MINDS, CULTURE AND THE EVOLUTION OF INTELLIGENCE

What's Going to Happen to Us?

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Overview of the Talk

1. Introduction (How I Got Myself Into This)
 - Overview of my background and research outlook
2. Trend Spotting: Recent Work on the Evolution of Human Cognition
 - Niche Construction and the Informational Environment
 - Social Learning and Cumulative Cultural Evolution
 - Technology and Extended Minds
3. Post-Singularity: What's Going to Happen to Us?
 - Us and Them
 - Can I Upload Myself?

My Research Outlook

(Or: How I Got Myself Into This)

• Me

- **Naturalistic** philosopher of **mind** and **cognitive science**
- Interested in **evolutionary approaches** to **human minds, behaviors, social arrangements** and **intelligence**

• Have worked on:

- **Disgust** and its role in **morality** and **moral judgment**
- The evolution and cognition of **social norms**
- The psychology of **sociality**
 - **Group membership** and **group boundaries**
 - Implicit biases towards members of certain **social groups**

• On the agenda:

- The character of **persons** and **personal identity**
- Nature of **human selves**

Trend Spotting:

Evolution and Human Cognition

- **Externalism** as a Big Tent
 - A **general drift, tendency** in a lot of recent work
- The **common thread** is an insistence that from the point of view of, broadly speaking, **psychology**

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Evolution and Human Cognition

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- The **common thread** is an insistence that from the point of view of, broadly speaking, **psychology**
- The **boundaries** of an individual's **skin** and **skull**, between the **biological organism** and its **external environment**, are **relatively unimportant**
 - The nature & content of individual human **minds**
 - The **evolutionary pressures** that shaped them
 - The bases of individual & collective **behavior**

Trend Spotting:

Evolution and Human Cognition

- **Externalism** as a Big Tent
 - A **general drift, tendency** in a lot of recent work
- Many more specific topics, approaches, theses, and views fall under the idea of **externalist** in the **broad way** I'm construing it
 - Accounts of **cognition** that break with **orthodoxy** in various ways
 - **Embedded, embodied, ecological** and **enactivist** approaches to understanding **minds** and the way they work
 - Accounts of **character traits & personality** (or lack thereof)
 - **Situationist** critique of character and virtue ethics

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 - Four Ideas
 - **Extended Phenotype**
 - **Niche Construction**
 - **Culture and Coevolution**
 - **Technology and Extended Minds**

Trend Spotting:

Evolution and Human Cognition

- **Extended Phenotype**

Trend Spotting:

Evolution and Human Cognition

Extended Phenotype

Core Idea

- Given the **genotype**/**phenotype** distinction, our conception of a **phenotype** should not be **limited** to the biological elements “**internal**” to the organism
- Rather, an organism’s **genes** can also be expressed in ways that **extend** beyond its immediate **biological** boundaries, reaching outward to include
 - Birds' nests & spiders' webs & beavers' dams & human... (language? technology?)
- Aspects of many organisms' putatively “**external**” environment satisfy the conditions of a **phenotype** i.e. causal correlation w/ the **genome**

Interesting Details

- General idea in **biological evolution**, not specifically human
- Early breakdown of the intuitive but perhaps limited sense of importance of the **organism**/**environment** boundary

Trend Spotting: Evolution and Human Cognition

- **Niche Construction**

Trend Spotting:

Evolution and Human Cognition

• Niche Construction

• Core Idea

- Many animals **actively shape** their **habitats**, rather than **passively** inhabit environments as they find them

By being proactive in restructuring their “**external**” environments, these **ecosystem engineers** thus

- Produce and refine a kind of “**external**” **scaffolding** that then helps **facilitate** different kinds of adaptive activity
- Generate, over the course of evolutionary time, a system of complex **feedback loops** and **selective pressures** between **themselves** and their **custom made niches**

