Thomas Aquinas addresses the question of whether or not nonhuman animals reason in connection with the famous example of Chrysippus' dog, which was originally formulated by the Stoic logician of the same name. 

Like most other Stoics, Chrysippus was relatively skeptical about, if not even hostile to, the idea of animal rationality. His actual intention was not to make a case for the rationality of dogs. Rather, he simply aimed to illustrate a certain type of syllogism, namely, the so-called disjunctive syllogism. And so he told the story of a hunting dog that chases an animal but then loses sight of it and comes to a fork with three paths. Since the dog cannot see where the animal went it sniffs around the first and then around the second path, before finally taking the third way without sniffing. The dog in the example thus seems to employ a syllogism of the form 'The animal took either A or B or C, so if it did not take A or B it must have taken C'. As has been stated, Chrysippus simply took this to be a good illustration of a disjunctive syllogism. However – and quite ironically, one could say – his example became one of the most widespread examples of animal reasoning, especially through the Outlines of Pyrrhonism in which Sextus Empiricus turned this example against the Stoics' denial of animal intelligence and made it a proof of their rationality.

Thomas Aquinas, like many other medieval authors, likely knew this example through writings of the Church fathers, such as Basil of Caesarea's and Ambrose of Milan's Hexaemeron. But what matters here is not so much how this example was handed on from one generation to the next but rather how

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1 On the origin, history, and reception of this example, see Floridi (1997). A recent philosophical analysis and discussion provides Rescorla (2009).
2 On the Stoics' position see Dierauer (1977), 205–238; Sorabji (1993b), 20–28; Steiner (2005), 77–92.
3 See Sextus Empiricus, Outlines of Pyrrhonism I.14, §69, tr. Bury (1933), 41–43.
4 See Basil of Caesarea, Homiliae ix in Hexaemeron IX.4, ed. Migne (1886), 198B-C: "Et quidem canis expers rationis est attamen sensum rationi haud imparem habet. Quae enim mundi sapientes per multum vitae otium desidentes vix invenerunt, videlicet ratiocinationum ambages, haec ab ipsa natura edoctus canis perhibetur." Ambrose of Milan, Hexaemeron libri sex VI.4, §23, ed. Migne (1882), 265D-266B. On the reception among Christian writers in particular see Moretti (2005) and Lauzi (2012), 217–219.
someone like Aquinas interpreted it. Aquinas mentions the example of the dog in the *Summa theologiae* when he asks whether nonhuman animals are capable of making a ‘choice’ (*electio*). In his opinion, the dog’s behaviour is a good example for ‘the astonishing sagacities in the works of animals’ (*mirabiles sagacitates in operibus animalium*).5 This view, of course, very much depends on the fact that the dog ‘takes the third path without further exploration’ (*per tertiam viam incedit non explorando*), as Aquinas puts it. He thus stresses the fact that the dog takes the third path without sniffing at it, as he did with the other two. Now, one could object that it is unlikely that the dog would not sniff at the third path, too, and thus that the example is flawed from the very beginning. Despite this objection, it is significant that the majority of thinkers accepted the case as a plausible description of canine behaviour. The key matter of debate, then, is whether or not such an animal takes the third path by syllogising.

According to Aquinas, the dog takes the third path ‘as if using a disjunctive syllogism’ (*quasi utens syllogismo divisivo*). This means that it looks as if the dog reasoned in this situation. But actually it employs neither a disjunctive syllogism nor any other kind of rational argument, Aquinas argues. The reason simply is that dogs lack intellect and reason, therefore they cannot engage in reasoning. But how else can one account for the dog’s behaviour? Aquinas gives the following reply: like many other nonhuman animals, the dog has ‘a natural inclination to certain most orderly processes’ (*inclinatio naturalis ad quosdam ordinatissimos processus*).6 Admittedly, this might seem like a relatively obscure description of what is going on in the dog’s head while it is standing at the fork in the road, but Aquinas’ idea is that the dog’s behaviour is based on a comparatively complex cognitive process. However, this process is an orderly process only by virtue of ‘the highest art’ (*summa ars*), that is, the

5 Thomas Aquinas, *Summa theologiae* i–ii, q. 13, a. 2, co., ed. Leonina vi (1891), 99: “Et hoc etiam sensui manifestum videtur, apparent enim mirabiles sagacitates in operibus animalium, ut apum et aranearum et canum. Canis enim insequens cervum, si ad trivium venerator, odorat quidem explorat an cervus per primam vel secundam viam transiberit, quod si invenerit non transisse, iam securus per tertiam viam incedit non explorando, quasi utens syllogismo divisivo, quo conclaudi posset cervum per illam viam incedere, ex quo non incedit per alias duas, cum non sint plures. Ergo videtur quod electio bruti animalibus conveniat.”

