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CONSTRUCTING KNOWLEDGE AT THE INTERSECTION OF DISCIPLINES: APPRAISAL IN KNOWLEDGE CLAIMS CONCERNING ANIMALS IN POSTHUMANIST DISCOURSE

Keywords: interdisciplinarity, posthumanism, academic monograph, animal, appraisal

Abstract

The discursive practices of individual academic disciplines differ in many ways, which is why numerous studies of academic discourse adopt cross-disciplinary perspectives to explore the character and extent of those differences. Less attention has, however, been given to interdisciplinary discourses which incorporate the findings and/or research methods from a number of disciplines. This paper focuses on the discourse of one of the new critical interdisciplinarities: posthumanism. More specifically, it examines how posthumanist discourse integrates knowledge produced by the soft and hard sciences (as well as other sources) to build its perspective on animals and their relations with humans. Using Martin and White's (2005) appraisal framework to study knowledge claims collected from selected scholarly monographs adopting a posthumanist perspective, this study demonstrates that posthumanist claims referring to biological knowledge and experiential evidence tend to contain neutral, positive and endorsing formulations, while the knowledge from the soft sciences is reported in more critical ways, which is consistent with the aims of critical interdisciplinarities, i.e. questioning and transforming the dominant knowledge structure within different disciplines. Additionally, this paper provides evidence of the importance of popular science within interdisciplinary research in the humanities. It also sheds some light on the rhetorical practices within the scholarly monograph as a genre, particularly concerning the relative flexibility of its discursive conventions in comparison with those expected from a research article.

1. Introduction

The conventions of academic discourse are largely discipline specific (cf. e.g. Hyland 2004, 2007, 2008, 2015; Bondi and Hyland 2006; Fløttum et al. 2006), which is why contrasting the discursive practices of various disciplines has proved to be a fruitful area of research. Less attention has been given to interdisciplinary discourses, even though interest in various aspects of interdisciplinary research has increased in recent years, as demonstrated by a growing body of works concerning interdisciplinary projects and interdisciplinary education (cf. e.g. Carayol 2005; Choi and Pak 2006; Corbacho et al. 2021). The relative scarcity of linguistic studies investigating interdisciplinarity has led Thompson and Hunston (2020) to observe that a major reason for studying interdisciplinary research discourse is that it is an uncommon thing to do. This paper contributes to research on the nature of interdisciplinary discourses by examining the formulation of knowledge claims in posthumanist discourse on animals – a type of discourse which represents "critical interdisciplinarity", characterized by questioning "the dominant structure of knowledge and education with the aim of transforming it" (Klein 2017: 28). Posthumanism aims at changing the perception of animals, as well as that of the relations between humans and animals in the soft sciences (the humanities and social sciences). To do so, scholars adopting a posthumanist perspective make references to different types and sources of knowledge concerning animals, often those which are outside their disciplinary backgrounds. However, the properties of posthumanist discourse as an interdisciplinary enterprise, have not, to the best of my knowledge, received significant attention from language scholars. Therefore, the aim of this study is to examine how researchers adopting the posthumanist perspective report and express stance towards data obtained from different types and sources of knowledge. The analysis is conducted using Martin and White's (2005) appraisal framework. The main research questions that this paper aims to address are: (1) to what sources of knowledge concerning animals do the analyzed works refer? (2) what appraisal markers do they employ to qualify claims based on different sources of knowledge?

This article is divided into five sections: Section 2 focuses on disciplinarity and interdisciplinarity in academia; it also provides an overview of the research into disciplinary and interdisciplinary research discourse; Section 3 presents the material and method; Section 4 discusses the results of the study, while Section 5 presents a summary of the findings, and offers some conclusions.

2. Disciplinarity and interdisciplinarity: An overview of earlier research

As noted by Turner (2017: 8), the modern model of disciplinarization in science had largely been shaped by 1910. Despite some concerns regarding the process, such as an anticipated loss of the unity of knowledge (cf. Weingart 2010), disciplines have proved to be "a notion with remarkable persistence" (Hyland 2015: 34). The process

of disciplinarization was accompanied by the development of disciplinary communities with their distinct epistemological frameworks, paradigms, objects of research and rhetorical practices. Hyland (2015: 34) links the existence of distinct discursive practices within disciplines with the researchers' need to embed "their writing in a particular social world which they reflect and conjure up through approved discourses". Cross-disciplinary differences in academic discourse have been analyzed in a number of studies, and with reference to numerous aspects of academic writing, e.g. ways of engaging the reader (Swales et al. 1998; Hyland 2001a; Harwood 2005; Zou and Hyland 2020), author identity (Hyland 2012), self-mentions (Hyland 2001b; Fløttum et al. 2006; McGrath 2016), elements of metadiscourse (e.g. Hyland 2005; Vold 2006; Triki 2021), evaluation (for an overview, see Xie 2020), etc.