Trend Spotting: Evolution and Human Cognition

• Niche Construction

• Interesting Details

- Sterelny and others use this general **evolutionary idea** to develop a **sophisticated, discipline-spanning** view of **human behavior, cognition and evolution**

- Humans reshape & add to the **physical** aspect of our **environments**
- But also fastidiously **engineer** our **epistemic environment**

- **Actively enhance & organize** the **informational niches** in which we **live, learn,** and (most importantly) **raise children**

- Structured **apprenticeships, technological** scaffolding

- Once **externalized**, these enhancements created more pressures that further shaped & enhanced **human cognitive functioning**

Trend Spotting: Evolution and Human Cognition

- **Culture and Coevolution**

Trend Spotting: Evolution and Human Cognition

• Culture and Coevolution

- Core Idea

- R&B hold that key to **human evolution, cognition & intelligence** is our hypertrophied capacity for **social learning**, a sophisticated set of abilities for **acquiring** and **transmitting culture** from one person to the next
 - The term “**culture**” here includes any information, ideas, skills, norms, beliefs, etc. that is **not innate or internal**, but starts out **external** to you & is **learned** from parents, peers, or anyone else
 - **Cultural information is** often contained in brains, but can also be **external** to them: manifest in **behavior**, embodied in **artifacts**, written in **books**, realized in **technology**

Trend Spotting: Evolution and Human Cognition

• Culture and Coevolution

- Core Idea

- **R&B** claim that in humans (and **only** humans)

- The **socially transmitted information** began to **accumulate**
- The snowballing **repository** of information, containing hard won **wisdom** of the forebears, came to act as a **cultural inheritance system** operating in parallel with our **genetic inheritance system**
- But the 2 systems interacted w/ each other in an **internal/external**, increasingly complex system of **coevolutionary feedback loops**
- Over evolutionary time, being able to **acquire** and **use** of **socially transmitted cultural information** became more & more important to human survival

Trend Spotting: Evolution and Human Cognition

• Culture and Coevolution

- Interesting Details
 - Human level **intelligence** & **culture** are unique in nature
 - “The human species is a **spectacular anomaly**, ... the evolutionary system behind it is **pretty anomalous** as well.”
 - “Culture itself is part of the **design problem** for human minds”
 - For individuals, dealing with the **external cultural environment** cultural was a recurrent, hugely important, **adaptive problem**
 - As a result, part of the **intelligence** of **individual human minds** comes from the fact that unlike other animals minds, they are equipped with **cognitive mechanisms** that were selected for
 - Accessing, transmitting, and using **culture** and **technology**

Trend Spotting: Evolution and Human Cognition

• Culture and Coevolution

- Interesting Details
 - On this view, a lot of “**human intelligence**” is itself a feature of the repository of **culture** that our species has **collectively** created, rather than something **internal** to any one **individual** mind
 - The power of the **cultural inheritance system** as a whole is found in the fact that over time it can “**do our learning for us**”
 - **Cultural evolution** is cumulative but also **gradual**
 - **Intelligence** is assembled over the course of many generations
 - **Small improvements** are made by individuals
 - The best of those innovations are favored by **selection**, other eliminated
- Different **cultural traditions** lead to salient **group differences**

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- Technology and Extended Minds

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- Core Idea

- Cognitive processes, mental states – **human minds themselves** – ain't (all) in the head
- When an “**external**” part of the epistemic environment, or part of culture, or piece of technology is properly **functionally organized** and become **sufficiently integrated** with an individual's other **mental processes**

- That piece of the “**external**” environment is, properly speaking, just as much a part of her **mind** what's going on inside her head
- Actual **mental states** and genuine **mental processes** can **extend** beyond the **biologically** salient but **psychologically** unimportant boundaries the **skin** and **skull**

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• Technology and Extended Minds

- Interesting details
 - This is the **most extreme** form of **externalism**
 - It's emphasis is **here** and **now** rather than historical - it was not primarily motivated by reflecting on **human evolution**, but it **dovetails** nicely w/ externalist trends in current **evolutionary work**

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- “Again and again we act so as to **stabilize** our **local environments** in ways that simplify or enhance ... problem-solving”
- “much of our prowess at thought and reason depends upon the robust and reliable operation, often (but not always) in **dense brain-involving loops**, of a variety of **non-biological problem-solving** resources spread throughout our **social** and **technological surround**.”

