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# ABSTRACT (as accepted)

**Title:** Computational Anthrozoology - a manifesto: 'as the lens' and 'under the lens'

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## **Introduction:**

The author will discuss the role of computer-based research in Anthrozoology, proposing it as an emerging field of research: Computational Anthrozoology. This term includes both (i) using computers to study human interspecies relationships (the computer 'as the lens') and (ii) studying human interspecies relationships that are themselves mediated by computers (the computer 'under the lens').

## **Methodology:**

Critical reflection has been applied to the application of computers (or any other digital-era technology) to Anthrozoology. It will be argued that 'now' is an appropriate time to think carefully about how we currently use technology in our research. What do the technological tools that we choose, say about our inherent biases and the filters or distance that we may place between ourselves and the participants that we observe? In addition, this work asks: "what happens when human interactions with other animals are mediated by technology (for example: dogs watching TV with humans, cat enrichment with tablet-based computer games or horses living in an automated housing system)?"

## **Main Findings:**

Computational Anthrozoology is a field that is both data-driven ('as the lens') and reflexive ('under the lens'). As such, it is open to the use of mixed and hybrid methodological approaches, combining elements of the quantitative (for example: statistics, ethology-based observations) and the qualitative (for example: ethnography).

## **Principal Conclusions and Implications for Field:**

Anthrozoology researchers are already highly dependent on computer-based systems to mediate their understanding of interactions between humans and other animals. It is

proposed that this dependence would benefit from greater levels of reflection. In addition, technology is increasingly present in all areas of our interaction with non-humans. For example, when we attach a GPS tracker to a studied individual, we are potentially modifying their range of behavioural responses. Therefore, we need to reflect on the role of technology in all aspects of our practice. This may also mean welcoming colleagues from computer science fields (such as Human-Computer Interaction and Animal-Computer Interaction), broadening still further Anthrozoology's multidisciplinary base. Computational Anthrozoology has potential crossovers with the following fields: computational anthropology, digital anthropology, techno-anthropology, digital ethnography, cyber anthropology, virtual anthropology and animal-computer interaction.

## Presentation

Anthrozoology researchers are already highly dependent on computer-based systems to mediate their understanding of interactions between humans and other animals. It is proposed that this dependence would benefit from greater levels of reflection.

I would argue that 'now' seems like an appropriate time to think carefully about how we currently use technology in our anthrozoology research...

Computational Anthrozoology will both:

- help us to think about and to specify the digital tools that we want to support our studies and
- provide a new research space to: (i) reflect on the impacts of our digital study tools on the interactions that we observe and (ii) to consider any technology mediating those interactions

How has this been addressed in related fields?

Anthropology has already developed research areas with a similar focus:

- computational anthropology
- digital anthropology
- Techno-anthropology
- digital ethnography
- cyber anthropology
- virtual anthropology

## What is computational anthrozoology?

(i) using computers to study human interspecies relationships (the computer 'as the lens') and

(ii) studying human interspecies relationships that are themselves mediated by computers (the computer 'under the lens').

## The computer 'as the lens'

This might include:

- The use of computer-based systems to help us understand interactions between humans and other animals.
- Computer systems as supportive technologies. For example: the use of artificial intelligence, machine learning and computer vision to automate the recognition of behaviours and emotions, during interactions.
- Citizen science approaches that enable human animals to participate in anthrozoological studies.
- Video and audio analysis - where computers are used to support the understanding of interaction data collected in the field.
- Data session and fieldwork review tools (for example: synchronising log files, video, audio and electronic notes into a navigable timeline for researcher review).
- Using mixed reality technologies (virtual, augmented etc.) or agent systems to simulate human interactions with other animals.
- Using an anthrozoological perspective to contextualise the 'data mining' of online information relating to human-animal interactions

## 'as the lens' - example

Acting as a tool to analyse the interaction between the human and the other animal.



Figure 1. PIXIO's auto-follow camera system (left) and an equitation science riding analysis system (right).

If we conducted computational anthrozoology studies of these interactions, the technology would be the study tool.

### The computer 'under the lens'

This might include:

- Studying parallels between human–non-human-animal interactions and human-computer interactions (as considered by the computer science field of HCI – human-computer interaction)
- Studying relationships between humans and other animals, that are mediated by computers. For example: dogs watching TV with humans, cat enrichment with tablet-based computer games or horses living in automated housing systems.
- Studying interactions between humans and virtual representations of other animals (for example: zoo experiences that either interpret, 'speak for' or completely replace non-human animals).
- Observing and contextualising humans and other animals as they exist (represent themselves and / or are depicted) online (social media, YouTube etc.)

### 'under the lens' - example

Acting as an interface between the human and the other animal.



Figure 2. The University of Pennsylvania School of Veterinary Medicine's equine imaging system

If we conducted an computational anthrozoology study of this interaction, the technology would be the focus.

## Methodological implications

Computational Anthrozoology is both:

- data-driven ('as the lens') and
- reflexive ('under the lens').
- Therefore, it can use mixed and hybrid methodological approaches: quant (statistics, ethology-based observations etc.) and qual (ethnography etc.)

The type of questions that we might want to ask

- What do the technological tools that we choose, say about our inherent biases and the filters or distance that we may place between ourselves and the participants that we observe?
- What happens when human interactions with other animals are mediated by technology (for example: dogs watching TV with humans, cat enrichment with tablet-based computer games or horses living in an automated housing system)?

# THE COMPUTATIONAL ANTHROZOOLOGY **MANIFESTO**

Anthrozoologists with an interest in technology, please **JOIN ME!**

I call on you to help me study the interactions between humans and other animals by: -

Using your machines '**AS THE LENS**'

and

Putting machines that mediate such interactions '**UNDER THE LENS**'

We have nothing to lose, but our ignorance concerning the role of technology in human interspecies interactions

**UNITE!**

Fight for your right to understand the role that machines play, when humans meet other animals

Figure 3. The computational anthrozoology manifesto