2019 July 7

Nonhuman Self-Investment Value:

A Philosophical Approach to the Economics of Wrongful Death Companion Animal Law

*Abstract*: Guardians of companion animals killed wrongfully in the U.S. historically receive compensatory judgments reflecting the animal’s economic value. As animals are property in torts law, this value typically is the animal’s fair market value—which is often zero. But this is only the animal’s value, as it were, *to a* *stranger* and, in light of the fact that many guardians value their animals at rates far in excess of fair market value, legislatures and courts have begun to recognize a second value, the animal’s value *to her guardian*. What is this noneconomic value, and how should guardians be compensated for it? In Part 1, I propose a novel method to answer this question. My method includes a third, even more controversial, value: the animal’s value *to herself*. The idea that an animal could invest in herself faces many criticisms. In Part 2, I defend the claim by examining the mental capacities of dogs (*Canis familiaris*). I rebut the central objection—that dogs lack the psychological capacities required for self-investment—by showing that dogs are autonomous, think about their futures, and inhibit their desires in light of their goals. I close by suggesting that whereas the approach has conservative implications for the valuation of companion animals, it has radical implications for the valuation of agricultural animals.

*Keywords*: companion animals, animal law, legal theory, value theory, practical ethics, economic value, noneconomic value, intrinsic value, instrumental value, animal welfare, dogs, animal rights, capital value, self-investment value, autonomy, wrongful death, philosophy of animal law, animal minds, moral standing of animals, legal standing of animals, agency, prospection, canine neurobiology, bereavement, replaceability, non-ideal ethics

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How should we value animals brought into the world to be our companions? The answer turns on the resolution of difficult issues involving highly contested concepts such as intrinsic value, and on the proper interpretation of results of empirical experiments, such as tests to probe the mental lives of animals.[[1]](#footnote-2) However, as we do not live in an ideal world and as courts are making decisions today regarding companion animals, we cannot wait on these results. We need a reasonable and transparent if non-ideal method to help decision-makers navigate what is a complex nexus of legislative initiatives, judicial precedents, and actuarial table-making. The following exercise is meant to provide such practical guidance.

Philosophers and legal theorists have explored the harm involved when the future is taken away from persons (Cudd, 1990; Marquis, 1989; McMahan, 2002; Nichols, 2012; Reitan, 2016; Sinnott-Armstrong, 1999) and from nonhuman animals (Comstock, 2004; McMahan, 2002; Pluhar, 1995; Regan, 1983; S. F. Sapontzis, 1987; Singer, 1975, 1993; Varner, 2012). However, they have paid little attention to what I will call an animal’s *self-investment* value. I want to try to stimulate conversation about this topic so that we can refine existing judicial procedures in light of empirical discoveries in comparative mammalian psychology. Toward this end, I propose, in Part 1, a novel legal method to determine the value of a companion animal’s life. In Part 2, I defend the approach against objections.

**PART 1: The model**

Guardians of companion animals killed intentionally, maliciously, or recklessly (henceforth, “wrongfully”) in the U.S. typically receive compensatory judgments that reflect the animal’s economic value. An animal’s total economic value is the sum of her income, earnings, and services. Since under U.S. law animals are property, one way to determine an animal’s economic value is to determine her fair market value (Roukas, 2007). The fair market value of a piece of property is the price someone is willing to pay for it. Since no one is willing to pay anything for some dogs, these dogs have zero economic value. Other dogs, however, are worth small fortunes. Consider police dogs, seeing eye dogs, bomb-sniffing dogs.[[2]](#footnote-3) And show dogs may be worth large fortunes; a rare Tibetan mastiff puppy in Zhejiang China reportedly sold for $2 million (Cosgrave, 2014). These facts direct attention to the variability of a dog’s value, a topic I will take up directly. However, another matter must be addressed first. For three considerations undermine the very idea that a companion animal’s economic value is exhausted by her fair market value.

First, many companion animals provide critical but uncompensated services to their guardians, including comfort, friendship, exercise for otherwise sedentary people, social engagement for otherwise solitary individuals, and perceptual enhancement such as better hearing and seeing (Lundqvist, Levin, Roback, & Alwin, 2018).

