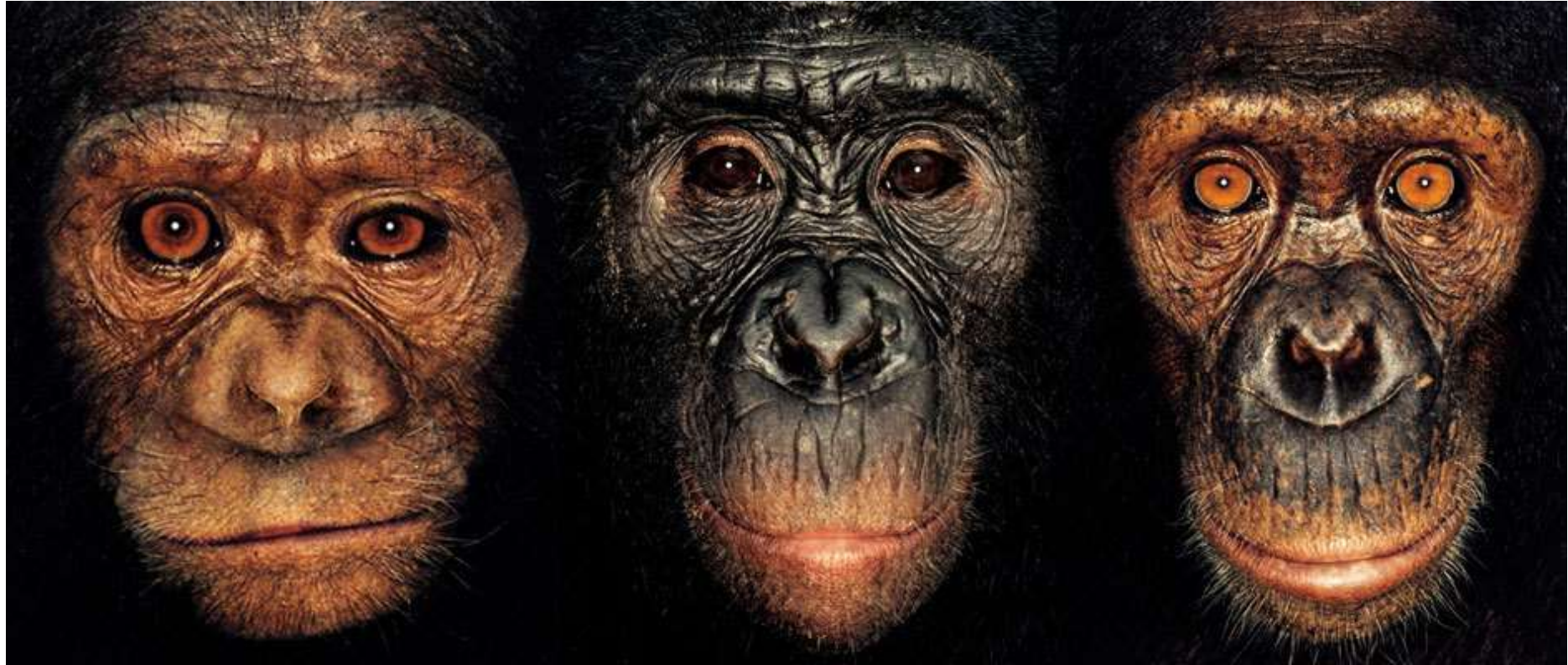


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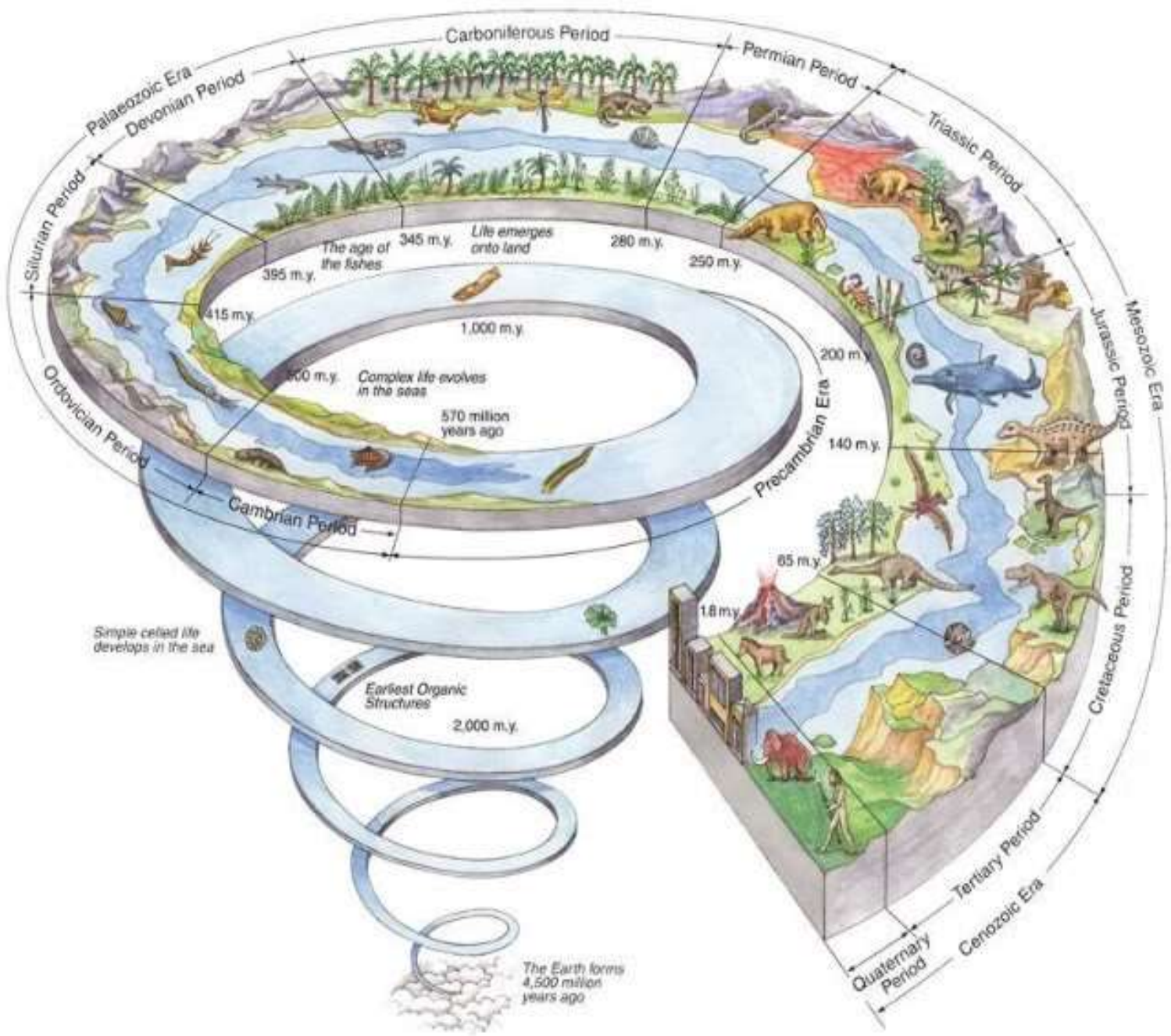
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Analysis and Interpretation

- What do we notice?
- Why do we notice what we notice?
- How can we interpret what we notice?
- How can we know that interpretation is the right one?

Holloway and Jefferson, 2000



Jane

“Well the positive side of it is, you can see there’s not much life, not much going on at all here and as we go further in things are starting to evolve, from where I have no idea, and then as you can see it is, more life. But then look at this bit I can see that we are going from some nice quiet areas (laughs). Looks lovely, you know there’s not much human activity going on and then it starts to get crazy and visual nuisance. There’s lots and lots of stuff happening, it is happening more and more, it increases as we are going further and then it seems like lots of tech, technology you can seem you’ve got the buildings. I live here now so I know what it is like, I didn’t live, I weren’t alive here.

And how do you feel about what it is like?

I don’t know, I don’t know if it is positive or negative, but we are kind of with all of our technology kind of taking away this part of what we have got, you know this bit.

Do you mean the natural world?

Yes, I feel slightly worried.”

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Jane

“Yes again it is positive and negative. As we see with the spiral there is growth and there is overgrowth. There is a garden looking nice and there is a garden looking like it needs to be tended to. And it is like this road here is crazy, it is absolutely nuts sometimes.