While disciplines have persisted, some areas of research are perceived to require interdisciplinary efforts. As observed by Turner (2017: 9), the development of interdisciplinarity was partly motivated by the conviction that some topics were ignored because various individual disciplines did not consider them to be "prestigious". The collaboration between several disciplines may take different forms, which is why several terms have been proposed to name such joint efforts. The major terms in the field include interdisciplinarity, multidisciplinarity and transdisciplinarity (cf. Apostel 1972; Klein 2017). As summarized by Klein (2017), interdisciplinarity involves integration on the level of methodological tools or concepts (e.g. the use of methods from other disciplines to solve a specific problem). Multidisciplinarity, on the other hand, involves the juxtaposition of disciplines, thus providing a wider scope of knowledge, while at the same time retaining the separation of disciplines, whereas transdisciplinarity involves crossing the boundaries between disciplines to ensure a holistic approach to broad areas of research, e.g. cancer treatment (cf. Klein 2017). While a separation of the disciplines involved in multidisciplinarity makes this notion relatively easy to distinguish from the other two, the boundaries between interdisciplinarity and transdisciplinarity are often blurred. There are also certain national preferences regarding the use of both terms. As noted by Barry and Born (2013: 9), "[i]n the Anglo-American academy, the concept of interdisciplinarity has been dominant and has been widely adopted by researchers and funding organizations alike", while the concept of transdisciplinarity "has wider currency in the French and German speaking worlds" (Barry and Born 2013: 10). Moreover, interdisciplinarity itself involves different types of relations between disciplines. Barry and Born (2013) distinguish between three major modes of interdisciplinarity: (1) the integrative-synthesis mode, where both disciplines contribute equally to the research activities; (2) the subordination-service mode, where one discipline occupies a subordinate position in relation to the other, and (3) the agonistic-antagonistic mode, where the aim of an interdisciplinary effort is to contest the assumptions of a certain discipline. Considering the complex and varied nature of the relations between different disciplines involved in interdisciplinary research, interdisciplinary discourse seems to offer a rich vein of potential research material.

In comparison with cross-disciplinary studies of academic discourse, works examining interdisciplinary discourses are, however, rather scarce, and concern a

relatively narrow range of topics. Several studies have compared selected features of the discourses of two disciplines with those found in the discourses of their interdisciplines. An example is Teich and Hiltz (2009), who compare selected lexicogrammatical patterns in linguistics and computer science research articles with those found in research articles in the field of computational linguistics; another example is Muguiro (2019), who discusses citation practices and the use of adjectives of importance in research articles from the interdisciplines of educational neuroscience, economic history, and science and technology. Another topic in the area of interdisciplinary discourse that has received scholarly attention is the communication within multidisciplinary research teams, studied by Choi and Richards (2017). Thompson and Hunston (2020), in contrast, have examined the language of interdisciplinary environmental journals, concentrating, amongst other aspects, on how researchers from different disciplinary backgrounds write articles for an interdisciplinary audience.

Unlike such interdisciplines as computational linguistics or neurolinguistics, posthumanism has not arisen as a result of a merger between two disciplines. It does not represent the integrative-synthesis mode of interdisciplinarity (cf. Barry and Born 2013), where both disciplines equally contribute to research projects. Neither does it involve the joint efforts of multidisciplinary research teams. Therefore, the findings of previous studies into interdisciplinary discourses do not have a direct bearing on the analysis conducted in this study. Posthumanism is one of the "new interdisciplinarities", which developed as a result of the "critical turn" in the humanities and social sciences that began in the 1960s, and adopted names containing such prefixes as "anti", "post", "non" and "de" (Klein 2017: 28). As observed by Klein (2017: 28), critical interdisciplinarity "interrogates the dominant structure of knowledge and education with the aim of transforming it, raising questions of value and purpose". It also aims at "deconstructing disciplinary knowledge and boundaries, blurring boundaries of the epistemological and the political" (Klein 2017: 28; cf. also Lattuca 2001). Posthumanism rejects the traditional opposition between humans and animals in favour of a more inclusive treatment, as evidenced by the use of such formulations characteristic of posthumanist discourse as "human and non-human animals" or "humans and other animals". It uses knowledge from biological sciences to change the perception of animals and human-animal relations in the soft sciences. As such, it is likely to have developed its own discursive practices, some of which are examined in this study.