Second, many guardians value their pets at rates that far exceed fair market value. Consider, for example, the amounts guardians spend while tending to an animal’s diet, preventative medical care, surgeries, training, and end-of-life veterinary care.[[3]](#footnote-4)

Third, fair market value only assesses an animal’s value to strangers, thereby failing to capture the rich complexities of the guardian-pet relationship. Guardians have sincerely claimed that they love their animals as much as their children. Some, apparently genuinely, report having suffered more from losing a dog than from losing a father (Rohrer, 2010). An animal’s fair market value does not capture these facts.

In light of the problem, many juries, state courts, and legislatures have begun to recognize an additional value, an animal’s *noneconomic* value. An animal’s noneconomic value, often referred to as “pain and suffering,” is the indirect psychological cost to the guardian of losing the animal. Such costs include the harm of social isolation and emotional upset that the grieving guardian incurs. For example, a dog named Gabby died at a grooming business from being negligently exposed to extremely hot conditions. The New Jersey Superior Court found that the dog had a “subjective value…to its owner” and recognized “…their relationship and the length and strength of the owner’s attachment to the animal” (*Harabes v. Barkery, Inc. No. 791 A.2d 1142*, 2001). The problem is that the determinations of such value are made in highly variable ways. As recently as 2001, most states agreed with the Pennsylvania appellate court’s decision, that “under no circumstances . . . may there be recovery for loss of companionship due to the death of an animal.”[[4]](#footnote-5) These states included Wisconsin, Nebraska, Alaska, Iowa, Michigan, Georgia, New York, Minnesota, and Texas. However, since 2001, opinions have been changing. In 2004, for example, a Texas trial court awarded a woman $10,000 for the “loss of companionship” of her dog, Licorice.[[5]](#footnote-6) In Washington a court granted a man $100,000 after someone shot his English springer spaniel.[[6]](#footnote-7)

Here is the first problem. The method to determine the value of a wrongfully killed dog, insofar as there is a method, is capricious at best. While we may welcome the fact that decision-makers are beginning to acknowledge a dog’s noneconomic value, we cannot rest content with the way in which these awards are calculated. When the sums range from zero to $100,000, something is wrong. One dog’s value may be five times another dog’s value, but it cannot be five *orders of magnitude* more than another dog’s value.

In U.S. law, tort regimes are one of two applicable rules for determining monetary awards in wrongful death cases. The other set of rules originate in legislative bodies, where there is also nothing short of confusion. Again, in most states laws do not recognize an animal’s noneconomic value. However, in 2015 Tennessee passed a law permitting guardians of unlawfully killed pets to receive up to $5,000 in noneconomic damages to compensate guardians for the loss of “expected society, companionship, love and affection of the pet” (Sirois, 2015). And in Illinois guardians may sue for damages for “emotional distress” and “loss of companionship” when pets are harmed intentionally or wantonly. In a trial to test that law, plaintiff was awarded $100,000 after their cat was killed in a veterinary clinic by an unattended visiting Rottweiler dog. On appeal, the size of the award was reduced. However, the guardian’s claim that the cat’s true value was not captured by her fair market value was allowed to stand (Roukas, 2007).

As the previous discussion shows, juries and legislatures are increasingly inclined to honor a guardian’s claim to have lost investments in their pets. The problem is that no standardized procedure exists for establishing the dollar value of such a loss. In this paper, I defend a way to calculate noneconomic value, but I do not stop there. I argue further that the instrumental value of a companion animal’s services to her human guardian’s ends does not exhaust her value. Many guardians keep animals primarily to improve *the guardian’s* physical security, health, or emotional equilibrium. However, other guardians keep animals primarily to improve *the animals’* physical security, health, or emotional equilibrium. The latter are concerned about the well-being of the animal for the animal’s sake and want their animals to have good lives not primarily because that will bring salutary consequences for the guardian but, rather, because that will bring salutary consequences for the animal.

