

Centring animal experience through comics-based research: The case of Pavlov's dogs

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The focus of this article is the collaborative creation of Pavlov and the Kingdom of Dogs, a graphic nonfiction novel aimed at highlighting the lives of dogs experimented upon by Ivan Pavlov in late 19th and early 20th-century Russia. The novel delves into the intricate human-canine relationships within the context of St. Petersburg's scientific, cultural, and political landscape. The collaboration between a researcher, a professional illustrator, and a script editor aimed to challenge anthropocentric narratives prevalent in historical representations of Pavlov and experimental science. Rooted in animal studies and psychology, this project explores the potential of arts-based methods to centre animals and their relationships within historical contexts. It aims to deepen depictions of animal experiences and agency while bridging the gap between human-animal studies and psychology, where attention to animal lives in research settings remains limited. By focusing on Pavlov's experiments, the project seeks to redefine experimental animals as active historical subjects, contributing to broader discussions on human-animal relationships and ethical responsibilities. The article delineates the theoretical and methodological underpinnings of the graphic novel, provides insights into the comics-based research process, and discusses the affordances and challenges of this approach. It concludes by reflecting on the potential of comics-based research to engage both academic and public audiences, ultimately advocating for a deeper understanding of human-animal entanglements and their implications in contemporary society.

KEYWORDS: arts-based research; comics-based research; experimental animals; graphic novels; human-animal relations; psychology

Introduction

This article describes and discusses the collaborative production of a work of graphic nonfiction novel entitled *Pavlov and the Kingdom of Dogs*.¹ This novel was created as part of a wider project utilising creative, arts-based methods to centre the lives of the thousands of dogs experimented upon by Russian psychophysicologist Ivan Pavlov (1849-1936) in the late nineteenth and early twentieth century. The novel tells the story of Pavlov, his family, co-workers and the lives of some of the dogs that he chose as his experimental animals. Central to the narrative are the human-canine relationships involved and their entanglement with wider shifts in technology, science, culture and politics during his lifetime, all centred on the city of St Petersburg (later Petrograd, then Leningrad), where the adult Pavlov lived and worked. The novel was produced collaboratively, teaming up a researcher (me – the author of this article) with a professional illustrator – Sophie Burrows. Additional input was provided by a script editor – Paul Fraser – to provide advice and feedback on script drafts. In choosing to create a graphic novel focusing on Pavlov’s dogs the general intention was to challenge normative anthropocentric representations of animals and human-animal relations in a specific historical setting. Broadly this is accomplished through visual storytelling which decentres and disrupts familiar representations of Pavlov, histories of experimental science and psychology, and (re)centres animal experiences and entanglements.

The chosen medium and subject also reflect a number of more specific objectives. Researchers in and across multiple disciplines are developing and refining methods for studying the entanglements of human-animal and multispecies relationships, meeting the ethical and methodological challenge of speaking with and for nonhuman others (Chaplin 2017). The merits of different methodologies and methods are increasingly debated (e.g. Dowling, Lloyd and Suchet-Pearson 2017; Gillespie 2019), and plenty

1 Comics are most succinctly defined as ‘juxtaposed images in deliberate sequence, with or without text’ (Miller cited in Dittmar 2022, 608). Dodging ongoing definitional wrangling, a graphic novel is most straightforwardly described as ‘every comic that looks like a book’ (Dittmar 2022, 609). Seeing as the term ‘graphic novel’ is applied very broadly, fiction and nonfiction are often included under that heading. Comics and graphic novels are also used interchangeable as terms. So we end up with a book like *Pavlov and the Kingdom of Dogs* being referred to as a nonfiction graphic novel, graphic nonfiction, non-fiction comics, or just plain old graphic novel. Within graphic nonfiction there are various subgenres (not dissimilar from nonfiction generally), including graphic memoir, medicine, biography, reportage, popular science and history. Graphic novels and comics are commonly understood to mean the same thing (though see Brown 2011; Baetens and Frey 2014 for debates on this issue). When referring to *Pavlov and the Kingdom of Dogs* the terms graphic nonfiction, graphic novel and nonfiction comics are used interchangeably.

of scope remains for exploring the viability of a broader range of qualitative methods in a human-animal and animal studies context. A first objective is to explore the viability of arts-based methods for centring animals and their relationships in specific human-animal domains. Specifically through representing and communicating the experiences of animals and the human-animal relations involved in a historical laboratory setting.

A second objective in producing a graphic novel specifically is to use it as a way of deepening and complicating depictions of animal experience. In Erica Fudge's recent overview of studies in animal history she reports a more recent shift 'from the issue of representation to considering agency and the question of how we might think about animals as actors in the past' (Fudge 2022, 255), and on to more complex understandings of animal agency as emerging from dynamic networks of interaction. Animal agency and the entanglement of animals in networks of human and nonhuman actors is something that increasingly interests many animal studies scholars (e.g. Birke, Bryld and Lykke 2013; Caiza-Villegas, van Hoven and Jones 2023) and it is argued here that arts-based research in general, and the production of comics in particular, is an interesting vehicle for pursuing these more recent considerations in the field.

A third objective is to bring an animal studies orientation into closer contact with a discipline where it has been notably absent – psychology. As just noted, Erica Fudge wrote that a key foundational concern of animal studies was representation: 'how human documents and events constructed animals' (Fudge 2022, 254). Yet in psychology there is still relatively little attention paid to if or how the lives of animals involved in animal research are depicted, historically or in the present day (Volsche et al. 2022). Hank Davis and Dianne Balfour's important text on scientist-animal interaction does include accounts of psychological research (Davis and Balfour 1992), and a handful of essays and articles have extended human-animal studies type scholarship to physiology or psychology settings (Birke 2010; Despret 2004; Haraway 1989; Pettit 2012). However, subsequent scholarship on human-animal relations in experimental laboratory studies has mostly focused on examples of biomedical experimentation (e.g. Giraud and Hollin 2017; Holmberg 2008), and there are as yet none focusing on Pavlov's studies (besides Adams 2020), or for that matter any subsequent animal experiments carried out under the rubric of behaviourist psychology. Via a focus on Pavlov's animal research, the project aims to contribute to redressing the lack of widely shared narratives about experimental animals as legitimate historical subjects – active, complex, characterful – in psychology and popular texts.

