

Spiders behaving badly in the Middle English Physiologus, the Bestiaire attributed to Pierre de Beauvais and Odo of Cheriton's fables

Cavell, Megan

DOI:

[10.1007/s11061-020-09645-7](https://doi.org/10.1007/s11061-020-09645-7)

License:

Creative Commons: Attribution (CC BY)

Document Version

Publisher's PDF, also known as Version of record

Citation for published version (Harvard):

Cavell, M 2020, 'Spiders behaving badly in the Middle English Physiologus, the Bestiaire attributed to Pierre de Beauvais and Odo of Cheriton's fables', *Neophilologus*, vol. 104, no. 4, pp. 567–583.

<https://doi.org/10.1007/s11061-020-09645-7>

[Link to publication on Research at Birmingham portal](#)

General rights

Unless a licence is specified above, all rights (including copyright and moral rights) in this document are retained by the authors and/or the copyright holders. The express permission of the copyright holder must be obtained for any use of this material other than for purposes permitted by law.

- Users may freely distribute the URL that is used to identify this publication.
- Users may download and/or print one copy of the publication from the University of Birmingham research portal for the purpose of private study or non-commercial research.
- User may use extracts from the document in line with the concept of 'fair dealing' under the Copyright, Designs and Patents Act 1988 (?)
- Users may not further distribute the material nor use it for the purposes of commercial gain.

Where a licence is displayed above, please note the terms and conditions of the licence govern your use of this document.

When citing, please reference the published version.

Take down policy

While the University of Birmingham exercises care and attention in making items available there are rare occasions when an item has been uploaded in error or has been deemed to be commercially or otherwise sensitive.

If you believe that this is the case for this document, please contact UBIRA@lists.bham.ac.uk providing details and we will remove access to the work immediately and investigate.



Spiders Behaving Badly in the Middle English *Physiologus*, the *Bestiaire* Attributed to Pierre de Beauvais and Odo of Cheriton's Fables

Megan Cavell¹

© The Author(s) 2020

Abstract

Two remarkably similar depictions of spiders survive in Middle English and French sources from the middle of the thirteenth century. Both of these vernacular versions of the *Physiologus* deviate so wildly from their sources when it comes to describing these creatures that their editors have declared these passages to be entirely original. And yet, the spiders who survive in the Middle English *Physiologus* and the long version of the *Bestiaire* attributed to Pierre de Beauvais perform such similar work that their originality may be called into question. The *Physiologus'* and *Bestiaire's* descriptions of spiders' violent hunting methods were likely informed by the burgeoning of natural history writing that accompanied the recovery of Aristotle's *History of Animals*, but for these texts' allegorical interpretations I argue that we should look to Odo of Cheriton's Latin fables from earlier in the thirteenth century. There is an explicit link between Odo's fables and the Middle English *Physiologus* and implicit connections with the French *Bestiaire*. Together, these analogues demonstrate a small but coherent tradition of emphasizing the diabolical violence of spiders in the multilingual environment of thirteenth-century England and France.

Keywords Spiders · Thirteenth century · Middle English *Physiologus* · Pierre de Beauvais · *Bestiaire* Long Version · Odo of Cheriton

Spiders were ubiquitous in early and high medieval European life, even if the written record largely ignores their presence. The majority of literary spiders from this period are contained within references to Psalms 38.12 and 89.9, repurposings of Isidore of Seville's *Etymologiae* (XII.v.2), and in texts that detail medical issues involving venomous bites (see Cavell 2018). Interestingly, spiders play virtually no

✉ Megan Cavell
m.c.cavell@bham.ac.uk

¹ School of English, Drama and Creative Studies, University of Birmingham, 31 Pritchatts Rd, Birmingham B15 2SD, UK

role in the illuminated bestiary tradition, with the latter's substantial expansion of the tradition's core text: the *Physiologus*. Despite the limited attention paid to spiders in this period, two remarkably similar depictions do survive in Middle English and French sources from the middle of the thirteenth century. Both of these vernacular versions of the *Physiologus* deviate so wildly from their sources when it comes to describing spiders that their editors have declared these passages to be entirely original. And yet, the spiders who survive in the Middle English *Physiologus* and the long version of the *Bestiaire* attributed to Pierre de Beauvais perform such similar work that their originality may be called into question. Their descriptions of spiders' violent hunting methods were likely informed by the burgeoning of natural history writing that accompanied the recovery of Aristotle's *History of Animals*, but for their allegorical interpretations I argue that we should look to Odo of Cheriton's Latin fables from earlier in the thirteenth century. There is an explicit link between Odo's fables and the Middle English *Physiologus* and implicit connections with the French *Bestiaire*. Together, these analogues demonstrate a small but coherent tradition of emphasizing the diabolical violence of spiders in the multilingual environment of thirteenth-century England and France.

The early Middle English verse *Physiologus* survives in a single version: London, British Library, Arundel 292, which is dated to around 1300 and contains works in Latin, English and French (Wirtjes 1991, p. ix). The poem's most recent editor, Hanneke Wirtjes, has suggested that it should be dated to early in the second half of the thirteenth century on orthographical, morphological, and phonological grounds (1991, pp. xl–lii). Wirtjes further notes that the version that survives is a letter-by-letter copy of an earlier exemplar, with corruptions that likely indicate more than one layer of transmission, although the date of composition for the poem's archetype is unfortunately not clear (1991, pp. xli–lii). What is clear, however, is the source of this Middle English text: the eleventh-/twelfth-century Latin *Physiologus* by Theobald, possibly of Italian origin but whose identity is otherwise unknown (Eden 1972, pp. 5–7). This metrical *Physiologus*, with its descriptions of thirteen animals, was a popular school-book with a widespread reception throughout medieval Europe (Curley 1979, p. xxviii; McCulloch 1962, pp. 25, 40). Theobald's apparently original description of the spider and its allegory, *De Araneo* (ch. 7), reads:

Vermis araneus exiguus
 Plurima fila net assiduus,
 Texere que studet artificus.
 Retia sunt ea, musca, tibi,
 Ut volitans capiaris ibi,
 Dulcis et utilis esca sibi.
 Huic placet illud opus tenue,
 Sed sibi nil valet ut fragile:
 Quelibet aura trahit patulum;
 Rumpitur et cadit in nihilum.
 Hos sequitur homo vermiculos,
 Decipiendo suos socios,
 Quos comedit faciens miseros;