3. Material and method

Most studies of academic discourse examine the language of research articles, which are considered "the pre-eminent genre of the academy" (Hyland 2010: 117). The genre that this paper focuses upon, i.e. the scholarly monograph, has received less attention from language scholars, even though, as demonstrated by Williams et al. (2009: 73), "the monograph remains the single most valued means of scholarly

publishing and communication within the A&H [arts and humanities] field, and is widely seen as essential in making career progress". Since studies of academic discourse are increasingly broadening their scope of enquiry to include such forms of academic communication as works of popular science (e.g. Hyland 2010; Pilkington 2018) and blogs (Hyland and Zou 2020; Zou and Hyland 2020), I believe that the language of monographs also merits scholarly attention. The monograph is a more heterogeneous genre than the research article. It is not restricted by the structural and methodological conventions that shape the discourse of research articles. The level of specialization and accessibility of scholarly monographs also varies (cf. Williams et al. 2009). As reported by Williams et al. (2009: 73), humanities scholars perceive monographs as allowing for more "depth and flexibility" than research articles.

The material analyzed in this study comprises a collection of claims excerpted from three monographs written from the posthumanist perspective: (1) C. Wolfe's (2003) *Animal rites: American culture, the discourse of species, and posthumanist theory*, (2) D. J. Haraway's (2007) *When species meet*, and (3) A. Pennycook's (2017) *Posthumanist applied linguistics*. Wolfe and Haraway are both noted authors in the field of posthumanist studies. In *American rites*, Wolfe places zoological knowledge within the context of philosophy, literary criticism, and the works of popular culture which discuss issues connected with animals. Haraway is a humanities and social sciences scholar who additionally holds a PhD in biology. In *When species meet*, she links biological findings with philosophy, ecofeminism, literature and animal rights. Pennycook uses the posthumanist perspective to offer new insights into the perception of human language and its relation to systems of animal communication in applied linguistics. The three authors represent different disciplines within the humanities, and, consequently, they operate within different disciplinary discourses. Additionally, the flexible and heterogeneous character of the monograph as a genre allows them to adopt different individual styles of writing. The three monographs are thus quite different on both a rhetorical and stylistic level. What they have in common is that they all attempt to show how current knowledge concerning animals can be used to change the perception of the relation between humans and animals in the humanities, and this is why they have been selected for analysis.

To collect knowledge claims concerning animals for the analysis, I searched electronic versions of the three books for the word *animal* and also all the names of animal species listed in the thematic indexes included in the books, such as *ape, bat, cat, dog, fish, horse, killer whale, octopus, shark, wolf*, etc. I analyzed the contexts in which these words were used to identify claims expressing knowledge about animals, i.e. assertions that animals possess certain characteristics or behave in certain ways, e.g. *Sperm whales form clans which pass on distinctive dialects of sonar clicks to each other, enabling them to synchronize diving and feeding* (Pennycook 2017: 134), and to exclude statements which only made reference to animals, such as *I don't have a dog*. In some cases, a discussion of certain animal characteristics extended over several paragraphs, i.e. a statement containing one of the key words was followed

by a number of claims related to it. Such claims were also included in the analysis, even if they themselves did not include the key words. The total number of claims collected in this way is 140 (48 from Wolfe, 45 from Haraway, 47 from Pennycook). Subsequently, the claims were grouped on the basis of the source and type of knowledge to which they referred, and the ways in which the claims based on different sources of knowledge were qualified. In the discussion which follows, quotations from the three books are marked with the initials of their authors' surnames and numbers indicating the order in which they have been listed for the purposes of this study, e.g. W1, P3.