Human-animal studies research approaches animals as more than merely 'passive objects for humans to act upon or use as tools or resources' (Mullin 2010, 148); and moves beyond anthropocentric histories and narratives by placing animal life and human-

animal worlds in the spotlight. It is work that can raise troubling questions about the human relationship to and responsibility for nonhuman animals in contemporary societies, where that relationship is defined by ever more precarity and complexity. There is already a wider public appetite for addressing these questions, evident across a range of cultural markers, from a growth in vegan and plant-based lifestyles to nuanced approaches to natural animal histories in documentaries, fiction and other art forms. There remains enormous scope for societies to address the ethico-political implications of our entanglements, incorporating animals as food, companions, endangered, and zoonotic pathogen hosts. Academic research can play a role here in undertaking innovative and engaging research attentive to aesthetic and performative elements that can deepen understanding and debate in wider culture. Following this logic, a fourth and final objective is to explore if arts-based methods and related outputs can provide an engaging and accessible way of centring animal experiences not just for academic and discipline-specific audiences, but also for a wider public.²

The remainder of the article is structured as follows. The first section sets out how the theoretical and methodological foundations for producing the graphic novel were established and provides some detail on the nature of Pavlov's laboratory enterprise and the experiences of the dogs involved. The second section offers a more specific account of comics-based research and outlines the story being told in the graphic novel. The third section recounts some of the specific 'affordances' of comics in bringing attention to experimental animal lives as they are entangled with human and other material relations. The fourth section discusses some of the benefits and challenges discovered in working with comics in this way. The fifth section reflects on the stated objectives, before finally considering the wider potential of comics-based research for human-animal studies.

Centring animals in psychological research using comics-based research methods

The centring of animal experience and agency across multiple settings has been an explicit goal of overlapping interdisciplinary movements for some time now, including (critical) animal studies, human-animal studies, animal history, multi-species methodologies and posthumanism. These developments have contributed to the formulation of

2 The focus of this article is the production of a work of graphic nonfiction. The project also involved the creation of another artefact – an art installation consisting of multiple miniature scale models exploring different aspects of Pavlov's laboratory complex, also spotlighting the experiences of the dogs and their relationships.

alternative theories and methods that place the life of animals and the dynamics of human-animal relations firmly in the spotlight (Johnson 2015, 299). Animal life here covers an array of sites and situations, historical and present day, including laboratories and experimental animals (Garlick 2015; Haraway 1989; 2008; see also Birke 2010; Despret 2004). The growth of human-animal studies has been accompanied by a creative and open approach to methodological innovation, and a nascent body of work specifically addressing human-animal relations through creative and visual methods (e.g. Fennell 2022; Haanpää et al. 2019; Turnbull 2020). Increasing attention is also paid to the role of art forms in examining the lives of animals, the complexity of human-animal relationships, and in challenging anthropocentric ideologies and attitudes (e.g. Aloï 2015; Ross 2021; Małecki et al. 2018).

Comics have also emerged as a specific focus in human-animal studies. Comics are a visual medium, used to express ideas and stories with images, which are normally organised in a sequence, as separate panels. Panels are single frames or moments, often but not always enclosed within a border. Imagery is often combined with text which can take various visual forms – captions, speech and thought balloons, sound effects; and other symbolic elements (sometimes referred to as ‘emanata’) that convey feelings, states of mind, movement and so on.³ Academic engagement with comics is well established, and there ‘are a growing number of researchers, both in the academy and out, leveraging comics as a powerful mode of social inquiry’ (Kuttner, Sousanis and Weaver-Hightower 2018, 396). Comics studies scholarship has opened up ample space for both understanding and critiquing cultural representations of animals, and exploring attempts to create alternate perspectives on how animals think, feel, and act, that provoke us to reflect on how we treat them and related historical, political and ethical issues (e.g. Alaniz 2020; Brown 2011; Herman 2018; Mayersen 2018).

Whilst the collaborative creation of a graphic novel based on academic research loosely aligns with multiple qualitative research traditions, here it is more specifically situated within ‘comics-based research’ (CBR). CBR is defined as a subset of visual, narrative, and arts-based research methods (Leavy, 2018); and as a ‘field of practice’ rather than a specific methodology or method (Kuttner, Weaver-Hightower and Sousanis 2021). What comics-based researchers share is ‘an interest in the unique semiotic, narrative, communicative, and educative properties of the comics form for their participants, their audiences, and themselves’ (Kuttner, Weaver-Hightower and Sousanis 2021, 197). As a field, it includes academic research on and about comics, but also

3 Called ‘emanata’ because they refer to shared conventions for pictorial elements emanating from a character or object that signify something – anxiety, confusion, fear etc.

research that involves making comics as a research practice and/or as the outcome of research. There are also numerous examples of academic-illustrator collaborations in creating comics (e.g. Jones and Woglom 2013; Jonsson and Grafström 2021). Comics have recently been used and produced in relation to a wide range of topics (see for example Ahuja et al. 2022; Forde, 2022; Mandolini 2022) and practices, including as vehicles for collecting and eliciting or analysing data (e.g. Febres-Cordero et al. 2021), and for disseminating and presenting findings (e.g. Al-Jawad 2015).