Et placet inde sibi nimium,
 Quando nocere potest alium.
 Ille tamen mala queque facit,
 Cum moritur, quasi tela cadit,
 Qua modo dictus araneus it. (Eden 1972, pp. 52/54)

(The small insect, the spider, ceaselessly spins many threads, which, expertly, it strives to weave. Those are nets for you, fly, so that you are caught there, flying, a sweet and profitable meal for it. That delicate work is pleasing to this one, but it is worth nothing to it as fragile as it is: any breeze draws it apart; it is destroyed and falls into nothing. A man follows these small insects, cheating his own companions, making them miserable he devours them; and that gives him great pleasure when he is able to harm another. Yet whatever evil that one brings about, when he dies he falls like the web, on which the aforementioned spider walks.) (own translation)

When it comes to this spider, the editor P. T. Eden argues that it is one of Theobald's 'most original compositions' (1972, p. 5). Eden finds no source among the many versions of the *Physiologus* circulating at the time, suggesting that some detail may be drawn from Isidore of Seville and noting that the spider description includes no scriptural material and only 'ad hoc moralising' (1972, p. 5). Ultimately, Eden concludes that the spider's 'treatment is in the spirit of the amplified and eclectic Bestiaries of the twelfth century and later. If such existed which served Theobaldus as his sole and immediate source, it has yet to be discovered' (1972, p. 5). And yet, this spider clearly owes a debt to both the classical and biblical traditions that focus on the artistry of the creature and its (literal and metaphorical) weakness, respectively (Cavell 2018, pp. 4–18).

The Middle English translation is, however, nothing like Theobald's spider. It reads:

Seftes sop ure Seppande, sene is on werlde,
 Leiðe & lo[dl]ike, ðus we it leuen,
 Manikines ðing, alle manne to wissing.
 ðe spinnere on hire [web] swi[ðe] 3e weweð,
 Festeð atte hus-rof, hire fo [ð]redes,
 O rof er on ouese, so hire if on elde,
 Werpeð ðus hire web, & weueð on hire wise.
 ðanne 3e it haeuð al idi3t, ðeden 3e driueð,
 Hitt hire in hire hole, oc ai 3e it biholdeð
 Til ðat ðer fle3es faren & fallen ðerinne,
 Wiðeren in ðat web, & wilen ut wenden.
 ðanne renneð 3e rapelike, for 3e is ai redi:
 Nimeð anon to ðe net & nimeð hem ðere.
 Bitterlike 3e hem bit & here bane wurdeð,
 Drepeð & drinkeð here blod, doð 3e hire non oðer god,
 Bute fret hire fille, & dareð siðen stille.
 Dis wirm bitokeneð ðe man ðat oðer biswikeð,

On stede er on stalle, stille er lude,
 In mot er in market, er oni oðer wise.
 He him bit ðan he him bale selleð
 & he drinkeð his blod wanne he him dreueð
 & ðo freteð h[i]m al ðan he him iuel werkeð.¹ (Wirtjes 1991, pp. 12–13, ll. 313–332)

(Our creator created creatures, visible in the world, detestable and loathsome, and so we believe that many different kinds of things are for humanity's instruction. The spider on her web, she quickly weaves, fastens her variegated threads at the roof of the house, from the roof or from the eaves, as if she were on a hill, threads thus her web, and weaves it in her manner. When she has it all ready, she dashes away from there, hides in her hole, but she always looks upon it until flies come to it and fall therein, writhe in that web, and want to go out. Then she runs hurriedly, for she is always ready: immediately she steals to the net and seizes them there. Fiercely she bites them and becomes their murderer, subdues them and drinks their blood, she does for herself no other good, but eats her fill, and then sits still. This bug signifies the man who deceives another, in one place or another, under any circumstances, in a meeting or in the market, or in any other way. He bites him when he does him harm and drinks his blood when he troubles him and then eats him when he continually causes evil for him.) (own translation)

It is immediately clear that the Middle English version is either adapting Theobald's material in a very innovative way or working from another source. The two texts differ a great deal. Theobald's emphasis on fragility and weakness, as well as his poem's light tone and reminder of human transience at the end of the allegorical interpretation all give way to a Middle English crime drama.

This drama unfolds in a new setting, with distinct references to the home—*hus-rof* [...] / *O rof er on ouese* (the roof of the house, from the roof or from the eaves)—and to a variety of public spaces—*On stede er on stalle*, [...] / *In mot er in market* (in one place or another, [...] in a meeting or in the market). This focus on both private and public spaces—and the gendered work associated with them—may speak to the introduction of gendered pronouns, at least in part.² The weaving spider is now emphatically female, even if the allegory concerns deceptive men. That deceptiveness partly stems from the focus on the spider's hiding and spying—*ðeden ze driueð*, / *Hitt hire in hire hole, oc ai ze it biholdeð* (she

¹ Letters enclosed by square brackets are editorial emendations that do not appear in the manuscript. I have silently erased other editorial marks.

² This may also be attributed to information in early natural histories. For example, Aristotle states: 'The work and hunting is done by the female; the male shares the benefit' (1991, bk 8, ch. 39, p. 331), and Pliny follows him: *feminam putant esse quae texat, marem qui venetur; ita paria fieri merita coniugio* (People think that it is the female that weaves and the male that hunts, and that thus the married pair do equal shares of service) (1991, bk 11, ch. 28, pp. 484–5). This detail is repeated in the thirteenth century by Thomas of Cantimpré (1973, bk 9, ch. 3, p. 298), Vincent of Beauvais (1964, bk 20, ch. 112, p. 1525) and Albertus Magnus (1916, bk 8, no. 4, ch. 1, pp. 628–629; 1999, p. 578).

dashes away from there, hides in her hole, but she always looks upon it)—which is equally not present in Theobald’s text.