In the analysis of the collected claims, this paper employs Martin and White's (2005) appraisal framework, which focuses on "the subjective presence of writers/speakers in texts as they adopt stances towards both the material they present and those with whom they communicate" (Martin and White 2005: 1). It offers tools to examine how writers bring other voices into their texts, how they evaluate them, and how they express their feelings towards them. Appraisal comprises three major domains: attitude, engagement and graduation. As explained by Martin and White (2005: 35), attitude is concerned with feelings ("emotional reactions, judgements of behaviour and evaluation of things"). It comprises three subcategories: affect, judgement and appreciation. Affect represents the realm of emotions; it is realized by formulations expressing positive and negative feelings, e.g. *angry, happy, sad, miserable, joy, sorrow, to like, to love, to hate, to weep, to miss sb* (Martin and White 2005: 47–50). Judgement represents the semantic region of ethics; it involves expressing attitudes towards people and evaluating their behaviour, e.g. *witty, eccentric, mature, insightful, brave, cowardly, loyal, disloyal, expert, ignorant* (Martin and White 2005: 53). Appreciation concerns the area of aesthetics; it involves evaluating "things" made by people and people's "performances", and also natural phenomena, using the criteria characteristic of specific fields, e.g. *boring, unremarkable, elegant, simplistic, innovative, shallow, genuine, worthless* (Martin and White 2005: 56). There are cases, however, when a distinction between affect, judgement and appreciation is difficult to make, as all three categories involve some form of evaluation. In this study, the term affect is used with reference to expressions which indicate the feelings and emotions that the works and behaviour of others evoke in the authors of the analyzed books, e.g. *I love, angry*. The term judgement is used to refer to those formulations which concern others (typically other researchers) and their activities, e.g. *they are right* or *he misses the point*, while the term appreciation is employed to refer to those expressions which comment on the value and quality of the work of others, e.g. *a wonderful title, an important work*.

Engagement is concerned with the ways in which different voices are brought into the text. Following Bakhtin (1981), Martin and White (2005) divide utterances into monoglossic (single-voiced, showing no recognition of alternatives) and heteroglossic (showing recognition of other voices). The engagement system they developed concerns heteroglossic utterances. Such utterances are divided into dialogically contractive and dialogically expansive, depending on whether they restrict (contractive) or allow space for alternative views (expansive). Dialogically

contractive utterances are used to "disclaim" a proposition by denying (e.g. *no, never)* or countering it (e.g. *yet, but*), or alternatively, to "proclaim" a proposition by showing strong support for it (the functionalities "concur", e.g. *admittedly…but*, "pronounce", e.g. *indeed*; "endorse", e.g. *the report demonstrates/proves that…*). Dialogically expansive formulations indicate that the authorial voice "entertains" a dialogistic position by presenting it as one of a number of possible alternatives (e.g. *perhaps, possibly*), or "attributes" a proposition to an external voice. Attribution involves neutral acknowledgement, e.g. *reportedly*, as well as distancing formulations, e.g. *claim*.

Graduation refers to "grading phenomena whereby feelings are amplified and categories blurred" (Martin and White 2005: 35). It is linked to both attitude and engagement because expressions of attitude are gradable (e.g. *happier, very upset*) and expressions of engagement indicate different "degrees of investment" in an utterance on the speaker's part (e.g. *I suspect* – a low level of investment; *I am convinced* – a high degree of investment) (Martin and White 2005: 36).

4. Results and discussion

4.1. Quantitative data

The claims concerning animals and their relations with humans that have been collected and analyzed for the purposes of this study are based on five major sources of knowledge: (1) knowledge established within biological disciplines; (2) knowledge established within the soft sciences; (3) interdisciplinary knowledge; (4) the authors' own experience with animals; (5) other people's experience with animals. In the analyzed data, claims referring to different sources of knowledge tend to be qualified with different appraisal markers. Table 1 lists the appraisal markers identified in the analyzed claims, together with their frequencies. Some claims referring to the authors' own experience and interdisciplinary sciences are monologic and contain no engagement markers, which is why their number is lower than the overall number of claims within these categories.

As shown in Table 1, most of the analyzed claims refer to knowledge established within the soft sciences and the biological sciences. The less commonly employed sources include the experience of others with animals, the authors' own experience and interdisciplinary knowledge. Since the construction of knowledge concerning animals in the analyzed books mostly involves reporting findings from various external sources, the most frequent type of engagement in the analyzed material is acknowledgement. The major difference between the ways the writers report findings from the biological sciences and those from the soft sciences concerns the use of attitude markers, which are noticeably more frequent in the claims referring to findings in the humanities. Graduation markers are also more frequently used with reference to claims concerning the perception of animals in the soft sciences. The specific differences between the ways in which the analyzed claims based on different sources of knowledge are qualified are discussed in section 4.2.