Pavlov and the Kingdom of Dogs is an academic-illustrator collaboration, and most closely aligns with the practice of dissemination and presentation. The structure and content of the graphic novel relies on ongoing research undertaken by the author of this article. This has included literature in human-animal studies, critical animal studies and posthumanities, synthesised to create the theoretical and ethical framework for the project. In terms of the specific focus, research has involved examining biographies of Pavlov, recent comprehensive translations of his work, contemporaneous research reports and media coverage, historical archives, online museum and tourist sites, and educational accounts.⁴ To date the result of this scholarship has informed a critical reappraisal of how animal experience and agency has historically been represented in the 'kingdom of dogs' – the name one visitor gave to St Petersburg laboratory complex – and the subsequent framing of Pavlov's studies and their contribution to the discipline in popular and pedagogical texts (see Adams 2020). Critique has been accompanied by a recentering of Pavlov's dogs as subjects, drawing out the detail of their existence from available sources. The research undertaken directly informs the narrative created for the novel. However, as the writing progressed, more research was undertaken, especially on those topics that became central, but were not my areas of expertise (e.g. history of urban dog populations in Russia, or the demographics of Pavlov's workforce). As well as reading lots of graphic novels with a newfound level of scrutiny, significant additional research was required relating to the practice of effective (visual) storytelling, and the writing and grammar of graphic novels (e.g. Barry 2019; Madden 2005; McCloud 1995).

There are very few published accounts of attempts to *produce* comics that explicitly take up animal studies concerns in addressing their subject matter via an academic-artist collaboration, so in that sense we are venturing into new territory here.⁵ Why

4 I am especially indebted to Daniel Todes' exhaustive historical and biographic work (e.g. Todes 2002; 2014), Yokoyama's recent translation of Pavlov's papers from 1903 to 1936 (Pavlov 2023) and the Wellcome Institute Archives.

5 The only example discovered at time of writing is Scott Hurley and Daniel Bruin's article discussing their collaborative creation of a 'graphic narrative' that 'addresses the problems puppies born and raised in breeding facilities face when they enter their new homes (Hurley

might it be important to produce comics rather than simply study existing comics? The former entails a different kind of collaborative research process in its own right – translating academic knowledge and understanding of animals and human-animal relations into graphic nonfiction, knowledge that is transformed or at least modified in the process of creating. The process of making can *itself* be considered as a form of inquiry and investigation – a form of research (Mäkelä 2007). In creating the graphic novel, my own and my collaborators’ perspectives and positions on the work of Pavlov, his human and canine co-workers, on the history of psychology, have developed and changed. What I hope to further gain, and share, from now reflecting on this process is a more intimate grasp of the benefits and challenges of utilising creative and arts-based methods for those engaged in human-animal studies research.

Creating Pavlov and the Kingdom of Dogs

A script editor and an illustrator were recruited via an open call, shortlist and interview process conducted by the academic lead of the project – the author of this article. Both roles were funded as part of a UK based Arts and Humanities Research Council Fellowship award.

My initial focus was the production of an initial script for the book, based on the research described above.⁶ This first involved working out the overall focus, key characters, scenes, and ‘beats’ – moments that hold the story together for the reader, propel it forward, or allow them pause and take stock. The script editor provided feedback on early synopses, which were worked and reworked before embarking on a detailed script. The intention here was to create the outline of a story that centred the experiences of the experimental animals, but within a narrative that was compelling in its own right. I considered this point vital for the objective of reaching wider audiences, rather than limiting the book’s appeal to a readership explicitly oriented towards animal studies. First and foremost, I wanted to tell a good story.

A rough outline of the novel seems necessary at this point. The story opens in 1929, an 80-year-old Pavlov publicly unveiling a statue of a dog to commemorate the role of the animals in his life’s work (see Figure 2). The dog statue comes to life and

and Bruin 2013, 91).

⁶ The first-person pronoun ‘I’ and ‘me/my’ is used when referring to my (the author of this article) perspective or position in this article, or my specific role in the collaboration. The ‘we’ pronoun is used when referring to the collaborative process and its outcomes, incorporating both the author of this article and the illustrator collectively, unless otherwise stated.

together they co-narrate the story from here, often in dialogue. We go back to Pavlov's childhood in the mid-1850s, in the provincial Russian town of Ryazan. We follow his family and school life against the backdrop of changes in Russian society, especially the rise of scientific and medical knowledge in the latter half of the 19th century. Attention then shifts to St Petersburg, where against his father's wishes, Pavlov arrives in the autumn of 1870 to study science and medicine. He resides in the city for the rest of his life. A budding physiologist, Pavlov is routinely vivisecting animals by the time he is a postgraduate student, and here the narrative shifts to spotlight the experiences of the animals involved, justifications for, and opposition to animal experimentation, and the rapidly transforming city.

The novel tracks Pavlov's personal and professional life as his laboratory enterprise grows throughout the late 19th and early 20th century, involving hundreds of intrusive, routinely fatal, physiological experiments with dogs. It follows Pavlov's radical shift to focus on psychology and the 'conditional reflex', paying close attention to how this new direction was experienced by the many hundreds more dogs involved: the violence and suffering they were routinely subjected to, but also the acts of resistance, moments of companionship and individual stories. World War I, the 1917 October revolution, subsequent civil war, and the formation of the Soviet Union all feature as events in the novel, specifically in terms of the impact it has on the city, its residents, the dogs, the scientific community, and Pavlov himself. The final sections of the book tell of Pavlov's remarkable changes of fortune, a dramatic fall from grace followed by financial backing and celebrity status in the new Soviet regime of the 1920s, bringing the story to the 'present day' of the statue unveiling in 1929.

Returning to the process of creating the book, once an overall structure and synopsis was established, the detail came into focus – scene directions, character descriptions, and dialogue. Figure 1 indicates how this looked in practice, panel by panel.

Figure 1: Pages from script draft. Source: Matthew Adams.

PAGE 124 (6 PANELS)

Panel 1

Two dogs being brought out of the Physiology Dept building and heading into the grounds by a handler, leashed. BORIS BABKIN at the door looking on.

Towers visible in shot. Behind them, another handler is wheeling an electric shock machine (not labelled yet) in the same direction.

The dogs are captioned with their names: POSTREL (female, young, excitable, extremely sociable) & MILORD (male, older, calm, solid, balanced, peaceful).

Panel 2

Medium panel. The two dogs are being led into the Towers. They are resisting, whining, barking, pulling back. Handler with shock machine waiting behind them.

DOGS:
Grrrrr. Owooooooooo.