There is a counterpart to this description of the spider hiding in a hole in Aristotle’s *History of Animals*:

Another kind is the so-called wolves. Now this small one does not weave a web, while the larger one weaves a thick and poor web on the ground and on the dry-stone walls: it always makes the web over the apertures, but remains inside watching over the starting-threads until something falls in and moves; then it approaches. (1991, bk 8, ch. 39, p. 329)

Pliny the Elder condenses but retains this point in his *Naturalis historia: luporum minimi non texunt; maiores in terra, et cavernis exigua vestibula praepandunt* (Of the wolf-spiders the smallest do not weave a web, but the larger ones live in the ground and spin tiny anterooms in front of their holes) (1983, bk 11, ch. 28, pp. 480–481). This detail refers to wolf spiders, not to the web-weavers whose skill both Aristotle and Pliny devote the majority of their chapters to praising. In Aristotle, however, one type of web-weaver is attributed to hiding in a hole in the web itself:

Of the spiders that are smooth and weave a close web there are two kinds, one bigger and one smaller. Now the longer-legged one keeps watch from below by hanging on, so that the creatures may not be frightened and beware but may fall in above it (for because of its size it is not easily hidden); but the better proportioned one keeps watch from above, screening itself in a small hole in the web. (1991, p. 331)

Perhaps it is to the recovery of Aristotle, rather than to Pliny, that we owe this particular detail.

While Pliny’s work had been circulating in Europe from an early date, the recovery of Aristotle in the High Middle Ages certainly influenced the natural history writing that newly emerged in the mid-thirteenth century, especially among scholars and preachers of theology studying in Paris. Thomas of Cantimpré’s *De natura rerum* (composed c.1225–1245), Bartholomaeus Anglicus’s *De proprietatibus rerum* (composed c.1220–1240), Vincent of Beauvais’ *Speculum naturale* (part of his *Speculum maius*, composed c.1240–1260) and Albertus Magnus’ *De animalibus* (composed after 1257) all make reference to Aristotle’s *History of Animals*, alongside Pliny. Aristotle’s influence can be seen in specific passages describing spiders in these thirteenth-century natural histories. For example, Thomas of Cantimpré attributes his description of the spider’s reproductive habits to Aristotle (1973, bk 9, ch. 3, p. 298), while both Bartholomaeus Anglicus and Vincent of Beauvais draw on Aristotle to discuss the various types of spiders, their reproduction and hunting methods, including large excerpts that echo the passages above (1964, bk 18, ch. 10, pp. 1009–1013; 1964, bk 20, ch. 112–117, pp. 1526–1528). Albertus Magnus likewise includes such echoes, alongside a great deal of information on Greek terms for

spiders (1916, bk 8, no. 4, ch. 1, pp. 628–629; 1999, pp. 576–577). Interestingly, he also cites his own observation³ of spiders’ hunting methods:

et deinde ascendunt super ipsum, et mordendo pungunt ipsum quousque moriatur aut debiletetur, et tunc ascendunt in rete ad locum thecae, ubi reponitur cibus, et post se trahunt filum et attrahunt bestiolam quasi per funem suspensam: et hoc iam vidimus propriis oculis, et mirati sumus sollertiam araneorum. (1916, p. 630)

(Then they [the spiders] get on its back and bite and sting it [the prey] until it dies or is weakened. They then climb the net to the repository where their food is kept, drawing the little creature behind them as if it were hung on a rope. We have seen this with our own eyes and have marveled at the cleverness of spiders.) (1999, p. 579)

Albertus’s comment betrays a respect for spiders that is not mirrored in the Middle English *Physiologus*. While this particular natural history could not have acted as a source for the vernacular poem (if we accept Wirtjes’ theory about its dating and transmission), it is an excellent example of the culmination of the thirteenth-century natural history tradition, which saw descriptions of spiders and their hunting methods circulating widely. These were still largely in line with Aristotle and Pliny’s positive reception of spiders.

In addition to praising the artistic precision of web-weaving spiders’ methods, both Aristotle and Pliny (and their thirteenth-century followers) also focus on the creatures’ readiness and watchfulness. Aristotle writes: ‘she does her hunting at the centre where she keeps watch’ (1991, p. 331). And Pliny states: *cum vero captura incidit, quam vigilans et paratus accursus!* (But when a catch falls into the web, how watchfully and alertly it runs to it!) (1991, pp. 482–483). This is repeated nearly verbatim in both Thomas of Cantimpré’s and Vincent de Beauvais’s natural histories (1973, p. 298; 1964, p. 1527). The Middle English spider is equally watchful, ready and eager in her hunting (Cavell 2018, p. 40). Yet, while the classical natural histories and their followers are interested primarily in the spider, the Middle English *Physiologus* focuses our attention on her prey’s struggle: *ðat ðer flezes fare & fallen ðerinne, / Wiðeren in ðat web, & wilen ut wenden* (flies come to it and fall therein, writhe in that web, and want to go out). While this shift in focus may stem from Theobald’s apostrophe to the fly, the change of tone from light to foreboding is remarkable.

This foreboding tone is carried over to the end of the spider’s description, which focuses on her killing methods in detail. After she *nimeð* (seizes) the flies, *Bitterlike ze hem bit & here bane wurðeð, / Drepeð & drinkeð here blod, doð ze hire non oðer god, / Bute fret hire fille, & dareð siðen stille* (Fiercely she bites them and becomes their murderer, subdues them and drinks their blood, she does for herself no other good, but eats her fill, and then sits still). The emphasis on biting and drinking blood is most definitely not present in Theobald’s text, though it does have a

³ Note, however, that direct observation is something of a topos for Albertus Magnus, which occasionally obscures borrowing from other sources (Friedman 1997).

potential parallel in Aristotle: ‘first she binds it round and enwraps it with webs until she has made it helpless, then she lifts it up and carries it away, and if she happens to be hungry she sucks out its juice (for that is what she gains from it)’ (1991, p. 331). While this point is not included in Pliny’s reworking of Aristotle, thirteenth-century natural historians did pick up on it. References to the spider binding its prey make use of the verb *ligare* and noun *ligatio*, and the sucking out of its juices is evoked through combinations of *sugere* (to suck/imbibe) and *humiditas* (moisture/humour) (Bartholomaeus Anglicus 1964, pp. 1009–1010; Vincent of Beauvais 1964, p. 1526; Albertus Magnus 1916, p. 629).

Vincent of Beauvais directly attributes this detail to Aristotle before moving on to provide further information from the *Physiologus*. Here he focuses on the spider in the middle of a circular web, again sucking out the *humiditatem* of captive *bestiola*e (little creatures) before repairing the web and returning to hunting (1964, pp. 1526–1527). It is not clear which *Physiologus* text Vincent is citing; the original *Physiologus* did not contain a spider chapter, which makes Vincent’s reference all the more intriguing. While the precise details noted by Vincent do not appear in Theobald or translations thereof, they do closely relate to Aristotle and Pliny, as well as to descriptions in the other thirteenth-century natural histories.

