ORGANISMS and US

How living things help us to understand our world

How Philosophy of Biology and Ethics Can Help to Inform Potential Testable Hypotheses

10th National Primary Industries Animal Welfare RD&E Forum

Pain – elimination, mitigation and inter-disciplinary learnings

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Outline

Key philosophical questions arise with regard to animal pain:

- What is pain?
- How can we study it (ethically and effectively) in non-humans?
- How do we form testable hypotheses?

The ‘Justificatory’ Dilemma

“The more researchers emphasize *similarities* between animals and humans, the more they threaten the prospects for ethically justifying the experiment in question; the more researchers emphasize *differences* between animals and humans, the more they threaten the prospects for scientifically justifying the experiment”

(Ferdowsian & Gluck 2015)

Image from: https://www.inverse.com/article/26192-drunk-sad-mice-emotional-fear-ptsd

What is Pain?

- Complex even in humans where we think we have some knowledge/understanding
- Some philosophers argue that 'pain talk' should be eliminated from both folk and academic communities, and that a more biological approach is needed (Hardcastle 1999)
- Often defined simply in the negative (in terms of its absence)
- Others that pain is in some sense 'real' but deeply culturally shaped (e.g., Vetlesen & Irons 2009; Moscoso 2012)
- "A disease [pain?] does not exist as a social phenomenon until we agree that it does" (Rosenberg 1989)—similar to philosophical claim that pain exists when it is experienced

Image from: https://www.apa.org/topics/chronic-pain

Traditional Questions in Philosophy of Medicine

- Is there a difference between the physical and the mental?
- Are diseases (and pain) 'real' or merely social constructs?
- What are the moral implications associated with attributions of disease, illness, death, pain…?
- When is enhancement permissible or even perhaps obligatory? (and disenhancement?)

Image from: https://philosophyandmedicine.org/

The ‘Problem’ of Animal Minds

- Often we have treated non-human animals very instrumentally and/or projected human qualities onto them: ‘speciesism’ popularised in Peter Singer’s classic work (1975)
- Scepticism regarding animal minds, cognition, and experience (e.g., reluctance to attribute thoughts, beliefs, phenomenal consciousness, and sentience to non-human animals) justified via fundamental differences in neural structure and cognitive complexity (e.g., Jones 2020)
- However often such claims are not grounded in the science but more in our moral views
- If animals are ‘things that have experiences,’ there are ethical implications…

Ethical Issues

- Obligations to research organisms (what we create, how we use them, what are limits): reduce, re-use, replace (3Rs)…
- What counts as ‘sentience’ and what is its relation to moral status
- Research that causes harm to a subject (human or animal) is justified only if the harm is outweighed by the potential benefit (broadly construed)
- Community values and understandings (limited knowledge about this in Australia)
- Growing recognition of the importance of ‘one health’ and its potential impact for our approaches (see e.g. Degeling, Dawson, & Gilbert 2019)

What Makes Something a Good Experimental System?

- Ironic that non-human animals have been used as models precisely because of their *similarities* to humans!
- However animal models are not always useful: there must be close attention to choice/use within the broad context of practice (Johnson & Degeling 2013) which makes it possible for researchers to rationalise and justify commitments to a specific organism (Ankeny & Leonelli 2020)
- Experimental organism choice/use should change over time but often is grounded in long-standing familiarity, techniques, social/financial norms, etc.