Panel 3

Small panel. Same shot, but dogs now gone. Handler who took them in leans against the building, smoking a cigarette. Dogs can be heard off-panel from inside.

DOGS (OFF PANEL):
Woof woof! Owooooooooooooooooo.

Panel 4

Medium panel. Shot of MARIA at her booth - as we saw in page spread of Towers, now close up. Handler brings POSTREL in to chamber clearly visible in front of MARIA through a large glass viewing window. She growls as she approaches the chamber and she's being taken/dragged in.

Panel 5

Same scene, Another handler arrives, with the machine. MARIA is pointing to somewhere close by her side.

CAPTION:
(pointing to the machine) A machine for administering electric shocks.

HANDLER:
Where would you like this Madame Petrova

MARIA:

Ah! Its arrived. Just there, Thank-you.

Panel 6

Medium panel. Seeing MARIA's view through the window, through her eyes.

POSTREL, strapped into the stand. Left rear thigh area is shaved.

A glass rod containing electrodes is inside a metallic holder that is fastened to the dog's leg, and the rod is in contact with the exposed flesh.

A cord extends from the rod, heading out of the room - to the shock machine and MARIA's controls.

POSTREL looks terrified? Puzzled?

POSTREL:

?

The script editor provided feedback on early drafts, which were then discussed and worked on, forming the basis for next draft. Multiple drafts were produced following this procedure, around twelve in total. A 'final' text draft was then shared with the illustrator. She initially produced black and white 'roughs' to depict text/image combinations for the first section of the novel – about 30 pages, made up of multiple panels, from the book's planned total of 200 pages. Figure 2 is an example of how the script was illustrated at this stage – little background detail, text roughly placed, but expressions and gestures of key characters prominent, an emerging sense of how visual and textual elements combine within a panel, and of how panels combine across a page, or a double-page spread.

The illustrator shared the roughs of a section with me, annotated with queries emerging from her translation of the script into images and words - anything ranging from appearance of characters, fonts, positioning of text or characters, scenery etc. I also annotated the roughs, with my own queries about the illustrations, positioning, sequencing etc. We then met, and discussed queries and annotations and resolved any uncertainties. This was followed by me making any required changes to the script and undertaking any further research to fill in identified gaps as required (e.g. architectural styles, clothing, contemporaneous newspaper headlines, other reference images), and the illustrator moving on to the next section of the book. This process was continued

until the roughs of all pages were produced. Once we were both happy with the overall look and feel of the roughs, the illustrator began experimenting with colour palettes (see Figure 3). Once agreed upon, the whole novel was coloured and lettered.⁷

Figure 2: Example of roughs. Images: Sophie Burrows. Text: Matthew Adams



The affordances of comics in the case of Pavlov's dogs

This section discusses how comics were considered particularly suitable as a method for creating an alternative history of Pavlov's dogs that meets the objectives stated above, describing in more detail some elements of the graphic novel. Whilst the concept of *affordances* is familiar in various research contexts, in and outside of comics studies, it has also been utilised by researchers to specifically explore and thematise the various resources and opportunities that comics offer the researcher (e.g. Venkatesan

⁷ At time of writing, this is the stage we have reached in the process. We are negotiating publication of the novel with a professional publisher, which may involve further editing and design.

and Saji 2016). Most simply, the term refers to the qualities or properties of an object that defines its possible uses. In their overview of CBR, Kuttner, Weaver-Hightower and Sousanis (2021) identify three common affordances of comics: multimodality; sequence/simultaneity; style and voice. In what follows all three of these elements are drawn upon as important elements of *producing* comics. They provide a vehicle for discussing the opportunities the comics medium have provided us with in centring the experiences of the dogs involved in Pavlov's work and meeting the objectives stated.

Multimodality

In broad terms, comics are claimed to afford the researcher unique opportunities for 'meaning-making' derived from their multimodal nature – namely the interplay of visual and textual semiotic 'channels' (Herman 2018). In the context of a discussion of graphic nonfiction and animal minds, Herman asks whether 'graphic narratives, in recruiting from more than one semiotic channel to evoke storyworlds, afford possibilities for projecting subjective experience not afforded by monomodal or "single-channel" print texts' (Herman 2018, 203). In our case, we answer in the affirmative: multimodality is utilised as a vehicle for 'projecting the subjective experience' of Pavlov's dogs onto the page; for communicating what it might be like to be – or to experience the world as – a lab dog.⁸

Thanks to the conventions of speech bubbles, thought bubbles and related emanata, in comics anyone or anything can be given the power of speaking and/or thinking in a language that can be understood by the reader, and accordingly engage in meaningful dialogue with anyone or anything else. Whilst imagined dog sounds are 'translated' into letters and words, I made the decision *not* to grant our laboratory dogs the power of human language (with one notable exception, as we discuss below). Why, when accepted genre conventions of comics combine with the multimodality of comics to create fertile ground for nonhumans – animals, objects, anything - to speak? Especially considering a stated interest in spotlighting animal experience, agency and, to repeat, 'the question of how we might think about animals as actors in the past' (Fudge 2022, 255)? The decision was based partly on instinct – it *felt* right in early attempts at plotting and sketching the story, and partly on the following reasons.

A first derives from developments in animal studies that take a nuanced and

8 We are sidestepping the thorny question of access here – how can we know what an animal is experiencing, thinking, feeling? Instead, we offer our interpretation, based on our own everyday observations and reasoning; and wider knowledge of what we (think we) know about canine intelligence, sensibilities etc.

reflective approach to the challenges of speaking for animals. The assumption is not made here that in producing comics a dog's experience can be represented accurately or authentically simply by having them speak in the humanly legible symbols of (English) language (Keskinen 2019); or to erase their canine identities and replace them with a version of humanness (Hurley and Bruin 2013, 84). Of course, the dogs could have been depicted as able to speak to each other exclusively, represented somehow as a language our human characters do not understand, but readers can. However, I wanted to hold on to a sense of the fact that interaction between the book's human and nonhuman characters emerges from how they read and respond to each other, just as they do in real life, but not from sharing a *spoken* language. This arguably allows greater scope for the reader to make their own investments – to identify with the canine characters, their expressions, sounds and development in the story; including those derived from a capacity for empathy grounded in experience – dogs do not speak, but many of us know them. An additional reason is the appeal of a kind of 'narrative reticence', to borrow Herman's term (2018), in that it maintains a sense of illegibility, of intraspecies distinctiveness and inter-species difference; acknowledging that another animal's *umwelt* – its own ontology, way of being in and experiencing the world – is fundamentally distinctive from ours, unknowable, even as we try to evoke it.