Regardless, the Middle English poem appears to be adapting Aristotelian source material, perhaps via one of these thirteenth-century natural histories. Even so, in its own description, the Middle English translator takes ample creative license. The final line of the *natura* speaks to the integrity of the Middle English *Physiologus* as a whole; it references the end of the fox’s description, the animal who direct precedes the spider in the Middle English version. Notably, the order is revised from the Latin, which includes the stag between the fox and spider. The end of the fox’s description reads: *Fret hire fille & goð ðan ðer ze wille* (1991, p. 11, l. 280) ([she] eats her fill and then goes where she will), pairing a similar rhyming of the alliterative phrase *fret hire fille* (eats her fill) with the animals’ movement or lack thereof. The fox is similarly interpreted as a symbol of deceit and of the devil (Wirtjes 1991, pp. 11–12, ll. 281–300). She is also depicted as female, though the gendering is more straightforward, given that Latin *vulpes* (fox) is a grammatically feminine noun, which does lead to feminine pronouns in Theobald’s text. As with the spider, the fox undergoes a transformation in the allegorical interpretation of both the Latin and Middle English texts; she becomes a symbol for the devil, deceptive men and Herod. The fox is a multipurpose teaching tool.

The *Physiologus*’s didactic aim is also made clear from the very beginning of the Middle English spider’s description. A new introduction reminds us that all of creation—even *Leiðe & lo[dl]ike* (detestable and loathsome) animals—is there for our instruction. Considering this overtly didactic motive, it is notable that the allegorical interpretation focuses entirely on the deceptive man’s actions and includes no reference to his downfall, as in Theobald’s Latin version.

Given the extensive license the Middle English translator takes with the source, it is interesting to note that—while there are other places where the Middle English adapts sections of Theobald’s text (especially his allegories)—the spider is the *only* animal to be entirely revised. One further Theobaldian animal (the onocentaur) is eliminated from the Middle English version, and one animal (the dove), which

does not appear in Theobald, is added to the Middle English, drawing on Alexander Neckam's late twelfth-century *De naturis rerum* for its material (Wirtjes 1991, p. lxxix). The spider is, however, unique in appearing in both versions, but in very different forms.

I have recently argued that the Middle English *Physiologus*' innovative spider builds on a long tradition of vernacular adaptations of Latin spiders that highlight fear and disgust of these little creatures (Cavell 2018). One notable example is the Old English adaptation of Psalm 89.9 in the *Paris Psalter* (Cavell 2018, p. 40). The Old English metrical psalm expands the original's brief metaphor linking spiders and the fragility of human lifespans to focus attention upon the spider's frightening hunting methods:

Forþam ðe ure dagas ealle geteorudun,
and we on þinum yrre synt swiðe gewæhte.
Wæran anlicast ure winter
geongewifran, þonne hio geornast bið,
þæt heo afære fleogan on nette (Krapp 1933, p. 61, ll. 24–28).

(For our days have ceased entirely, and in your anger we are very troubled. Our winters are most like a spider, when it is most eager, that it may frighten flies into its net) (own translation).

This expansion seems to derive from and build upon Cassiodorus' sixth-century commentary on the same psalm, which—while still emphasizing the weakness of spiders that can be seen throughout the biblical tradition and its many psalm commentaries (Cavell 2018, pp. 15–16, 32–34)—links their cunning to human malice and deceit:

Malignitatem uitae nostrae posita similitudo declarat. Aranea est enim animal debile ac tenuissimum, quod transeuntibus muscis ad escam sibi procurandam quaedam retia dolose contextit: sic anni eorum qui sceleratis operibus dediti sunt, inanibus et subdolis machinationibus occupantur. (Cassiodorus 1958, p. 825)

(The specified parallel reveals the malice of our lives. For a spider is a weak and feeble animal, which cunningly weaves nets for passing flies in order to procure its food. Thus the years of those who are devoted to evil deeds are occupied with empty and deceitful tricks.) (own translation)

There is an overt link to this psalm in at least one of the thirteenth-century natural histories mentioned above. Vincent of Beauvais's description of the spider cites glosses of both Psalms 38.12 and 89.9⁴ that emphasize the futility of spiders' weaving and the weakness of their webs, as well as the relevance of spiders to human corruption and hypocrisy (1964, pp. 1526, 1528). Psalm-spiders and commentaries upon them, thus, continued to hold relevance to thirteenth-century natural historians, who were themselves well-versed in theology. Furthermore, although the Old

⁴ This is mis-numbered as Psalm 79 in the edition.

English psalm expansion is far briefer than the Middle English *Physiologus*' own adaptation of its source, they both provide cases of a versifying translator deviating from source material to heighten the fear factor by describing the violent hunting practices of spiders and their 'nets'. I have argued elsewhere that these texts speak to the presence of arachnophobia in the vernacular record of early and high medieval England (Cavell 2018).

While that may yet be the case, the similarities between the Middle English *Physiologus* and the long version of the French prose *Bestiaire* attributed to Pierre de Beauvais demand a wider scope that speaks to the multilingualism of medieval Europe, especially given the links between the thirteenth-century natural historians and Paris, all of whom studied or lectured there at some point from the 1220s to the 1240s. The long version of the *Bestiaire* survives in five manuscripts and one fragment, dated from the mid-thirteenth to fifteenth centuries (Baker 2010, pp. 55–66). Craig Baker has recently demonstrated that the long version was a reworking of Pierre de Beauvais' early thirteenth-century text by an unknown author, and has dated the text itself to between 1246 and 1268 (2010, pp. 15–20)—the same mid-thirteenth-century period that saw the Middle English text appear in Arundel 292 and Aristotle's spiders come to life in Vincent of Beauvais' and Albertus Magnus' work. Thomas of Cantimpré's and Bartholomaeus Anglicus' work would already have been in circulation by this point.