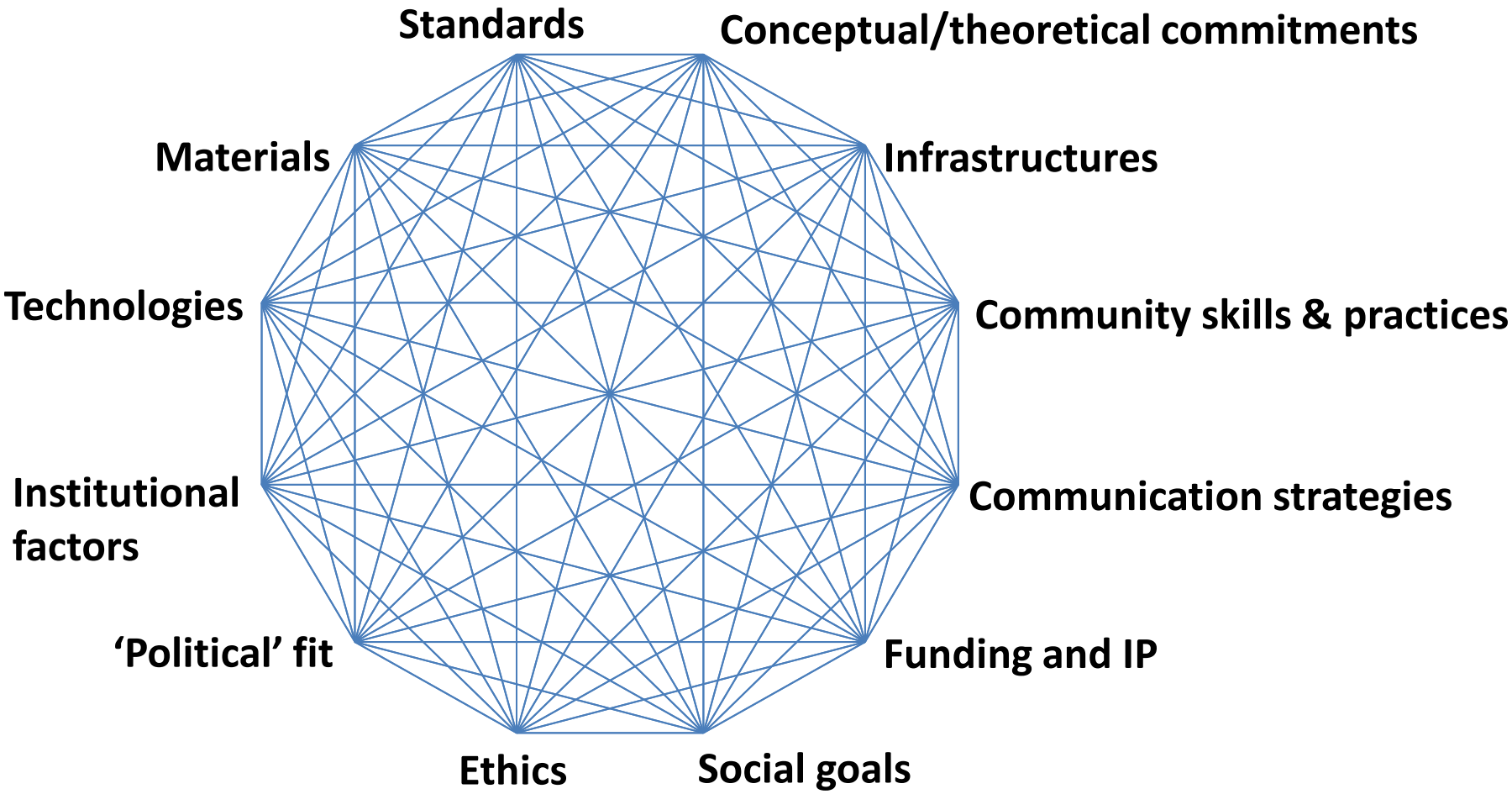
Image: http://www.cardio-research.com/animal-models-of-ischemic-heart-disease

Problems with Various Experimental Models

- Traditional 'model organisms' (fruitflies, etc.) were chosen for other purposes, so need to evaluate capacity to answer questions of interest and applicability to target
- Many models are too static: e.g. captive animals do not permit exploration of effects of ecosystems, plasticity, etc. (Bosch 2020 on brain models)
- Need to consider the triggers and models of pain itself: e.g. evoked versus spontaneous pain
- Often experimental models oversimplify the broader context within which pain occurs (e.g., co-morbidities) (Mogill 2009)

How to Form Testable Hypotheses

- As much about the underlying concepts, definitions, and assumptions as the hypotheses themselves
- Need transparency and clarity about assumptions being made (e.g., about what counts as pain)
- Reflect on dependent and independent variables (very difficult in the context of ‘pain’!)
- Need to carefully consider and justify which animals are the best to study to answer certain questions… even ‘context’ can affect what you can learn/know (epistemology)



'Repertoires' view of scientific practice: Ankeny & Leonelli 2016, 2020

Remaining Dilemmas

"For many years, academics have tended to avoid the question of the subjective experience of a nonhuman animal, because it has generally been thought to be unanswerable. This has allowed scientists to sidestep the moral question of whether it is okay to use animals in medical research. When we see similar brain processes occurring in these animals, it becomes harder to ignore…. Every week, I read about discoveries on the sophisticated cognitive abilities of other animals. Certainly they aren't automatons, like Descartes thought" (Berns quoted in Bekoff 2017)

"No animal, and indeed no animal suffering, is the same" (Aaltola 2012)

Image from: https://www.smithsonianmag.com/science-nature/fish-feel-pain-180967764/

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- See Ankeny & Leonelli, *Model Organisms* (Cambridge UP, 2020, available open access online)
- For more information please see

https://arts.adelaide.edu.au/organisms-and-us/

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