All this said, the multimodal nature of comics meant that there are other affordances available for evoking animal experience and subjectivity ('mind-attributing practices', Herman 2018). The illustrator made efforts to depict a dog's physical modes of expression – using their tails, ears, faces, bodily postures and so on. Text-based 'sound effects' are used to convey a dog's vocal range (e.g. barking, whining, whimpering, yelping, growling, howling); and situated in a specific textual-visual action sequence can readily suggest dog's experiences of pleasure or pain, bemusement, attempts to resist, warn, welcome and so on. Most readers will be familiar with interpretations of a dog's vocal and nonverbal communication – though of course there is plenty of scope for error, in real life readings, just as in creating and reading depictions in comics. Some scenes are framed so as to appear from a dog's eye level – an approximation of seeing what a dog sees. Emanata are further utilised to consolidate meaning-making. The shaking head of a handler might convey silent dissent towards the treatment of a dog in a scene; a vibrating panel whilst a dog is being electrocuted conveys the experience of an electric shock. All these options help frame the dogs' experience and 'prompt[s] inferences about characters' minds... situating them in particular physical and social contexts, with or without additional verbal cues' (Herman 2018, 203).

We have also named as many dogs as possible, a strategy advocated by Volsche

et al. (2022) for future writing about research that involves animals. Naming is not a possibility unique to comics of course – they could be named in ‘single-channel’ mediums. However, comics do afford additional visual signatures that, through repetition, become immediately recognisable marks of individuality (Rohman 2018). With dogs, this might be size, breed, or a distinguishing feature like the shape of a tail, as well as visible text (a name tag, being hailed by a co-worker), emanata, repeated gestures or expressions, but also the ways in which dogs are hailed by speaking characters (‘brave dog’ etc.).

Naming, though simple, is a significant act. In revisiting past research in any medium, it is a direct way of challenging the objectification of experimental animals. As Herman asserts, after Fudge, ‘individuating animals through naming can foster possibilities for empathy and promote nonhuman agency in a manner that calls into question established species hierarchies’ (Herman 2018, 222). However, naming can also reflect power over another – the dogs do not choose to be named, and many of them would not have names if they were not recruited as experimental animals. It is possible then that for a reader, naming experimental animals can reflect, or even reify, their position as relatively powerlessness. On balance, naming Pavlov’s dogs was considered a worthwhile pursuit. Most simply, we were motivated by the fact that the dogs *were* named by Pavlov and his co-workers, an increasingly important practice as Pavlov’s theoretical framework developed (Adams 2020; Todes 2014). In addition, naming makes dogs more readily identifiable characters in the narrative, and potentially triggers a reader affiliation with dogs as companion species, whilst acknowledging that such a role also involves asymmetrical power relations.⁹

So no speaking dogs? In our graphic novel, we decided to make a significant exception with the character of Rosa. She is a stone dog statue rather than a flesh-and-blood dog, but effectively she stands as an advocate for Pavlov’s dogs. The statue is based on a real one that still stands in the grounds of the Institute of Experimental Medicine, St Petersburg.¹⁰ Various inscriptions at the base were commissioned personally by Pavlov as a testament to the dogs’ sacrifice in the service of science. As noted above, in our story, at the statue’s unveiling ceremony, the dog comes to life. She speaks to Pavlov,

9 Thanks to an anonymous reviewer for encouraging this note of caution.

10 The real statue features a male dog. However, a female dog was chosen to ‘balance’ Pavlov’s authority, which is at least partly reliant on gender. The name itself was chosen from a list of the genuine names of Pavlov’s dogs I have been collecting in the course of my research from various sources, including Babkin 1949; Pavlov 2023, Todes 2002; 2014; Tully 2003, and visual archives – over a hundred so far, with the help of a translator where necessary. Why Rosa specifically, I am not sure, the name appealed intuitively.

and only he seems to be able to hear her (see Figure 2). Rosa prompts Pavlov to start telling us (the reader) the ‘real’ story of his *and his dogs’* life and career. From this point onwards, Pavlov and Rosa share narrating duties, usually in dialogue with each other.

The choice of the statue enables the use of irony as a literary device – while the statue was effectively a celebration of Pavlov’s methods in particular and the use of experimental animals in general, given voice it becomes a much more ambivalent symbol of both. As co-narrator, Rosa’s character also allows for the presentation of a ‘counter-story’ to Pavlov’s ‘official story’ in dialogue (Kuttner Weaver-Hightower and Sousanis 2021, 201). Telling an animal-oriented counterstory is in itself a vital objective. Rosa’s presence reminds the reader of laboratory animals’ experiences, and, as our notable exception, to ventriloquize them. It is hoped that her statue status provides just enough distance from the lab dogs to ‘normalise’ both this role and the non-speaking nature of flesh-and-blood dogs within the story.

Figure 3: Rosa as co-narrator. Images: Sophie Burrows. Text: Matthew Adams



Playing official and counterstory against each other offers more still in developing our storytelling and visual communication – it is a basis for conflict, drama, tension and humour as well as moments of concordance and resolution. In Figure 3, Rosa takes over narrating duties to describe how the dogs are recruited as laboratory animals, and their eventual fates. The page follows depictions of the collective kennels, describes different roles with dark humour, and sees Rosa rebuke Pavlov for his lack of curiosity about the dogs' fate, which is also visually depicted. Rosa is here central to a counter-story, developed across the novel, one which highlights violence and suffering. It is counter to the 'official' story in which the detail of the dog's lives are mostly absent, ethical questions rarely raised, and Pavlov's experiments considered mostly benign. It also disrupts a broader 'great man' approach to biography, which emphasises success as individual and heroic, often masculinised, achievement. In *Pavlov and the Kingdom of Dogs* Pavlov's own interpretation of events is routinely challenged, especially when it involves the experiences of the dogs. The roles of others in his work and life are also made central, as is the uncertainty and messiness of scientific practice.