The unknown author of the long version of the *Bestiaire* appears to have worked with French sources, rather than Latin, in order to augment Pierre de Beauvais' thirty-eight chapters and to add a further thirty-four chapters dispersed throughout (Baker 2010, pp. 13, 21). One of these additional chapters is 'Araigne et Mosche', which reads:

Physiologes nos dist de l'araigne que ce est une orde beste et malvaise; et si dist que la salive d'ome en jun tue le bot et l'araigne se il en gostasent pou ne grant. Si nos fait ci a entendre que li araigne trait de ses entrailles le fil qu'ele file, de coi ele fait sa roi. Et si a tel nature: quant ele a sa roi ovree, ele se muce en .i. angle et repont soi, que on ne le voit, et ascoute adés a sa roi, se mouche i vole ens ou autre petit ver que sa roi puet tenir. Et quant l'araigne l'ot crier, ele cort a la mosche et le devore et [o]cist, et li mangüe le sanc qu'ele a en soi. / Tot altresi a Deables adés sa roi apareillie et tendue por prendre l'ame de l'home. Quant li hom peche par luxure, par ivrece ou [h]omecide ou par covoitise ou en altre manière coment que ce soit, dont l'a Deables en sa roi. Et si tost comme Deables l'a en sa roi, il cort cele part : se il l'i trueve dedens, il l'estrange et ocist, si comme l'araigne fait la mosche, et li mangüe le sanc hors del cors, c'est a entendre l'ame que il li prent hors du cors; et l'en porte avoec lui en infer et la est ele doveree de diables a tos jors vivre en dolor sans morir. Et iluec brait et crie entre les mains d'anemis, comme la mosche fait en la roi quant li iraigne le tient et devore. (Baker 2010, p. 182)

(The *Physiologus* tells us about the spider, which is a vile and evil animal; and he says that the saliva of a fasting man kills the toad and spider if they taste

it, a little or a lot. And he here gives us to understand that the spider draws from its entrails the thread that it spins, from that it makes its net. And it has this nature: when it has made its net, it conceals itself in one corner and hides away, so that one cannot see it, and it listens continuously to its net, to see if a fly flies into it or another small bug which the net is able to hold. And when it happens that the fly flies into it, it cries out loudly and makes a great effort to get out. And when the spider hears it cry out, it runs to the fly and devours it and kills it and feeds on the blood that it has inside it. / Likewise, the devil always has his net made ready and stretched out to seize a man's soul. When a man sins through lust, through drunkenness or murder or covetousness or in any other manner that there may be, then the devil has him in his net. And as soon as he has him in his net, he runs to that place: if he finds him there, he strangles and kills him, just as the spider does the fly, and he consumes the blood out of the body, which is understood as the soul that he seizes out of the body; and that he takes with him into hell and there it is devoured by devils forever living in pain without dying. And there he laments and cries out within the hands of enemies, like the fly does in the net when the spider takes hold of it and devours it.)⁵

According to Baker, the source for the majority of this chapter is not known; only the description of the spider weaving from its entrails in ll. 2–5 has a clear source in Gossouin de Metz's *L'image du monde* (Baker 2010, p. 358), though this detail had wide currency, as indicated by Aristotle's rebuttal of it and its repetition in thirteenth-century texts (Aristotle 1991, p. 333; Thomas of Cantimpré 1973, p. 298; Bartholomaeus Anglicus 1964, p. 1012; Vincent of Beauvais 1964, p. 1526; Albertus Magnus 1916, p. 630). Baker posits that the rest of the chapter may represent an amplification by the long version's author and reviser (2010, p. 358).

Whatever the source, the amplified spider of the *Bestiaire* is remarkably similar to its contemporary account in the Middle English *Physiologus*. The gendered pronouns in the *Bestiaire* are the result of the grammatical gender of *araigne*, a feminine noun, and so I have translated them neutrally. They do, however, suggest the interesting possibility that the Middle English text may have been influenced not only by the issue of private/public spaces and the natural histories' gendered division of labour that are noted above, but also by the grammatical gender of the French word for spider. The Middle English text is, after all, preserved in a manuscript whose English, French and Latin contents speak to the multilingual environment of high medieval England, and we do know that the thirteenth-century natural histories that disseminated Aristotle's spiders so widely, perhaps influencing the Middle English *Physiologus*, were produced by writers with links to Paris.

Either way, both the Middle English and French texts open with an adjectival doublet that highlights the negative associations of the spider; she is *Leide & lo[dl]ike* (detestable and loathsome) in Middle English and *une orde beste et*

⁵ I am grateful to Olivia Robinson for her assistance translating this passage. All remaining errors are my own.

malvaise (a vile and evil animal) in French. When describing the nature of the spider, both texts also focus on the net, as well as the way the creature hides from the prey. In Middle English, the spider is always looking: *Ðanne ze it haued al idizt, ðeðen ze driued, / Hitt hire in hire hole, oc ai ze it biholdeð* (When she has it all ready, she dashes away from there, hides in her hole, but she always looks upon it). In French, it is listening: *quant ele a sa roi ovree, ele se muce en.i. angle et repont soi, que on ne le voit, et ascoute adés a sa roi, se mouche i vole ens ou autre petit ver que sa roi puet tenir* (when it has made its net, it conceals itself in one corner and hides away, so that one cannot see it, and it listens continuously to its net, to see if a fly flies into it or another small bug which the net is able to hold). And when the prey has been caught in the net, both texts focus our attention on these animals' struggle to free themselves. The Middle English has: *Til ðat ðer flezes faren & fallen ðerinne, / Wiðeren in ðat web, & wilen ut wenden* (until flies come to it and fall therein, writhe in that web, and want to go out). The French states: *Et quant ce avient que la mouche i vole ens, ele crie durement et se paine molt por issir* (And when it happens that the fly flies into it, it cries out loudly and makes a great effort to get out). Finally, both texts contain an extended description of the spider killing the fly and drinking its blood, a detail that is heightened significantly from Aristotle's passing reference to the spider drinking the fly's juices in order to survive (see above). In the Middle English, we have: *Ðanne renneð ze rapelike, for ze is ai redi: / Nimeð anon to ðe net & nimeð hem ðere. / Bitterlike ze hem bit & here bane wurðeð, / Drepeð & drinkeð here blod, doð ze hire non oðer god, / Bute fret hire fille, & dareð siðen stille* (Then she runs hurriedly, for she is always ready: immediately she steals to the net and seizes them there. Fiercely she bites them and becomes their murderer, subdues them and drinks their blood, she does for herself no other good, but eats her fill, and then sits still). In the French, we have: *Et quant l'araingne l'ot crier, ele cort a la mosche et le devore et [o]cist, et li mangüe le sanc qu'ele a en soi* (And when the spider hears it cry out, it runs to the fly and devours it and kills it and feeds on the blood that it has inside it). This behaviour is clearly linked to violent sins, directly by invoking murder in the case of the Middle English, and later in the allegorical interpretation of the French.