6 Ibid., 100: “Et ex hoc contingit quod in operibus brutorum animalium apparent quaedam sagacitates, inquantum habent inclinationem natualem ad quosdam ordinatissimos processus, utpote a summa arte ordinatos. Et propter hoc etiam quaedam animalia dicuntur prudentia vel sagacia, non quod in eis sit aliqua ratio vel electio. Quod ex hoc apparat, quod omnia quae sunt unius naturae, similiter operantur.”
divine creator. One could perhaps compare this to the processes of a complex machine, say, a computer. The computer calculates and solves all kinds of difficult tasks, but it does this only because this is how it has been constructed and programmed by a rational human being. Hence, the computer itself would not qualify as a rational being in the strict sense of (faculty and process) rationality. Similarly, the dog manages to find the right path, because this is how it has been programmed, so to speak, by the divine creator. Still, the natural inclination from which arises the ‘orderly process’ in which the dog engages makes this a very different process than the syllogistic reasoning that brings about the choice of a human being. In this sense, the dog is closer to a machine than to a human.

One might find this comparison inappropriate for two reasons. First, it might be thought to be anachronistic. Second, it seems to turn Aquinas into a Cartesian who considers nonhuman animals to be soulless machines. But neither is the case. As far as the charge of anachronism is concerned, it is important to note that Aquinas himself draws a comparison between cleverly constructed machines and nonhuman animals. His point is that many things, including, for instance, arrows or clocks, ‘are moved by reason’ (moventur a ratione). But this does not mean that they are rational beings themselves. Rather, an arrow is brought into motion by a rational agent, and so if it hits its target this is because the human being that launched it is a good archer and not because the arrow itself is capable of moving into the right direction. It is only ‘as if’ (ac si) the arrow itself knew where to go. Similarly, clocks display the time because this is how they have been constructed by some rational human craftsman. But what about animals? In contrast to arrows or clocks, they do have bodily organs and sensory powers by which they move. So in this respect they are definitely superior to non-cognitive beings, which is something Aquinas does not deny. Admittedly, Descartes did not deny that nonhuman animals have certain

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7 This is exactly the argument Michel de Montaigne criticises in his *Essais* II.12, 168: “Je dy donc, pour revenir à mon propos, qu'il n'y a point d'apparence d'estimer que les bestes facent par inclination naturelle et forcée les mesmes choses que nous faisons par nostre choix et industrie.” On this see also Wild (2006), 79.

8 This is what Barad (1995), 12, insinuates in her interpretation of this passage.

9 Thomas Aquinas, *Summa theologiae* i–ii, q. 13, a. 2, ad 3, ed. Leonina vi (1891), 99f.: “[...] in omnibus quae moventur a ratione apparat ordo rationis moventis, licet ipsa quae a ratione moventur rationem non habeant: sic enim sagitta directe tendit ad signum ex motione sagittantis, ac si ipsa rationem haberet dirigentem. Et idem apparat in motibus horologiorum et omnium ingeniorum humanorum quae arte fiunt. Sicut autem comparantur artificialia ad artem humanam, ita comparantur omnia naturalia ad artem divinam.” Descartes also compares animals to clocks, see Wild (2006), 161.
cognitive capacities either. But, in his view, the possession of these capacities
does not justify the ascription of a soul to their possessor.10

Aquinas obviously disagrees on this point.11 Nevertheless, he emphasises
that "just like artificial things compare to human art, so do all natural things
compare to the divine art."12 In other words, every creature owes its design and
functionality to the divine creator. But there are, of course, crucial differences
in design and functionality. Most importantly, only human beings are endowed
with intellect and reason, as well as with will. Because of this, only humans are
capable of reasoning and only they can make a choice, according to Aquinas.13
Thus, the dog at the fork does not reason freely. It does not arrange premises
and conclusions and it does not come to a decision by ruling out two of three
options, as we would. Rather, it owes the capacity to find the right path without
sniffing to the divine creator, just as an arrow owes its capacity to hit the target
to the archer or as a calculator owes its capacity to solve various mathematical
problems to a clever engineer. To be clear, this does not necessarily make these
beings inferior to rational human beings. As we all know, calculators usually
calculate much more quickly than we do. Similarly, many animals might have
fewer difficulties in solving certain problems even though they do not possess
intellect and reason.14 Nevertheless, how they do this is very different from
how we do it.