Sequence/simultaneity

Comics are mostly sequential – we expect one thing, event, movement, moment or action to follow another in a particular order. Generally speaking we know how to read panels (left to right in Western culture) this way. The sequential nature of comics is well suited to narrative and storytelling. Panels are a particularly powerful tool for conveying a sequence, providing endless flexibility for manipulating the timing and pacing of a story. It is a common, if not inevitable, convention for panels to be created, and read, as moments in time. This convention allows for enormous flexibility nonetheless: 'Panels can capture a single moment, the time it takes to read a speech bubble, or combine multiple events into a single panel' (Kuttner, Weaver-Hightower and Sousanis 2021, 203). Panel sequences also suggest to the reader what happens in the space between them (the gutters), offering further opportunities for slowing, stretching or speeding up a story, shifting attention and so on.¹¹

Kuttner, Weaver-Hightower and Sousanis refer to further possibilities as 'simultaneity'. Unlike film, we can also take in multiple panels at once, or go back and forward. This brings a multidirectional dimension to the succession of elements or events in comics. When we take in a panel we can also take in 'the other panels of the page,

11 Though both panels and gutters can also be used for purposes not related to the passing of time.

or even the double page [...] which inevitably influences the perception of the panel we are looking at' (Peeters, cited in Bartual 2012, 54). Bartual refers to this as a 'panoptic quality': the 'power to make the reader see past, present and future simultaneously in the panels of a single page' (Bartual 2012, 45). Across panels, pages, single- and double-page spreads, chapters creators can also 'braid' repeated visual/textual motifs through a narrative, contributing further layers of meaning for readers to take in beyond sequences (see also Groensteen 2007).

The timeframe for *Pavlov and the Kingdom of Dogs* is the seventy-year period from the 1850s to the 1920s. However, within these parameters we utilise panels and the spaces between to focus in on key moments that might last anything from a few 'minutes' – such as a specific experiment and a dog's reactions, to a few days – such as news coverage of the 1917 October Revolution – to months and years. We utilise page and double-page spreads to focus in on multiple events simultaneously too. In Figure 4 the three floors of the Physiology Department in the Institute of Experimental Medicine, where Pavlov was director, are depicted across a double-page spread. Sequence is conveyed by Pavlov being visible on each floor, 'moving through' the building with a guest. Simultaneity is apparent in the activity depicted underway on each floor – conveying a sense of varied activities, happening all at once. There is also sequence here in terms of a dog's journey through the experimental regime – between surgery, post-operative rest, experiment, and living area.

A number of themes and motifs are also 'braided' throughout the narrative, such as descriptive portraits of important characters (human and canine) separated off from the main text; and smaller repeated moments – such as 'silent' panels – where a co-worker and/or a dog might be present, but action is 'paused' to capture a moment of encounter or change. Figure 5 depicts one of those moments. The dog Druzhok is seen after he has taken part in a public demonstration of the role of gastric juices in digestion. It immediately follows Pavlov's defence of his practices during an anti-vivisection protest, in which he makes the oft-repeated claim that all of his experiments were 'completely painless' (Todes 2014, 170-71).

Figure 4: Physiology department double page spread. Images: Sophie Burrows. Text: Matthew Adams