The allegories of both texts are significantly different in focus, even if they both refer to sinful men. The Middle English is brief and interested mainly in human deception, while the extended French allegory links the spider to the devil, capturing sinners and dragging them to be tortured in hell. This detail is also not attested in Theobald's Latin *Physiologus* and so we must look elsewhere for potential analogues before establishing whether the *Bestiaire* author was undertaking truly original work.

As it happens, translators of the *Physiologus* were not the only thirteenth-century authors interested in linking spiders to sin and the devil. Florence McCulloch suggests in passing that the *Bestiaire* shares similarities with a description of the spider and fly in Odo of Cheriton's fables (1962, p. 68). In fact, Odo's fables and sermons feature spiders in a range of contexts, several of which proved very popular among fabulists following him (1896, pp. 189–190, 202–203, 220, 260–261, 293, 326, 422, 440).

Odo, born between 1180 and 1190 to a wealthy Norman family in Kent, studied theology at the University of Paris in the first decade of the thirteenth century (Friend 1948, pp. 641, 646), shortly before the natural historians discussed above took up residence there. His first series of sermons, the *Sermones Dominicales*, is dated to 1219, while his fables were likely written after 1225 (Friend 1948, p. 653–655). Odo travelled widely, certainly between England, France and Spain, and probably also undertook a pilgrimage (Friend 1948, pp. 648–649). His writings are preserved in Latin, but include some English and French references, both hinting at a close link to vernacular material and reminding us of the multilingual environment of this period (Echard 2017, s.v. Odo of Cheriton; Friend 1948, p. 641). Albert Clayton Henderson notes that many of Odo's fables 'appear in no extant European collection before him: he either invented them, took them from a lost or unpublished collection, assembled them from fables scattered among various authors, or elevated into fables a variety of proverbs, anecdotes, bestiary chapters, or oral tales' (Henderson 1978, p. 282). In this sense, and in the ecclesiastical satire to which his fables often turn, Odo is highly original. His fables were also '[c]learly designed to serve as models for preachers, [and] his works gained wide currency, as we know from the many manuscripts which survive' (Friend 1948, p. 641). The popularity of these works may stem in part from their content.

Odo's fables frequently describe either birds or domestic animals, which perhaps reflects both his ecclesiastical interests and his role as a preacher working with everyday people (Salisbury 2016, p. 62). His critical view of the high-ranking clergy's relationship with the lay community, and especially the poor, certainly shines through in some of the fables mentioned below. However, the first fable to be addressed here is most interesting for its similarity to the *Bestiaire's* allegorical spider-devil discussed above.

The fable on the dispute between the wasp and spider is an allegory for the way worldly concerns entrap humans (1896, pp. 202–203; Jacobs 1985, pp. 101–102). In this fable—no. 28 in Léopold Hervieux's edition, based on the mid-thirteenth-century Cambridge, Corpus Christi College 441⁶—the wasp mocks the spider for spending all of its time *in foramine* (in a hole) (Odo of Cheriton 1896, p. 202). The spider then challenges the wasp to a bet and invites it to have a drink within its *cortina* ('net' in late antique Latin, or 'curtain'—often in the context of the tabernacle or a saint's shrine—in the medieval Latin of the British Isles [Souter 1964, p. 81; Ashdowne 2015, s.v. *cortina*]), which Odo claims is the Lombard word for a spider's web (1896, p. 203). The climax and allegory play out as follows:

Vespa descendit super cortinam, id est telam Aranee. Et statim inuoluti sunt pedes eius et caput, et cepit cum alis se excutere et non potuit; et ait: Maledicta sit talis cortina, quia exire non possum! Certe, dixit Aranea, nunquam uiua euades. Et accessit et Vespam deuorauit. / Hec cortina est pulcra mulier, mundi amenitas, diuiciarum curiositas: qui (*sic*) dicuntur cortine Diaboli. Qui

⁶ A digitization of this manuscript is available online: <https://parker.stanford.edu/parker/catalog/wh417sx8653>.

se inmittunt a Diabolo deorantur. Job [C.] xviii[i, v. 8]: Misit in rete pedes meos,⁷ et in maculis eius ambulat. (Odo of Cheriton 1896, p. 203)

(The wasp descended through the net/curtain, that is, into the web of the spider. And at once its feet and head were enveloped, and it grasped it with its wings to cast it off itself, and was not able; and said: ‘Cursed be such a net/curtain, because I am not able to get out!’ ‘Certainly’, said the spider, ‘you will never escape alive’. And it approached and devoured the wasp. / This net/curtain is a beautiful woman, luxury of the world, inquisitiveness of riches: which are called nets/curtains of the devil. Those who go into them are devoured by the devil. Job 18:8: ‘He has thrust my feet into a net, and walks in its meshes’.)
(own translation)

Although this fable tells the story of a wasp rather than a fly, the association between spider-web and sin, and between the spider devouring prey and the devil devouring sinners makes this fable an interesting analogue to the *Bestiaire*. Lust, greed and ‘inquisitiveness of riches’—which seems to indicate covetousness—are all characterized as temptations that lead *in rete* (into a net) belonging to the devil who waits to entrap them. This is not unlike the *Bestiaire*’s reference to sinning *par luxure, par ivrece ou [h]omecide ou par covoitise ou en altre manière coment que ce soit* (through lust, through drunkenness or murder or covetousness or in any other manner that there may be). Only drunkenness and murder are unaccounted for in the Latin fable, but then it does describe a drinking bet that turns to violence.