Sources of knowledge	Number of claims	Appraisal markers		
		Engagement	Attitude	Graduation
biological sciences	53	53 acknowledgement (43) endorsement (7) "entertain" (2) pronouncement (1)	7 positive affect (3) positive appreciation (3) positive judgement (1)	2
soft sciences	68	68 acknowledgement (59) distancing (1) "entertain" (8)	40 positive affect (1) negative affect (4) positive appreciation (12) negative appreciation (5) positive judgement (7) negative judgement (11)	10
interdisciplinary knowledge	3	1 acknowledgement (1)	2 positive appreciation (2)	—
the authors' experience with animals	6	4 pronouncement (4)	—	—
other people's experience with animals	10	10 acknowledgement (8) endorsement (1) "entertain" (1)	4 positive judgement (1) positive appreciation (3)	1
Total	**140**	**136**	**53**	**13**

Table 1: Appraisal markers used to qualify claims based on different sources of knowledge about animals

4.2. Discussion

4.2.1. Claims referring to knowledge established within biological disciplines

The biological knowledge referred to in the analyzed claims comes from various branches of zoology, particularly ethology, which studies animal behaviour, and cognitive ethology, which investigates animal cognition. References to biological knowledge provide the point of departure for the researchers' discussions concerning the posthumanist perspective on animals and its relevance for the study of animals in the soft sciences. Such claims are essentially intended to demonstrate how intelligent animals are, and how close they are to humans in terms of their cognitive processes, abilities and behaviour. As shown in Table 1, claims reporting biological knowledge tend to use acknowledgement (*X argues, Y discusses*), as in (1), and, less often, endorsement, expressed by the factive verbs *show* and *demonstrate*, as illustrated in (2).

(1) Tomasello (2008, p 55) *argues*, "ape gestures – in all of their flexibility and sensitivity to others" rather than ape vocalizations are the "original font from which the richness of and complexities of human communication and language have flowed". (P26)
(2) For example, Margaret McFall-Ngai *has shown* that the sacs housing luminescent Vibrio bacteria on the adult squid Euprymna scolopes do not develop unless juvenile squid acquire an infection from the bacteria, resulting in a cascade of developmental events producing the final receptacles for the symbionts. (H8)

Acknowledgements present data as coming from external sources without explicitly signalling the writers' own opinions on the subject, while endorsing formulations construe "propositions sourced to external sources … as correct, valid, undeniable or otherwise maximally warrantable" (Martin and White 2005: 126). External voices tend to be brought in to provide support for the writers' arguments (Martin and White 2005), while factive verbs, such as *show* and *demonstrate*, are used to "indicate that other researchers are cited first and foremost to present what has already been found or shown in the research territory in question" (Fløttum et al. 2006: 236). In the analyzed material, acknowledgements and endorsements signal that the biological knowledge referred to is reliable and can serve as the basis for discussing and changing the perception of animals outside the biological disciplines.

Interestingly, the endorsing formulations identified in the analyzed data do not necessarily refer to strictly scientific sources. Some of them (3 out of 7) make reference to popular science books, nature documentaries, and articles published in non-scientific magazines, such as *Time* and *Newsweek*, as shown in (3)–(5).

(3) *Studies have now shown* birds capable of "toolmaking, culture, reasoning, the ability to remember the past and think about the future, to adopt another's perspective, to learn from one another" (Ackerman, 2016, p11). (P12)
(4) And PBS and cable television – most recently in the big-budget PBS series on "the animal mind" hosted by *Nature* executive producer George Page – have made standard fare out of *one study after another convincingly demonstrating* that the traditionally

distinctive marks of the human (first it was possession of a soul, then "reason," then tool use, then tool making, then altruism, then language, then the production of linguistic *novelty*, and so on) flourish quite reliably beyond the species barrier. (W2)

(5) Over the past several years *Time*, *Newsweek*, and *U.S. News and World Report* have all run multiple cover stories on new developments in cognitive ethology that *seem to demonstrate more or less conclusively* that the humanist habit of making even the *possibility* [italics original] of subjectivity coterminous with the species barrier is deeply problematic, if not clearly untenable. (W1)