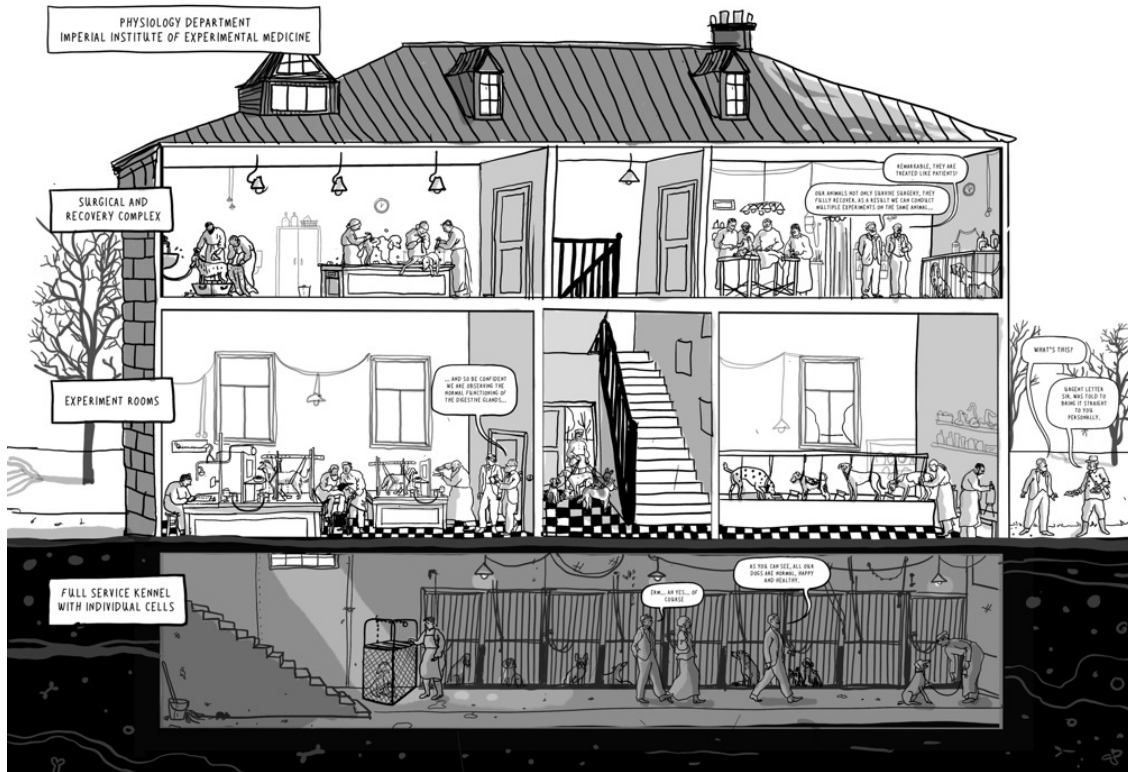


Figure 5: Druzhok's fate. Images: Sophie Burrows. Text: Matthew Adams



Style and voice

Kuttner, Weaver-Hightower and Sousanis (2021) include a third category, 'style and voice' briefly elaborated upon as the 'creator's inevitable presence in the story, their own subjectivity manifest in the crafting of image and text'. McCloud's *Understanding Comics* (1992) offers a comprehensive dissection of the myriad possibilities for comics creators in terms of style and voice, all with different implications for storytelling and visual communication. McCloud puts all comics imagery on a continuum from photo-realistic to more simplified / conceptualised images (what he calls iconic). In terms of illustrator style, Sophie's style is 'loose' and 'cartoonish' – i.e. towards the iconic end of the continuum – as Figures 1-5 indicate. More iconic images, according to McCloud, are more likely to facilitate reader involvement and identification, to encourage readers to identify with a story's characters. McCloud reasons that this is precisely because of their simplicity – iconic images offer a blanker slate which the reader works to fill, using their awareness of what else is going on visually and their own interpretive framework. McCloud's argument is potentially important for our objective of conveying laboratory animal experience in a way that encourages the reader to identify with the dogs (as well as human characters). The illustrator's 'cartoon' style locates both human and animal on a similar visual plane – in terms of complexity of gesture, expression, available emanata. As a consequence, potentially at least, 'the existential boundaries between human and nonhuman animals generally taken for granted in human societies' are temporarily suspended, or at least softened (Hurley and Bruin 2013, 99). A possible outcome for the human reader of the illustrator's style therefore is more readily identifying with the dogs' subjective experience and agency.

However, other comics study scholars question McCloud's claim that the iconic simplicity of comics increases the likelihood of identification (e.g. Hatfield 2005; 2022). The process of reader identification is argued to be more partial, uncertain and reflexive than McCloud's portrayal – complex rather than simple. Any reader brings a range of experiences and understandings, personal and cultural, to an encounter with comics, and their own interpretative framework. These shape the act of identification with and investment in *any* style, but they also bring the possibility of misidentification and rejection (Godfrey-Meers 2023). On this point, it is important to acknowledge that any reader response is 'an act of projection as much as an act of recognition' (Sinervo and Freedman 2022, 554). If we accept that identifying and empathising is more complex than McCloud acknowledges, the benefits of a particular style for empathising with nonhuman others can be advanced cautiously at best, and ideally on the basis of

reader-response research (e.g. Stamenković, Tasić and Forceville 2018). All that said, in terms of this specific affordance, by focusing on the dog's expressions, movements and interactions in a consistent and distinctive style, the illustrator is crafting a series of identifiable nonhuman characters, providing opportunities for connection.

Still on the theme of style and *voice*, Kuttner and colleagues refer mainly to the subjectivity of comics creators, as an ever-present element of comics. It is also where creators can raise the possibility of incorporating their *own* voice and experience into a narrative more explicitly, potentially going as far as 'integrating themselves as characters in their work' (Kuttner, Weaver-Hightower and Sousanis 2021, 205).¹² In our collaboratively produced graphic novel, neither academic nor illustrator are specific characters. However, some of the characters created reflect my (academic) position on the issues arising as the story unfolds, not least Rosa in her calling out of any attempt to ignore or downplay the violence done to Pavlov's dogs and her empathy with what they experience. At other times it is the voices of other human characters, if rarely Pavlov himself, that approximate my animal studies oriented academic voice most closely. In terms of the objective of centring animals, these other voices and counter-stories are important in two senses. First, they disrupt the limiting tradition of 'great man' biographic discourse (Maerker 2018). Second, they help provide an alternative to standard exposition and the aforementioned 'traditional authorial voice' commonly found in the presentation of research, in more 'official' histories of science and psychology, and even in animal advocacy discussion.

A final point related to the common affordance style and voice relates to the specifics of how we have attempted to situate the experience and agency of Pavlov's dogs. Recalling Erica Fudge's overview cited at the beginning of this article, animal studies has moved from being primarily concerned with how animals are represented and constructed to how they experience(d) the world and their agency. This section has discussed our attempts to represent the dogs' experience, and to some extent their agency. What of her third point, where she notes a shift to understanding animal agency as emerging from dynamic networks of interaction? In producing the graphic novel, we have situated the experiences of Pavlov's dogs, and their agency, in wider contexts and circumstances. This includes framing them within the interactions of scientific practice, equipment, human co-workers and a wider public. Image 6, for example, depicts a lively

12 A recent example is the multi-volume *Sapiens: A Graphic History* by Yuval Noah Harari, David Vandermeulen and Daniel Casanave, first published in 2020 by Jonathan Cape. The books are adapted from Harari's popular history of *homo sapiens*. They feature Harari as a key character – narrating the books alongside various characters.

dog, eating the food presented to her, during a demonstration of Pavlov's 'sham feeding system'. The various elements involved arguably bring the dog to life, in a context of limited agency and public spectacle. They also challenge any straightforward notion of scientific orderliness or uniform public assent.

Figure 6: Pavlov's 'sham feeding system'. Images: Sophie Burrows. Text: Matthew Adams



The novel also frames the experiences of dogs and humans alike with the context of a wider cast of characters, impact of changes in lab protocol, medical knowledge, and wider historical and political events. Whilst these relations undoubtedly involve asymmetrical relations of power, we have strived nonetheless to present a balanced picture that conveys the dogs' subjectivity, expressiveness, liveliness, obedience but also resistance and dissent. Even in a system tightly designed to show only how an animal obeys laws, the animal is never 'fully articulated' (Despret 2004, 124). By additionally paying attention to how human co-workers, citizens, Pavlov's family and Pavlov himself hold varying degrees of agency in different circumstances, we also follow Haraway in avoiding a simplistic dichotomy of wholly free humans and wholly unfree animals (Haraway 2008, 72-73).