One might be tempted to call this dimension of an animal’s life its intrinsic value except for the fact, previously mentioned, that such difficult philosophical controversies swirl around the concept. For example, many consequentialists think states of affairs—such as pleasure, the satisfaction of desires, or knowledge, virtue, and justice—are intrinsically valuable (Feldman, 1997; R. M. Hare, 1981; Harman, 2000; Moore, 1903; Ross, 1930; Singer, 1993; Varner, 2012). Others, along more Kantian lines, disagree, arguing that only individual human beings and, perhaps, some individual nonhuman animals, are intrinsically valuable (Korsgaard, 1996b; Regan, 1983; Ross, 1930; Scanlon, 1998; E. Anderson, 1997). To sidestep these important and foundational but murky issues, I will concentrate instead on an animal’s *self-investment* value, by which I mean roughly the present value of a wrongfully killed animal’s lost future existence given her past investments in herself.

Some will be skeptical about whether such a thing exists, and for valid reasons. I will address the most important objections below (Part 2). First, however, let us note the intuitive appeal of the idea. From eastern gray squirrels burying acorns under mulch beds to chipmunks pilfering pine seeds from conspecifics’ caches, animals save food items to consume later (Thorington, Koprowski, Steele, & Whatton, 2012; Vander Wall & Joyner, 1998). A bonobo selects a tool and lays it aside to employ hours later (Bräuer & Call, 2015). A great ape fashions a rake to retrieve a reward from a box and then hangs it up for safe keeping (Mulcahy & Call, 2006). A chimpanzee places stones next to his perch in the morning, only reaching for them in the afternoon when he decides to pelt visitors (Osvath, 2009; Osvath & Karvonen, 2012; Osvath & Osvath, 2008). An orangutan plans tomorrow’s travel route, calls it out to his distant female mates before bedtime, and they all meet at the designated spot the following day (van Schaik, Damerius, & Isler, 2013). Nonhuman primates and non-primates have foresight into their future. When such animals are killed, they are deprived of the ability to realize gains on investments they have made in themselves. That, at least, is the initial thought.

When dogs dig holes to hide bones, they are, I will argue, consciously expending their labor to protect resources from future would-be thieves. Insofar as a bone is a good to be exploited, the dog is behaving in accord with a basic economic tenet, the law of supply and demand. She anticipates that a certain good will be scarce later and invests her labor now to ensure the good’s future availability. Her behavior fits the definition of rational planning. Renounce the instincts to rest or play now. Work instead. Profit later (Dubner, 2018; Hammerstein & Noë, 2016; Noë & Hammerstein, 1995).

But, comes the initial objection, do any of these animals *know* what they’re doing? This is a critical question and, in Part 2, I will examine the extent to which dogs may have conscious foresight. To begin, however, I want to motivate the inquiry in a rough way by noting the *prima facie* plausibility of the notion that dogs have their own point of view that includes a past and a future. A point of view faces backward in time as memory, and forward in time as prospection. One’s emotions and attitudes about one’s future can be positive or negative, and one can be attracted or repulsed by one’s memories and anticipations. Generally speaking, a well-cared for ten year-old Rottweiler should look forward to her future. However, if she has diabetes, major organ failure, and osteosarcoma, a painful bone tumor that is difficult to treat, many guardians will have a pessimistic point of view about their companion’s future. The dog does not understand her medical diagnosis but she may well come to share her companion’s dim mood about her prospects. In such a situation, more than one guardian has come to think it better *for the Rottweiler* to be put to sleep rather than to continue to suffer through additional months of pain. If on occasion that verdict seems right, as I think it should and as many pet guardians have come to affirm when facing the circumstance, then it is not only possible for the animal to have her own perspective, positive or negative, on her future. It is possible for us to share it, within limits. For that is what we must do to determine when euthanasia is better, all things considered, for the animal.

It seems possible, too, for a dog to affirm or surrender her interest in continuing to live. Should she suffer an incurable depression, become incontinent and in constant pain and unable to drink or eat, she may well give up hope. Her life, we say, trying to take on her perspective, is no longer worth living for her. When the things that make an animal happy have stopped interesting her, when she is so sad and lethargic that every hour only seems to add to her burden, the question of euthanasia becomes urgent. Any minimally decent guardian will at least consider it, and a caring guardian will consider it—here is my point—from the animal’s perspective.