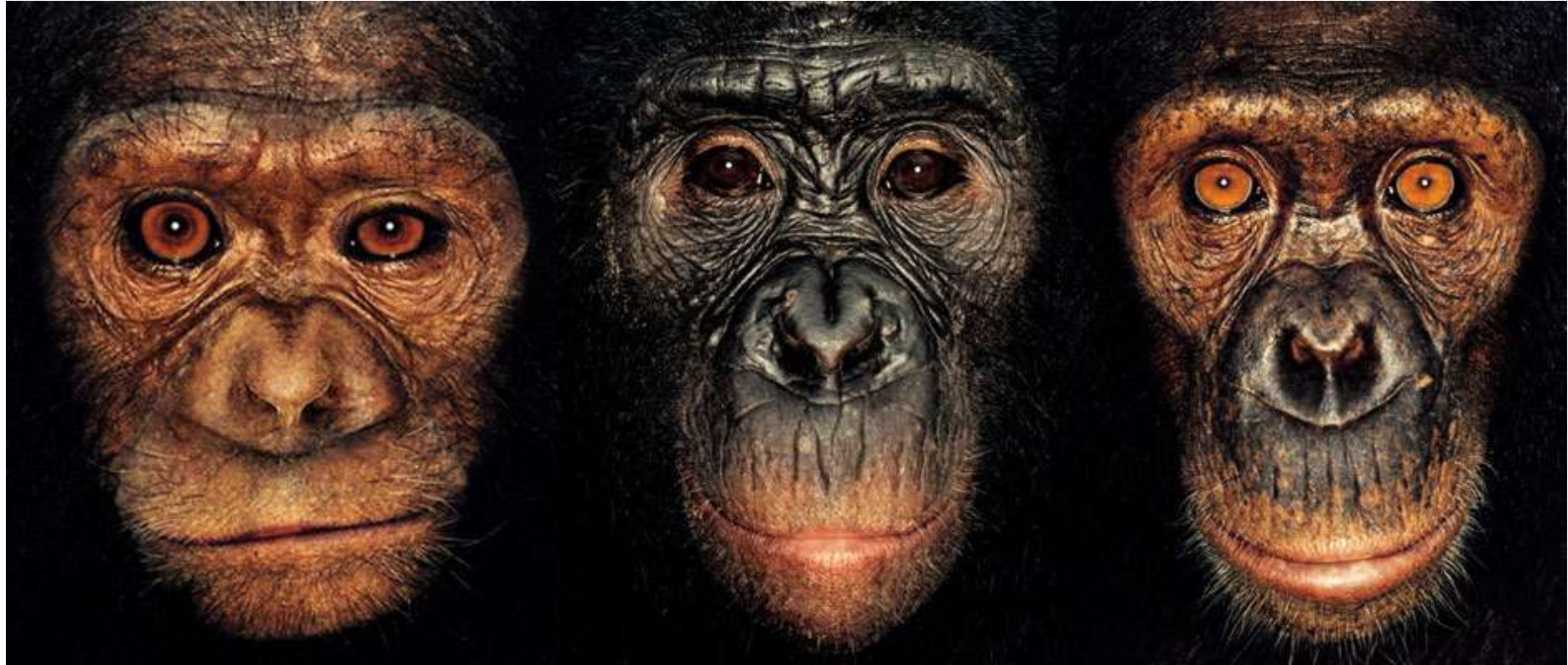
Yes it is a busy road.

Yeah there is growth and there is over growth. Like if it is we have evolved from fish are we going to carry on evolving? Will us humans evolve into something else? That’s worrying.

Why is that worrying?

Not knowing, not knowing what could be there in 20 years.

What our children could be faced with.”



Jane

“Yes, some of them, some of the pictures do look like they are dying inside, maybe, but then some of them look quite happy, how can you tell?”

Well what you are feeling is empathy isn't it? Feeling like you would, as you say if it were a person and you are getting cues from their faces telling you that maybe not everything is hunk dory.

Yeah hmm.

So you said that is what they made you think about, how do they make you feel?

I am not sure (quietly) PAUSE. I feel slightly..... not uncomfortable, I don't feel uncomfortable, but I do feel maybe, somewhat selfish?”