Since researchers tend to cite sources which their disciplinary communities are likely to perceive as credible, the references to the nature documentaries and popular science works identified in the analyzed books reveal their authors' belief that humanistic audiences will accept such sources as sufficiently credible. In (5), the endorsement marker *demonstrate* is mitigated by the dialogically expansive marker *seem to* (the functionality "entertain"), and combined with the graduation marker *more or less conclusively*; both of which lower the degree of authorial investment in the content of the claims, but the very fact that *Time*, *Newsweek*, and *U.S. News and World Report* are cited indicates the author's conviction that science sections in newspapers may serve as reliable sources of biological knowledge in the humanities. The importance of popular science as a source of knowledge for members of the scientific community has been noted by Pilkington (2018: 4), who argues that "[p]opular science … opens up the scientific community to a level of examination otherwise not accessible". It offers researchers access to recent developments in areas which are outside their fields of expertise. As summarized by Pilkington (2018: 3), "[o]ne of the side effects of the professionalization of science is increased specialization. A physicist and a marine biologist are both scientists, but one will not be able to grasp all the intricacies of the other's research without the help of popularization". In the analyzed texts, popular science serves as a bridge between the biological sciences and the humanities. It enables researchers in the soft sciences to familiarize themselves with current biological knowledge, which they subsequently use to challenge the claims and assumptions about animals made in their own disciplinary fields. As argued by Hyland (2010: 118), "it would be a great oversimplification to dismiss popular science as merely infotainment. This is a discourse related to the academy, its work, and its forms of communication but stripped of its more forbidding rhetorical features". Scholarly monographs are not expected to possess all the "forbidding rhetorical features" of research articles, which might be one of the reasons why they appear more likely to make reference to popular science. Indeed many popular science works are written by researchers who treat them as alternative publication outlets (cf. Bucchi 1998; Turney 2007; Pilkington 2018), with Pilkington (2018:3) concluding, based on a number of examples from the field of physics, that "[n]ot only does popular science address professional scientists, but it also serves as a medium for negotiation and development of ideas, as much as the research article does". The results of this study provide evidence for the importance of popular science in the development of ideas in the humanities.

Another characteristic property of the analyzed claims referring to biological knowledge is that they contain relatively few markers of attitude. Only one expresses a negative attitude (example 8), while the others are all positive (*I love, wonderful, crucial, convincingly*). Example (6) illustrates the use of *I love* (positive affect) to refer to biological knowledge; example (7) shows one of the contexts in which the adjective *wonderful* expresses positive appreciation for reports in the area of developmental biology.

(6) *I love* the fact that human genomes can be found in only about 10 percent of all the cells that occupy the mundane space I call my body; the other 90 percent of the cells are filled with the genomes of bacteria, fungi, protists, and such, some of which play in a symphony necessary to my being alive at all. (H1)

(7) Scott Gilbert's several editions of *Developmental Biology*, starting in 1985, are a *wonderful* site to track a growing grasp of the centrality of reciprocal induction, through which organisms are structured by the mutual coshaping of the fates of cells. (H9)

(8) No one has yet looked for the evidence of human genetically stabilized abilities showing how domestic associates such as dogs and cattle have shaped people, partly because of the dualistic assumption that people change culturally, but animals change only biologically, since they have no culture. Both parts of this assumption are *surely wrong*, even making allowances for irresolvable fights over what "culture" means among different communities of practice. (H14)

Expressions of a positive attitude strengthen the authors' argumentation concerning the need to incorporate the knowledge produced in biological sciences into some areas of the soft sciences. The almost complete lack of expressions of negative attitude towards the reported biological research may result from the researchers' focus on those biological findings which support their argumentation. It is also likely that since, with the exception of Haraway (the only author expressing a negative attitude regarding biological research), they are not experts in biological sciences, they may not feel competent enough to express criticism in those areas.

4.2.2. References to knowledge established within the soft sciences

Needless to say, observations concerning animals in the soft sciences are of a different character than those provided by the biological sciences. The humanities tend to focus more on animal rights, on relations between animals and humans, and, particularly in the case of linguistics, on animal communication systems. They do not usually provide new empirical data on the abilities of animals, but rely more on reasoning and the interpretation of different views. As in the case of claims based on findings in the biological sciences, the most frequent type of engagement identified in the claims concerning the perception of animals in the soft sciences is acknowledgement (e.g. *X notes, X and Y report*). However, in contrast to the acknowledgements concerning biological knowledge, those related to the soft sciences are often accompanied by markers of attitude, both positive and negative, as illustrated in examples (9)–(11). They are also more frequently combined with markers of the functionality "entertain", such as *I think*, as exemplified in (10), and markers of graduation, e.g. *profound* in (11).