In Aquinas’ view, another sign of this difference is that all members of a
nonhuman animal species act alike. There is a uniformity in their behaviour:
all swallows build their nests in the same way and, similarly, all spiders con-
struct their webs in a very similar manner.15 Many, if not all, of the things ‘they

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10 For a thorough analysis of Descartes’ position see Wild (2006), 135–210. See also Cotting-
ham (1978).
11 On the differences between Descartes and Aquinas in this context see also Davids (2017),
192f.
12 See n9 above.
13 Floridi (1997), 43, obviously misreads Aquinas here as he states that Aquinas “held that the
episode [of Chrysippus’ dog; A.O.] proved that animals too have the capacity of choosing.”
On this misinterpretation see also Davids (2017), 191.
14 This point is not made by Aquinas but by Basil of Caesarea and Ambrose of Milan; see
n4 above.
15 See Thomas Aquinas, Summa contra gentiles, lib. ii, q. 82, co., ed. Leonina xiii (1918),
533: “In animabus autem brutorum non est invenire aliquam operationem superiorem
operationibus sensitivae partis: non enim intelligunt neque ratiocinantur. Quod ex hoc
apparet, quia omnia animalia eiusdem speciei similiter operantur, quasi a natura motae
et non ex arte operantes: omnis enim hirundo similiter facit nidum, et omnis aranea si-
militer telam.”

do as if they were moved by nature’ (*quasi a natura motae*), as Aquinas states. But why does he say that they act ‘as if they were moved by nature’? Why does he not simply say that they are moved by nature? Aquinas himself does not explain why he has chosen this particular phrasing. But the most likely explanation is that he is aiming, once more, to stress the difference between cognitive and non-cognitive beings. Non-cognitive beings are entirely moved by nature. If a stone falls to earth, this happens not because the stone cognitively responds to a certain stimulus. Rather, it happens because of certain natural forces. Similarly, an arrow does not fly because some cognitive power has triggered its movement. Rather, it moves because a cognitive agent has set it into motion. Nonhuman animals, by contrast, do (most of) the things they do because they perceive something and then react to what they perceive. The dog does not take the right path because of the laws of gravity or because a human being pushes it in this direction. Instead, its behaviour is based on a cognitive process. Nevertheless, this process is different from the process that occurs in a human being in that it is not a *rational* process. Hence, even though it sometimes looks as if other animals reason, they can not be credited with that capacity, according to Aquinas.

Like Thomas Aquinas, Gregory of Rimini and John Duns Scotus also think that nonhuman animals do not actually engage in reasoning. For Gregory, the behaviour of dogs shows, on the one hand, that having ‘complex cognition’ (*notitia complexa*) is nothing exclusively human. In his view, these dogs ‘judge’ (*iudicant*) that their prey must have taken the remaining path. But, on the other hand, they only ‘judge as if they reasoned’ (*quasi arguentes iudicant*). So, like Aquinas, Gregory thinks that the cognitive process that makes the dog take the remaining path does not qualify as reasoning.\(^\text{16}\) It might seem somewhat incoherent to claim that Gregory belongs to Aquinas’ camp, especially because we have seen him attacking Adam Wodeham’s attempt to account for animal behaviour on the basis of simple stimulus-response models before (see Chapter 18).\(^\text{17}\) Nevertheless, his phrasing is quite clear when it comes to the question

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16 See Gregory of Rimini, *Lectura super primum et secundum Sententiarum*, dist. 3, q. 1, eds. Marcolino & Trapp (1981), 305: “Tertio, idem probatur ex experimentia quae de canibus venaticis fertur, videlicet quod, cum ferram fugientem insequantur, si ad bivium veniant, odorant unam viarum, in qua, si non percipiant odorem fugientis, subito absque alterius viae odoratione per alteram pergunt. Quod non videtur aliunde contingere, nisi quia iudicant feram non transisse per illam quam odorati sunt, et ex hoc quasi arguentes iudicant transisse per aliam.” The opposite view is held by William of Ockham, *Quaestiones in librum quartum Sententiarum* (Reportatio), q. 14, eds. Wood & Gál (1984), 315.

17 Adam Wodeham also mentions the sylvologising dog in his *Lectura secunda in primum librum Sententiarum*, prol., q. 3, §2, ed. Wood (1990), 67.
of reasoning. For even though he thinks that nonhuman animals have complex cognition, he holds that this does not amount to a syllogistic process. Furthermore, he shares Wodeham’s doubt that we cannot naturally know what kind of cognition other animals have. All we can do is to observe their behaviour and to infer what kind of cognitive process is likely to underlie this behaviour.\footnote{Gregory of Rimini, \textit{Lectura super primum et secundum Sententiarum}, dist. 3, q. 1, eds. Marcolino & Trapp (1981), 304: “Et hic dico quod, quamvis istud non possit nobis plene naturaliter esse notum, probabiliter tamen ex his, quae percipimus, possumus arguere quod talem notitiam habeant.”}