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Humans in a Post-Singularity World:

What's Going to Happen to Us?

- The very idea of **cognition & intelligence** being **artificial**

Humans in a Post-Singularity World:

What's Going to Happen to Us?

- The very idea of **cognition & intelligence** being **artificial**
 - The broadly **externalist perspective** that I've been outlining gives (further?) reason to doubt that “**artificial**” here entails
 - Non-**biological**
 - Located **outside** of brains
 - **Technologically** or **culturally** enhanced
 - Constructed or improved by **human innovation** and **effort**
 - Indeed, on this view, **components** of our own **individual minds** and **cognitive processes**, and much of **human intelligence** in general, **satisfy** one (or several) of these descriptions
- Many promising theories suggest that our ability to **externalize intelligence** & **accumulate information** was **key** to the evolution of modern humans
- In our species, intelligence “escaped **purely biological** constraints” long ago

Humans in a Post-Singularity World:

What's Going to Happen to Us?

- Will we eventually “**merge with our technology**”?

- “In the next epoch this species that ushered in its own evolutionary process - that is, its own cultural and technological evolution, as no other species has - will **combine with its own creation** and will **merge with its technology**. At some level that's already happening, even if most of us don't necessarily have them yet **inside our bodies and brains**, since we're very intimate with the technology—it's in our pockets.”

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- From the **externalist** informed **evolutionary point** of view
 - “**We’ve**” been “merging” with our own technology for as long as “**we’ve**” been **human** – it’s how **we** got here!
 - What we may be approaching is an **increased volume** and **intimacy** in this kind of **interfolding** of the biological and non-biological
 - But its nothing new **in kind**: **human nature** has never been purely biological

Humans in a Post-Singularity World:

What's Going to Happen to **Us**?

- **Us** versus **Them**?

Humans in a Post-Singularity World:

What's Going to Happen to **Us**?

- **Us** versus **Them**?

- Reflecting on

- The **malleable**, and often **culturally variable** ways the **human mind** carves up the **social world** into “**us**’s” and “**them**’s”
- Together with the **cultural** and **evolutionary** pressures that lead the **human** to have those idiosyncratic perhaps parochial **tendencies**
- Suggests we have **very little idea** how another kind of autonomous intelligence would see **social groups**, make divisions btwn **them** (families, races, tribes, species), or if it would see “**us**/**them**” at all

...we're **projecting**, and ...ing this

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What's Going to Happen to **Us**?

- **Human integration** into a post-singularity world:
 - Could a human **dispense with his or her biological core** entirely and still survive, retain the **same identity**, be the **same person**?
 - If and when the technology becomes available, will I be able to “**upload**” myself into a computer network, and still be **me**?

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 - The **externalist perspective**, and the broadly **naturalistic orientation** it's embedded in, provide us reasons for **optimism**
 - The **biological/non-biological** division is not important from the point of view of psychology
 - The physical, putative **internal/external** division is also mere a surface distinction for psychological categories

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 - **Uploading** is really just a new twist on an old chestnut type puzzle of philosophy, namely the problem of **personal identity**

Uploading and Personal Identity

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Same person?

Same person?

Uploading and Personal Identity

Psychological continuity?

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Same person?

Same person?

Uploading and Personal Identity

Psychological continuity = Yes

remembers pl

Same person?

YES!

Same person?

YES!

Uploading and Personal Identity

Biological aging

Uploading

remembers pl

psychological

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The End
Thanks!

Daniel Kelly

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