One hopes that companion animals have mostly positive attitudes about their future, that they enjoy the prospect of their guardian’s returning home after many hours being absent. But it also seems true that a dog can enjoy hours on her own, apart from her guardian and independently of any humans at all. She can enjoy solitary walks in the woods, the company of other dogs, and the thrill of a chase. She can teach herself new tricks for keeping track of conspecifics and for remembering where best to surprise an annoying squirrel. And much more. If these animals have their own points of view, as they certainly seem to do, then wrongfully killing one of them involves harm even if the animal is being kept by a loutish guardian who does not care for the animal. Each animal is sentient, has a welfare, and is an emotional subject of a life. Each animal can be happy or sad, excited or bored; each can have her life go well or poorly. This is true whether or not she has noneconomic value for her guardian.

Dogs have desires and aims that they pursue in common with their guardians. They also have desires and aims of their own. All their own. This is the basis for the claim that animals make investments in themselves. They pay attention to challenges from which they can learn lessons. They concentrate their energies and focus their efforts on acquiring new skills and capacities of use only to them. They set short-term goals for themselves and exercise self-control as they try to achieve them. And as they do so, they make investments in themselves independent of their guardian’s input.

Or so I shall argue. Assume for the moment that I am right, that wrongfully killing companion animals harms them by stealing from them opportunities to recoup their investments in themselves. If this is the pet’s self-investment value, then some of it is natural and some artificial. A dog’s natural self-investment value consists of her innate self-investments, the learned behaviors typical of her species. These are behaviors dogs learn from conspecifics: self-grooming, foraging, playing with other conspecifics, having sex with them, parenting offspring, and so on. A dog’s artificial self-investment value consists of self-investments she makes under the guidance of a human. She learns the proper locations for defecating, the signals for hunting ducks, the rules of safeguarding the blind, sniffing the contraband, catching the tennis ball, signaling the possibility of the guardian’s imminent epileptic seizure, and so on (Dalziel, Uthman, McGorray, & Reep, 2003).

I will say more about the components of self-investment value. First, however, there is another matter to put on the table; a cost-benefit method by which to assess an animal’s capital value. The reason is that self-investment value cannot be determined until capital value is determined.[[7]](#footnote-8) Here another problem confronts us. The methods used to determine noneconomic value are opaque if not arbitrary, with the consequence that litigants and judges are confused while court costs have become excessive. To address the problem, we need a standardized procedure to calculate what Sebastien Gay describes as “the stock of competences, knowledge, personality attributes, and characteristics that comprises the companion animal’s ability to produce economic value for her owner.”[[8]](#footnote-9) We may expect this value to increase as the animal and guardian spend time together because, as Gay observes, “the owner invests emotionally and financially in her companion animal and, in return, the companion animal performs a special form of work for its owner…[offering] loyalty, enjoyment, company, and safety.”[[9]](#footnote-10)

The Washington court case previously mentioned illustrates capital value. In Anderson v. Hayles, a jury awarded the plaintiff, Jim Anderson, $100,000 after his neighbor shot Chucky, Anderson’s 7 year-old dog.[[10]](#footnote-11) Anderson had adopted Chucky at 8 weeks, and he told the jury Chucky had a vocabulary of 100 words, could catch clay pigeons expertly during target practice, and was an excellent swimmer. He reported that he and the dog were not only inseparable. They were so close that Chucky suffered debilitating panic attacks whenever Anderson was absent for long periods. The award included $10,500 for Chucky’s special skills as a hunting dog and retriever and $36,475 for Anderson’s emotional distress (Lacitis, 2016). I will assume the difference, or $53,025, was for lawyers’ fees and court costs. “Chucky,” the jury concluded, “offered therapeutic, hedonic, and recreational value … made ‘coming home’ a more enriching experience … enhanced the value of Mr. Anderson’s relationships and built bonds to others.”[[11]](#footnote-12)

Chucky’s case both exemplifies and sets a precedent for a pet’s noneconomic value, but the jury did not say how they decided that Chucky’s noneconomic value was $46,975 ($10,500 + $36,475). To the contrary, they expressed a desire for some objective guidance about how to determine such awards. To that matter we now turn by asking, first, how human capital value is decided.