This epistemological caveat is also stressed by John Duns Scotus. As he points out, there are many cases in which the behaviour of humans and nonhuman animals looks very much the same. The example he gives is the following: if a human being has to make a choice between two different paths, she is likely to take the shorter one. This decision results from a syllogistic argument of the form ‘By taking the shortest path I arrive much faster at my destination; this one is shorter, therefore, I take it.’\footnote{See John Duns Scotus, \textit{Quaestiones super libros Metaphysicorum Aristotelis}, lib. 1, q. 3, §10, eds. Andrews et al. (1997), 89: “[...] bruta multa faciunt ex cognitione eodem modo quo fieren ab homine cognoscente per discursum rationis; ergo videntur habere similem cognitionem. Antecedens patet: sicut homo syllogizans argueret ‘per breviorem viam pervenitur ad intentum, haec est brevier, ergo etc.: et ex tali discursu breviorem eligeret ad aliquid obtinendum, similiter videtur canis eligere prosequendo leporem, et sic in alis.”} So, in short, our behaviour is based on what Scotus calls a ‘discourse of reason’ (\textit{discursus rationis}). But what about a dog, for instance? If seen from the outside, the dog’s behaviour is relatively similar to our own behaviour because if it has to make a choice between two paths, it usually takes the shorter one, too. However, the cognitive process involved in this situation is (or might be) very different. Whereas humans take some time to deliberate on what would be the better option to choose, the dog chooses the shorter path ‘by sensitive appetite alone’ (\textit{ex solo appetitu sensitivo}), as Scotus puts it.\footnote{Ibid., §11: “A d hoc dicitur quod licet similiter agant quaedam, sicut homo ex deliberatione ageret, non tamen oportet quod similem cognitionem habeant. Nam illud, quod eligitur ex delibratione, posset etiam idem non eligi ex deliberatione, sed ex solo appetitu sensitivo.”}

Two objections could be raised against Scotus’ explanation. First, if we say that the dog chooses the shortest path by some very simple sensory mechanism why should we assume that the analogous human mechanism is much more sophisticated? Maybe humans also choose the shortest path by some
sort of instinct? Second, if all we can do is to observe animal behaviour, how can we be so sure that we draw the right conclusions about the underlying cognitive processes? Maybe dogs and other nonhuman animals reason as well. To the first objection Scotus would possibly respond that the discourse of reason is something we can experience by introspection. If we monitor what is going on in our head when we choose a path, we are likely to see that we are reasoning in this situation. Moreover, other people might tell us that they usually reason in such a situation, and so we might conclude that we reason too because we belong to the same species of animal. Finally, Scotus might also refer to the teleological aspect of the possession of reason. Since we possess intellect and reason, he could say, it is unlikely that we do not use them. Otherwise it would be unclear why we have them at all, since ‘nature does nothing in vain’, as a popular Aristotelian saying has it. There is no guarantee that we always use them, and Scotus does not doubt that many cognitive processes such as sensory perception do not require intellectual faculties. Nevertheless, we have them; therefore, we must use them often.

Nonhuman animals, by contrast, do not have such faculties, as Scotus would reply to the second objection. Consequently, they cannot engage in reasoning. All they have is a certain number of external and internal senses, and so if they do something, it is not rational discourse that is behind this behaviour but sensation. Now, one could say that this is not a very convincing argument because it rests on the metaphysical assumption that nonhuman animals lack certain faculties of the soul. But why should we agree to this premise? Unless we accept that God created both human and nonhuman animals and gave intellect and reason only to the former, Scotus’ argument does not work. On the one hand, that is a very strong objection indeed. But on the other hand, Scotus could defend his view without referring to the metaphysical premise, namely, by referring to Morgan’s Canon. As we have seen in Chapters 12 and 18, this modern methodological principle recommends favouring explanations that refer to low-level cognitive processes over explanations that refer to higher-level processes as long as the former can coherently account for an animal’s behaviour. With this principle, Scotus could easily defend his argument that dogs find the shortest path by sensitive appetite while we find it by reasoning.

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21 See *Les Auctoriates Aristotelis*, ed. Hamesse (1974), n. 168, 188: “Natura nihil facit frustra, unde non deficit in necessariis, nec abundat in superfluis.” This sentence was commonly evoked by medieval Aristotelians. Note, however, that Scotus does not mention it in the present context.

22 See p. 92 n10.
Still, the question is whether this explanation also applies to other cases of animal behaviour. Maybe there are cases in which sensory appetite is too simple a mechanism in order to account for what an animal does. So the question is, how can one coherently explain more complex behaviours, especially, if one aims at saving the metaphysical premise according to which only humans possess intellect and reason? Not only Scotus, but also Aquinas and Gregory of Rimini might have answers to these questions. But since they do not address them explicitly, answering them on their behalf would be rather speculative. Therefore, it is much more promising to look at another thinker of the same period, namely, Roger Bacon who is explicitly concerned with complex animal behaviours and how one can account for them without giving up the above-mentioned metaphysical premise.