While the above fable is the most explicit association between spiders and the devil, it is not Odo’s only reference to this particular creature. In fact, the spider crops up repeatedly. In one short fable (no. 15 in Hervieux’s edition), the spider’s fragility is emphasized⁸:

Sic Aranea filum extrahit, telam orditur, totam se eviscerat, ut unicum Muscam capiat. Tandem uenit uentus, et totam telam cum Aranea et Musca dissipat et asportat. / Sic clerici, curiales, scolares in frigore et caumate, per uentos et pluuias, per montes et ualles laborant, totos se eviscerant, ut unicum beneficium, unicum ecclesiam, hoc est unicum Muscam capiant. B. (3): Circuit sedulus explorator, sequitur, obsequitur, manibus ac pedibus repit, si quo modo in patrimonium se ingerat crucifixi (Odo of Cheriton 1896, pp. 189–190)

(Thus, the spider drew forth a thread, began a web, completely eviscerated itself, in order to seize a single fly. In the end, the wind came, and completely destroyed and carried away the web with the spider and fly. / Thus, clergymen, courtiers, scholars labour in the cold and heat, in wind and rain, through mountains and valleys, completely eviscerate themselves, in order to seize a single benefice, a single church, which is a single fly. B[ernard de Clairvaux]: ‘An attentive prior circles, pursues, yields, crawls on hands and feet, to see if only he may carry off ecclesiastical wealth for himself.’)

⁷ As Hervieux notes, this should read *suos* (his).

⁸ See also a similar sermon excerpt, number 156 in Hervieux’s edition (Odo of Cheriton 1896, p. 326).

This description shows a debt to the biblical tradition and the many psalm commentaries that focus on the fragility of the spider's web and of human profit (Cavell 2018, pp. 10–18). Its reference to the wind destroying the web also aligns it with Theobald's Latin *Physiologus*: *Sed sibi nil valet ut fragile: / Quelibet aura trahit patulum; / Rumpitur et cadit in nihilum* (Eden 1972, pp. 52) (but it is worth nothing to it, as fragile as it is: any breeze draws it apart; it is destroyed and falls into nothing). Here, the spider's physical and spiritual/symbolic weakness is marshalled against the greed of the clergy.

Clerical corruption is a theme that Odo develops in other fables. He also describes a spider seizing and killing a fly, only to go *in foramen* (into its hole) to hide when a wasp comes along (no. 48 in Hervieux's edition):

Aranea, quando uenit Musca in telam suam, fortiter exit et Muscam capit et interficit. Quando uenit Burdo uel Vespa sonitum faciens, Aranea in foramen suum fugit. (Odo of Cheriton 1896, p. 220)

(A spider, when a fly comes into its web, goes forth boldly and seizes the fly and kills it. When a bee or a wasp comes, making a loud noise, the spider flees into its hole.) (own translation)

As in the classical authors, their thirteenth-century followers and the Middle English *Physiologus*, here we have references to spiders hiding in holes, attacking and killing flies. Odo associates this behaviour with corrupt, high-ranking clergy:

Sic est de episcopis quibusdam et prelati: quando pauper et modicus incidit in rete episcoporum per delictum uel falsam accusationem, illum arripiunt ardentem et comedunt. Sed cum uenit diues et minatur, tunc abscondit se episcopus uel prelati. (1896, p. 220)

(So it is with regard to certain bishops and prelates: when a poor and moderate man falls into the net of the bishops, through a transgression or false accusation, they eagerly seize and devour him. But when a rich man comes and threatens, then the bishop or prelate hides himself.) (own translation)

Here, the *rete* (net) is not associated with sin and the devil, but with the machinations of clergymen who exploit the poor and allow the wealthy to escape punishment.

Although this fable is less overtly associated with the *Bestiaire* through its allegory, an important link with the Middle English *Physiologus* exists. This particular spider fable appears in Arundel 292, in a collection of forty-five of Odo's fables that immediately follows the *Physiologus* (Wirtjes 1991, p. xii; edited as no. 16 in Oesterley 1868, pp. 136–137). Odo's spider fable is there followed by several fox fables that emphasize the devil capturing sinners. This is not unlike the pairing of the fox and spider in the Middle English *Physiologus*, which alters the order of the animals in Theobald's text to place them side by side. While Wirtjes has argued that this alteration was accidental (1991, p. lxxxii), it is possible that the link between spider and fox in the fable collection that sat alongside the *Physiologus* in Arundel 292 influenced this change to the source. Either way, there is an explicit link between the Middle English *Physiologus* and Odo of Cheriton's fables, including his description of the spider.

While there is only an implicit link between Odo's violent spiders and diabolic allegories and the *Bestiaire*, it is worth noting that a contemporary French translation of Odo's fables (surviving from the second half of the thirteenth century), includes two of the above fables—Hervieux's nos. 28 and 48 (Ruelle 1999, pp. 28–29, 47). The fact that the *Bestiaire* author draws on vernacular rather than Latin sources would not, therefore, present a problem if we were to suggest Odo's fables as a potential influence on the *Bestiaire*.

Furthermore, Odo's interest in spiders can be traced beyond his fables. Spider parables also exist within his earlier sermons, extracts of which have been edited from Paris, Bibliothèque nationale de France, Lat. 16506. No. 72 in Hervieux's edition reads:

Cedrus profunde radicatur ita quod uentis concussa non euellit. Ita diabolus stringit caudam (*sic*), multiplici laqueo consolidat, ut, si peccator exire uelit, non ualeat. Sic(ut) aranea muscam, ne uolare ualeat, filo subtilissimo inuoluit et tandem (*sic*) interficit. (Odo of Cheriton 1896, p. 293)

(The cedar is rooted deeply, in such a way that when stirred by the winds it is not torn out. Likewise, the devil draws the end tight, consolidates a complex snare, so that, if a sinner wants to go out, he is not strong enough. In the same way, the spider envelops the fly, not strong enough to fly, in the most delicate thread and kills it in the end.) (own translation)

Once again, Odo associates the spider's hunting methods with a diabolic trap. Like the sinner at the hands of the devil, the fly is caught and, unable to escape despite its efforts, killed by the spider. This is not unlike the *Bestiaire*'s allegory.