(9) "If one was caught in a spring brushfire a deep ecologist would be bound ethically to save a California condor hatchling over a human child, because the former—given its rarity—is much more valuable" …. For both Luke and Ferry, deep ecology attributes human qualities, and gives at least somewhat human status, to the nonhuman realm of nature… Ferry *is right* to point out the real danger of believing that "Nature in itself contains certain objectives, certain goals… independent of our opinions and our subjective decrees." (W34)

(10) Animals do indeed communicate: from bees to birds, orcas to dogs, there are many ways in which animals communicate with each other and with humans. But this communication is not in itself usefully termed language unless we want to reduce the idea of language to all forms of communication (to suggest, for example, that a lighthouse flashing in the night to warn a ship of a nearing coastline is a form of language). Some see this as an anthropocentric argument in itself – to hold on to language as human is to remain fixated on human capacities – but *I think* this objection *misses the point*. (P41)

(11) The making each other available to events that is the dance of "becoming with" has no truck with the fantasy wolf-pack version of "becoming-animal" figured in Gilles Deleuze and Félix Guattari's famous section of A Thousand Plateaus, "1730: Becoming-Intense, Becoming-Animal, Becoming-Imperceptible." … Despite much that *I love* in other work of Deleuze, *here I find little* but the two writers' scorn for all that is mundane and ordinary and the *profound absence* of curiosity about or respect for and with actual animals, even as innumerable references to diverse animals are invoked to figure the authors' anti-Oedipal and anticapitalist project. (H21)

The relatively frequent use of markers of attitude in relation to knowledge produced in the soft sciences is consistent with a more general tendency for greater explicit personal involvement by writers in the humanities and social sciences than those working in the hard sciences (cf. Hyland 2004, 2015). As observed by Hyland (2015), in the soft sciences, the methods and results are generally more open to question than in the hard sciences, which is why the soft sciences are more discursive. The use of formulations expressing negative judgement, such as *misses the point* (P41), *is unable to satisfactorily address an important issue* (W41), negative appreciation, such as *mischievous example* (W29), *desperate attempt* (W30), and negative affect, e.g. *it's a pity* (P39), *leave me so angry* (H20) may be linked with the general aim of posthumanism and other critical interdisciplinarities to question, deconstruct and transform the dominant disciplinary knowledge (cf. Klein 2017). The employment of such discursive strategies also indicates, somewhat obviously, that the writers feel more comfortable and more confident within the boundaries of their own disciplines. The presence of the rather informal expressions of affect, such as *I love* and *angry*, which are not usually found in academic discourse, may be linked to the rhetorical flexibility of the scholarly monograph as a genre, which allows scholars to develop a more personal style of writing. In the analyzed data, such informal expressions of affect are only found in Haraway's monograph, and seem to indicate the individual stylistic preferences of the author.

4.2.3. References to interdisciplinary knowledge

There are only three references to interdisciplinary research in the analyzed data. They all come from a single author (Haraway); two of them express a positive attitude

towards interdisciplinary efforts, and one uses neutral acknowledgement to report the results of an interdisciplinary project (*the authors argue*: H35). Such treatment reveals a favourable attitude towards the integration of biological knowledge and the knowledge produced in the soft sciences, which permeates the book. The use of a formulation expressing a positive attitude towards interdisciplinary research is exemplified in (12).

(12) Susan Squier, a professor at Pennsylvania State University, is doing *wonderful* research that links biomedical, biological, literary, feminist theoretical, and science studies dimensions of chicken–human relations. (H33)

4.2.4. Claims based on the authors' experience with animals

References to the authors' own experience with animals seem to have two functions: (1) they indicate that the authors have some expertise in the field which enables them to make knowledge claims; (2) they create common ground between the authors and their audiences, who do not necessarily have a wide knowledge of biological sciences, but are likely to have had similar experiences with animals, e.g. with their pets. There are considerable differences between the three books as far as the use of references to the authors' personal experience with animals is concerned. Wolfe does not refer to his personal experience at all; Pennycook makes several references of this type; in Haraway's book they are very common. The name of Haraway's dog, Cayenne, appears 162 times in *When species meet*. Not all the references to the authors' experience with animals are knowledge claims; some of them describe their pets' health and activities. Those which concern knowledge about animals tend to be strengthened with pronouncing formulations, which signals that the authors have no doubt as to the validity of their claims, and consider such first-hand experiential knowledge as both reliable and appropriate with respect to being referenced in academic books in the humanities. Illustrative examples are provided in (13) and (14).

(13) As *my work* to maintain the quality of Philippine reefs *has also made very clear*, caring about reefs is about more than endeavouring to halt the destruction caused by climate change, overfishing, dynamite fishing and the collecting of fish, shellfish and other creatures for aquariums. (P48)

(14) The global companion-animal industry is big, and the United States is a major player. *I know this* because I have dogs and cats who live in the style in which my whole post-Lassie generation and I have become indoctrinated (H43).