**§ 1.1 Human capital value**

The range of monetary awards in cases involving wrongfully killed humans is uncomfortably wide.[[12]](#footnote-13) While a number of the victim’s traits are taken into account—“socioeconomic status, total assets, annual income, age, educational background, and so forth for both sides, the plaintiff’s level of pain and harm, the victim’s negligence, the defendant’s repentance, and so on” (Y. Chang, Eisenberg, Ho, & Wells, 2015)—it is not clear how to assign weights to each trait or how to sum them. In fact, “no formula exists for courts to determine the amount of pain and suffering damages” in wrongful death cases (Y. Chang et al., 2015).

Instructions to juries are not helpful, either, for no judicial standards exist for measuring mental pain and suffering. As the standard reference work on the issue, *Jury Instructions on Damages in Tort Actions*, puts it, “There are no objective guidelines by which you can measure the money equivalent of this element of injury; the only real measuring stick, if it can be so described, is your collective enlightened conscience.”[[13]](#footnote-14) Consequently, jurors are likely to be told only that the law permits them “… to award to plaintiff a sum that will reasonably compensate him for any past physical pain, as well as pain that is reasonably certain to be suffered in the future as a result of the defendant's wrongdoing” (Douthwaite & Eades, 1988). As Chang observes, “Other than this, to date, there is no conventional wisdom or rules of thumb for quantifying pain and suffering. In practice, the plaintiff generally simply claims an amount and contends that it is just, with little supporting evidence” (Y. Chang et al., 2015).

One way to make a start is to observe the distinction between a person’s worth and their value. While Jermaine’s economic value may be greater than Carlos’s economic value, Carlos is not Jermaine’s inferior in moral worth. Here I simply assume the Enlightenment commitment enshrined in liberal political philosophy that no person is worth more than another. Despite Jermaine’s admirable high achieving personality and Carlos’s lower aspirations, these differences in personality do not render Carlos unequal in dignity with Jermaine. While awards should recognize *variability* in the economic value of low- and high-earners, they should also recognize *invariability* in the moral worth of all persons.

In keeping with these liberal commitments, legal settlements should be understood as attempts to compensate survivors for the economic value of a victim’s life, not what we call in ordinary moral thinking the victim’s *meaning* or *worth*. By the *meaning* of a life I mean the internal autobiographical narrative a person constructs as they gather their past and future into a coherent story that reflects their pursuit of their values and ideals (Frankfurt, 1971, 1988; Parfit, 1984; Schechtman, 1996; Wolf, 2010; MacIntyre, 1984; Mink, 1978; Ricœur, 1984). By the *worth* of a person I mean, in ordinary moral thinking, the dignity that inheres in their lives. Every person has equal dignity, whether or not they have yet given their lives a meaning and whether they are living out the values they say they endorse (Korsgaard, 1996b; McMahan, 2002; Regan, 1983; Parfit, 2011). One may be slothful in pursuing his goals, deluded about the meaning of his life, and self-deceived in the telling of his autobiography without losing his dignity.

If our worth is incommensurable with our value, as the previous paragraph implies, then monetary awards in human wrongful death suits that vary from individual to individual can only be seen as attempts to compensate survivors for the decedent’s lost economic value. Such awards are not meant to compensate survivors for the decedent’s lost worth. On the one hand, different victims reach different levels of achievement in their pursuit of their economic goals and this fact justifies courts in assigning different sums of money to different sets of survivors. On the other hand, if we try, as I think we should, to compensate survivors for the victim’s lost opportunity to give their lives meaning by pursing the values they had adopted for themselves, then the amount for these awards should be the same in every case. For all persons are equals of each other in dignity and worth. Therefore, when additional awards are given to survivors for the unique, irreplaceable worth of the victim, these awards should be for fixed sums and not vary from person to person.

These principles are consistent with the awards made to families of victims of the September 11 terrorist attacks. When the US Congress established the Victim Compensation Fund for survivors of relatives lost in the Twin Towers, the person in charge of allocating the monies, Kenneth Feinberg, followed procedures consistent with the approach just described. On the one hand, Feinberg provided variable awards according to variable estimates of each victim’s lost future income. Victims who had made significant self-investments were given larger awards than survivors with smaller self-investments because the former presumably had devoted more time and energy than others to advanced education, or taken more financial risks embarking on novel enterprises. On the other hand, Feinberg provided for a fixed sum of $250,000 to be given for each victim’s “loss of enjoyment of life” no matter the victim’s age or circumstances (Ackerman, 2005).