Jane: Responsibility

“I was 11, I was 11 when I got fostered, so think, I dunno, I’ve got the strong belief that education works best when the child has **an immense amount of support behind them**. If they know that they I have had a really poo day at school I am going to go home to mu mum, my dad, my brothers and sisters and I am just going to let it go, and the next day I am not going to think about yesterday I am going to go forward today, but it is like I never had that at home.”

Zara

- Confusion “I didn’t know who to believe”
- Sad – “crushed” hopes
- Science was taking something away – loss
- Authority, love
- Worried about other children – strongly identifies with the child

The humanity of apes

- Identifying their human features
- The fear of speaking out loud about the things that frighten us
- Racism
 - “They remind me of insults, it sounds crazy”
 - “People referring to people looking like monkeys”
- “nobody has spoken to me like this” before

A dichotomy of reactions

- External - Social/identity – fear of rejection, annihilation of self?
- Internal – relational? existential?
 - Existential - humans define their own meaning in life, and try to make rational decisions despite existing in an irrational universe.
 - Relational – object relations

A research partnership: Co-production of data

- Research narratives as a product of the relationship
- We cannot claim detachment: The subjective involvement of the interviewer
- Transference/counter transference
- **Projection – Responsibility**
- **Uncertainty = chaos and danger (splitting)**

A personal struggle

“For a social scientists still imbued with positivist principles about objectivity, fact and replicable evidence, the principle of unconscious intersubjectivity generates huge doubts about the validity of knowledge generated.” (Holloway and Jefferson, 2000)

“Meanings are unique as well as shared”
(Holloway and Jefferson, 2000)

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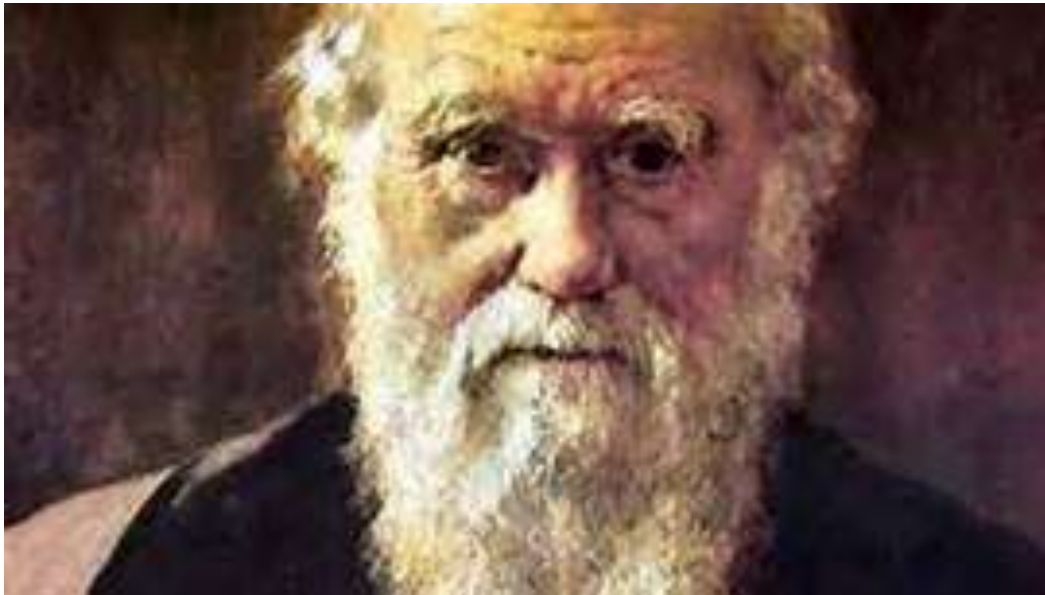
- The Association takes **voluntary informed consent** to be the condition in which participants understand and agree to their participation without any duress, prior to the research getting underway.

Ethics

- Informed consent
- Signalling expectations
- Upsetting experiences
- Representations
- Honesty, sympathy and respect

I have not pushed my interpretations onto them, nor my beliefs or world view. I hope I have interacted with them in a spirit of acceptance, although I may disagree with their beliefs and interpretations, I do not judge nor do I think they should change, I just want to understand.

"... and that, whilst this planet has gone circling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being evolved."



Acknowledgements

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