Challenges

In sum, the common affordances of comics make them perhaps 'the ideal form for expressing the interconnectedness of human and nonhuman animals' (Hurley and Bruin 2013, 99). That is not to say the process of making comics has been without its difficulties and limitations. The challenges described relate to one or more of the objectives outlined at the beginning of the article. Briefly restated, the first was to explore the viability of arts-based methods for centring animals and human-animal relationships in the specific domain of the laboratory. The second was to use arts-based research and the production of a graphic novel as a way of deepening and complicating depictions of animal experience. The third was to bring an animal studies orientation into closer contact with psychology as a discipline. The final objective was to explore if arts-based methods and related outputs can provide an engaging and accessible way of centring animal experiences not just for academic and discipline-specific audiences, but also for a wider public.

As a first-time creative / comics writer, developing the capacity to tell a story in the medium has been difficult. I recall that the first time a draft section of the script was combined with illustrations, for example, I was despondent. The illustration 'roughs' were already expressive and sophisticated, but elements of the text that had been drafted and redrafted numerous times, and which I thought I was 'happy' with, seemed ill-fitting or perfunctory. In retrospect I think this is the nature of comics – text and image must be developed as they become entangled, their first meeting a stopping point rather than a destination. It is also a very time-consuming process. The time and space provided by a research fellowship was therefore paramount. As was the good

advice, the contribution of patient and highly skilled collaborators, and a shared belief in the potential of the story being told to appeal to a range of audiences.

A second issue is where best to target change. Academic research that has accompanied this process may be cited by future research engaging with Pavlov's theory or methods, thereby making a modest contribution to a less anthropocentric discipline. It is perhaps unlikely that a comic book will be cited in this context, so what wider purpose might it serve? One objective of this research is the development of novel ways of centring animals in psychological research – via Pavlov's dogs – that can reach wider academic and non-academic audiences. One specific audience is students of psychology. The discipline has experienced remarkable growth in recent years, one of the most popular choices across secondary, further and higher education, at least in the UK. Introductory and popular psychology texts are a significant entry point for representations of psychology's objects of concern. They are where many people will first encounter Pavlov, and he features in most if not all general introductory texts, and many others. So these texts set an important precedent in terms of the kinds of detail presented (or omitted). Currently there is very little, if any, account of the dogs' experiences, and to my knowledge no encouragement of critical thinking on topics such as canine experience or welfare. When dogs *do* appear, they are undifferentiated two-dimensional illustrations of 'classical conditioning', a means to an end, mute objects rather than agentic subjects.

Yet these are the places where disciplinary anthropocentrism (and androcentrism) *can* effectively be challenged. They provide an excellent opportunity for introducing critical thinking that incorporates methodological and ethical debates, and wider insights from emerging fields such as animal studies. If animals are centred in these settings, audiences are more likely to raise questions if transparency and reflexivity is missing later. Textbooks are a potentially significant place for doing the work of centring animals in research then, *especially* if more novel and accessible image-based sources are involved. Regularly updated with new editions and designed to appeal to students in a crowded market, it is plausible that such texts would include images or panels from a graphic novel. In fact in one section of our book we recreate then subvert the 'classic' textbook representation of Pavlov's experiments.¹³

13 We also plan to create a 'teacher's guide' to accompany the book, pitched at further/higher education level, with activities and suggestions to encourage classroom engagement and debate, focused on: contemporaneous criticism of the methods of Pavlov and others from a nascent anti-vivisectionist movement; actual detail of the procedures carried and dogs' role; questions over the veracity of certain results; naming animals.

Conclusion

The ongoing erasure of animal experience and subjectivity from disciplinary timelines, and with it the role of animals in scientific experimentation, impacts on how we understand and articulate science in general, and particular branches and methods, historically and in the present – in terms of what is prioritised, emphasised, discussed and debated. Received wisdom of Pavlov and his methods specifically exemplifies anthropocentric understandings of (experimental) animals as docile objects and indistinguishable, interchangeable components in establishing mechanistic laws of learning and behaviour. This article has offered an account of collaborative arts-based research using comics as an attempt to challenge that received wisdom via the example of Pavlov's dogs. It has described and discussed the experience of an academic-editor-illustrator collaboration disseminating animal studies research scholarship through the production of graphic nonfiction.

It is hoped that the work outlined here can contribute, however modestly, to a centring of experimental animals historically; and provide an opportunity to open up contemporary psychology to wider debates. This includes ways to reflect upon, research and write about the role of animals in psychological research today and in the future, both in and beyond the setting of laboratory research. In fact, there is surely a case to be made for extending these practices to other human-animal domains, beyond the laboratory into other areas of psychological practice and research, broadly defined, that involve working with non-human animals (animal-assisted therapies and their evaluation for example); and in doing so help reimagine the methods we use to do research with animals (see for example Adams, Ormrod and Smith 2023; Gorman 2019; Robinson 2020).¹⁴ It can also contribute to debates about psychology's ongoing anthropocentrism and encourage the discipline to adopt frameworks that make animal experience, agency and labour explicit; move towards more transparent and reflexive accounts of animal rights and welfare; and grasp animal agency as entangled in and emerging from complex networks of agents and activity. More generally, arts-based research can make a significant contribution to the methodological toolbox of a burgeoning human-animal and animal studies, with the potential to connect with wider audiences and extend understanding of and empathy for the experiences of nonhuman animals.

14 Haraway's list of 'human–animal worlds' where 'ordinary beings-in-encounter' takes place is instructive as to the range of topics being explored in animal, multispecies and human-animal studies, the posthumanities and anthrozoology: 'in the house, lab, field, zoo, park, truck, office, prison, ranch, arena, village, human hospital, slaughter house, vet clinic, stadium, barn, wildlife preserve, farm, city streets, factory, and more' (Potts and Haraway 2010, 322).

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