References to the authors' life experience are not likely to occur in research articles in any discipline, and seem to be more characteristic of the discourse in monographs, which offers researchers more freedom as regards the choice of rhetorical conventions. Crossick (2018: 25) argues that monographs allow researchers to "develop and articulate through writing a book what might be seen as their personal and distinctive voice". Monographs are not only written to present the researchers' new findings. As reported by Williams et al. (2009: 74), they are "also written in order for

researchers to pursue intellectual interests and clarify their own positions on various aspects of their specialisms", and are perceived as "a good vehicle for playing with ideas". The three monographs analyzed in this study fit this description rather well.

4.2.5. References to other people's experience with animals

Similarly to popular science, the experiential knowledge reported by those who work with animals provides access to data whose understanding does not require professional expertise in the biological sciences. When referring to such sources of knowledge, the authors of the analyzed books most often use acknowledgement and expressions indicating a positive attitude, as illustrated in examples (15)–(17).

(15) Baba Joseph [assistant at a lab, animal caretaker] *seems to me to offer a deep insight* into how to think about the labor of animals and their people in scientific practices, especially in experimental labs. (H37)
(16) In a *wonderful* understatement, Smuts writes, "At the beginning of my study, the baboons and I definitely did not see eye to eye." (H36)
(17) In her *wonderful* (if sometimes frustrating) book Adam's Task, Vicki Hearne—a master horse and dog trainer as well as a poet and a student of philosophy—provides two *useful* examples of such difference: the dog's sense of smell and the horse's sense of touch. (W45)

In addition to reporting knowledge resulting from other people's experience with animals, the authors appeal to their readers' experience to create a common platform of reference and to build an understanding of the problems discussed in their monographs. Example (18) is a case in point.

(18) When we take a dog for a walk (an activity which, it must be acknowledged, is not necessarily undertaken by the majority of the world's population), it is hard not to notice how the dog's sensory world is dominated by smell, as it moves, nose down, from tree to post to plant. (P46)

As is the case with the other non-scientific sources of knowledge about animals referred to in the analyzed monographs, reliance on experiential knowledge reported by those who look after animals seems to be characteristic of the discursive conventions of monographs. Such references are less likely to occur in research articles, which tend to only reference academic sources.

5. Conclusions

Posthumanist discourse, as exemplified by the three monographs analyzed in this study, builds its knowledge of animals by relying on data produced by biological disciplines, the soft sciences, interdisciplinary projects, as well as the experience of those who work with animals and look after them, including the authors themselves. The inclusion of such a wide range of sources, some of them scientific, some non-scientific, others belonging to popular science, reflects the rather flexible character

of the discursive practices of the scholarly monograph as a genre. The less restrictive nature of the rhetorical conventions of monographs in comparison with those expected from research articles is also visible in the use of rather informal expressions of affect (e.g. *love, angry*) in the analyzed books.

The analysis of claims concerning animals and their relations with humans conducted for the purposes of this study indicates that writers adopting the posthumanist perspective tend to use different appraisal strategies when reporting knowledge obtained from different sources. Claims based on biological knowledge tend to be formulated using neutral acknowledgement (e.g. *X argues*), endorsing formulations (e.g. *X and Y demonstrate*), and expressions of a positive attitude (e.g. *wonderful*), thus supporting the researchers' argument that new knowledge established in the biological sciences can and should be used to change the perception of animals in the soft sciences. When reporting knowledge obtained outside their disciplinary fields, the researchers tend to refer to works of popular science, which confirms earlier findings (Pilkington 2018) concerning the importance of popularization as a bridge between different academic disciplines. Experiential knowledge reported by those who work with animals is also introduced, with either neutral and/or positive markers of appraisal. By describing such experiences and appealing to the readers' own experience with animals, the authors both support their argumentation and build common ground with their audiences, who do not necessarily have a wide knowledge of ethology or animal cognition. The claims concerning knowledge produced in the soft sciences generally contain more expressions of attitude (judgement, appreciation and affect), both negative and positive, which reveals the researchers' self-confidence in their disciplinary knowledge, and is consistent with the frequently observed discursivity of the humanities and social sciences resulting from the fact that their methods and results are more open to debate than those of the hard disciplines (cf. Hyland 2004, 2015). The analyzed claims concerning the perception of animals in the soft sciences more often contain expressions revealing a negative attitude than those concerning the biological knowledge. This tendency is consistent with the aims of the agonistic-antagonistic mode of interdisciplinarity (cf. Barry and Born 2013) represented by posthumanism, i.e. challenging and questioning the dominant knowledge of the discipline within which it is applied.

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