It is clear from the above discussion that Odo of Cheriton had an interest in spiders, which led to their use in multiple fables and sermons. Along with other creepy crawlies, frogs and toads, Odo used spiders as an example of a creature that was 'stuck in the mire of sin' (Salisbury 2016, p. 63). In fact, Joyce E. Salisbury argues that contemporary aversions to these animals may have been influenced by 'ecclesiastical fabulists' association of these animals with sin' (2016, p. 63); at the least 'it is certain that their treatment by medieval fabulists did nothing to improve their reputation' (Salisbury 2016, p. 64). I would argue that the evidence for arachnophobia which predates Odo's work (Cavell 2018) suggests that fear of and disgust toward spiders is more likely to have contributed toward their depiction in this collection than to have resulted in contemporary aversions. Either way, the thirteenth century was a flashpoint for spiders behaving badly in the multilingual literatures of medieval England and France. While some passing references to spiders were amplified in the Old English literature of the preceding period to highlight spider fear and disgust, the norm was still the biblical tradition's focus on these creatures' fragility, read in terms of human weakness (Cavell 2018). The influence of the biblical tradition can be seen in Odo of Cheriton's early thirteenth-century fables and sermons, which treat spiders and other creepy crawlies as particularly aligned with sinful behaviours. Emerging in precisely the same period as Odo's work—and with shared links to the study of theology in Paris—a new natural history tradition drew upon the recovery of Aristotle's *History of Animals*, alongside Pliny the Elder's

previously available *Naturalis historia*, to describe the hunting methods and dietary preferences of spiders in visceral detail. This is the literary and historical context into which the Middle English and French *Physiologus* adaptations emerged. While these texts—and Odo of Cheriton’s fables—have been praised separately for their originality and despite the fact that they share such close dates of composition and transmission, they have never been analysed in relation to each other. This is especially surprising in the case of Odo of Cheriton’s fables and the Middle English *Physiologus*, which travel together in the same multilingual manuscript. Ultimately, these Latin, Middle English and French texts are the product of a shared cultural climate that saw the interweaving of theology and natural history produce a range of diabolic spiders whose similarity demands that they be read together.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article’s Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article’s Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

- Albertus Magnus. (1916). *De animalibus libri XXVI, Nach der Kölner Urschrift, Vol. 1: Buch I-XII* (H. Stadler, Ed.). Münster: Aschendorffsche Verlagsbuchhandlung.
- Albertus Magnus. (1999). *On animals: A medieval summa zoologica* (K. F. Kitchell, Jr. and I. M. Resnick, Trans.). Baltimore: Johns Hopkins University Press.
- Anglicus, B. (1964). *De rerum proprietatibus*. Frankfurt: Minerva.
- Aristotle. (1991). *History of animals, Vol. 3: Books 7–10* (Ed. and Trans., D. M. Balme). Loeb Classical Library (Vol. 439). Cambridge, MA: Harvard University Press.
- Ashdowne, R., Howlett, D., & Latham, R. (Eds.). (2015). *Dictionary of Medieval Latin from British Sources*. Turnhout: Brepols.
- Baker, C. (Ed.). (2010). *Le Bestiaire: version longue attribuée à Pierre de Beauvais*. Paris: Honoré Champion Éditeur.
- Cassiodorus. (1958). *Magni Aurelii Cassiodori expositio psalmodum LXXI–CL* (M. Adriaen, Ed). Corpus Christianorum Series Latina (Vol. 98). Turnhout: Brepols.
- Cavell, M. (2018). Arachnophobia and early English literature. *New Medieval Literatures*, 18, 1–43.
- Curley, M. J. (Trans.). (1979, 2009). *Physiologus: A medieval book of nature lore*. Chicago: University of Chicago Press.
- Echard, S. (2017). Odo of Cheriton. In S. Echard & R. Rouse (Eds.). *The encyclopedia of medieval literature in Britain*. Hoboken: Wiley.
- Eden, P. T. (Ed.). (1972). *Theobaldi ‘Physiologus’*. *Mittellateinische Studien und Texte* (Vol. 6). Leiden: Brill.
- Friedman, J. B. (1997). Albert the Great’s topoi of direct observation and his debt to Thomas of Cantimpré. In P. Binkley (Ed.), *Pre-modern encyclopaedic texts: Proceedings of the second COMERS congress, Groningen, 1–4 July 1996* (pp. 379–392). Leiden: Brill.
- Friend, A. C. (1948). Master Odo of Cheriton. *Speculum*, 23, 641–658.
- Henderson, A. C. (1978). ‘Of heigh or lough estat’: Medieval fabulists as social critics. *Viator*, 9, 265–290.
- Isidore of Seville. (1911). *Etymologiarum sive originum libri XX* (W. M. Lindsay, Ed.), 2 vols. Oxford: Oxford University Press.

- Jacobs, J. C. (Trans.). (1985). *The fables of Odo of Cheriton*. Syracuse: Syracuse University Press.
- Krapp, G. P. (Ed.). (1933). *The Paris Psalter and the Meters of Boethius*. Anglo-Saxon Poetic Records (Vol. 5). New York: Columbia University Press.
- McCulloch, F. (1962). *Mediaeval Latin and French bestiaries* (Rev ed.). Chapel Hill: University of North Carolina Press.
- Odo of Cheriton (1896). *Les Fabulistes Latins depuis le siècle d'Auguste jusqu'à la fin du moyen Âge, Vol. 4: Eudes de Cheriton et ses Dérivés* (L. Hervieux, Ed.). Paris: Firmin-Didot.
- Oesterley, H. (1868). Die Narrationes des Odo de Ciringtonia. *Jahrbuch für Romanische und Englische Literatur*, 9, 121–154.
- Pliny the Elder. (1983). *Natural history: Books 3–7* (Ed. and Trans. H. Rackham). Loeb Classical Library, 2nd edn (Vol. 352). Cambridge, MA: Harvard University Press.
- Ruelle, P. (1999). *Recueil général des Isopets, Vol. 4: Les Fables d'Eude de Cheriton*. Société des Anciens Textes Français. Paris: A. et J. Picard et C^{ie}.
- Salisbury, J. E. (2016). Human animals of medieval fables. In N. C. Flores (Ed.), *Animals in the middle ages* (pp. 49–65). London: Routledge.
- Souter, A. (1964). *A glossary of later Latin to 600 A.D.* Oxford: Clarendon.
- Thomas of Cantimpré. (1973). *Liber de natura rerum, Vol. 1: Text*. Berlin: De Gruyter.
- Vincent of Beauvais. (1964). *Speculum quadruplex sive speculum maius, Vol 1: Speculum naturale*. Graz: Akademische Druck.
- Wirtjes, H. (Ed.). (1991). *The Middle English Physiologus*. Early English Text Society (Vol. 299). Oxford: Oxford University Press.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.