It is also important to point out that Feinberg did not adjust awards based on assessments of a person’s desert. Awards for victims who had foregone opportunities to make large sums of money in order to work for far lower compensation improving the lives of the dispossessed were the same as awards for those who, say, may have been awaiting trial on suspicion of having committed a white collar crime. Whether a victim had mindlessly squandered their time, foolishly gambled away their resources, or spent their time relieving the suffering of the homeless were not factors Feinberg allowed to be taken into account.

Let us take stock. When a human is wrongfully killed, a survivor may receive two awards. The first award would be for the victim’s noneconomic value and, in the 9/11 settlements, this award was for a pre-determined non-variable sum. The second award would represent the victim’s expected future earnings, a highly variable figure. How can the second, the economic, value of a victim’s life be determined?

In trying to answer this question, economists have three options. In the first option, the value of a statistical life (VSL) approach asks, what is the cost of avoiding the death of one person (Viscusi, 2005; Viscusi & Aldy, 2003)? This model is useful in cases where a governmental agency is debating the costs and benefits of various policies. The goal is to determine the appropriate trade-off of potentially large benefits for many against potentially severe harms for a few. For example, if it will cost an auto manufacturer $1 million to replace a defective part in thousands of cars in order to save one life, is the government justified in imposing that cost on the car maker? VSL is suited to answer such questions because it derives its answers from market information. However, there are no markets in unjustly killed animals and no governmental agencies charged with deciding questions of stakeholder trade-offs in this matter. Consequently, there is no information about the market value of unjustly killed companion animals and no way to get VSL off the ground. For this reason, I set VSL aside.

In the second model, economists ask what someone would be willing to pay to extend their life for a set number of years at a set quality of life. This approach presumes that a person assesses their financial circumstances, life expectancy, and anticipated quality of life and then decides whether a certain job is too risky for them to accept at the offered salary. For example, one might decide against taking employment as a logger when one learns how many loggers are killed each year and what they are paid. Since we cannot ask dogs how much they are willing to pay to extend their life under various scenarios, the model, which is mathematically complicated and challenging to implement, is not appropriate for our purposes. We may set it aside, too.

The third, human capital, model is relevant and promising. It is also easier to operationalize than either of the first two procedures. Here, economists treat human beings as owners of a piece of property, their respective lives. One determines the property value of one’s life by calculating the financial damages that would accompany loss of the asset. After deliberating along these lines, one might respond by purchasing a $25,000 life insurance policy. As dogs are considered property under current law and as insurance policies are available for companion animals, this approach is most responsive to our concerns. It is also known as the “pecuniary loss rule” and proceeds broadly as follows.

Identify the revenue stream that would have resulted from responsible management of the “asset,” the owner’s life, had it not been lost. The revenue stream is one’s expected future earnings. Let *t* represent the year of the earnings in question, *Et* the amount of the worker’s earnings during that year, and *n* the last year in which the worker would have had earnings had they not been killed. The following formula represents, as a first pass, the present value, *PV*, of the lost future earnings.

Three modifications are necessary. First, to account for the probability that one’s salary will increase over time, use *g*for rate of income growth. Second, to acknowledge the fact that some of the decedent’s future income would have been spent on or consumed by the decedent herself, subtract a percentage of the decedent’s annual income from the final award. For example, the VCF adjustment for personal consumption, *PC*, for a married person with one child earning between $50,000 and $60,000 was 11.2%.[[14]](#footnote-15)

Third, we must discount for the fact that we typically value current pleasures more than the promise of the same pleasure in the future. Inflation will render today’s dollar less valuable in the future, and the promise of receiving a salary of $52,000 ten years from now means that one could accept a lesser amount today, invest it in instruments returning profits at a certain rate, and have a total of $52,000 in ten years. Any lump sum payoff today that represents the decedent’s expected income should, therefore, be discounted at some rate, *r* (Bryan & Linke, 1988). For purposes of simplicity, assume both *g* and *r* remain constant across the years.

Acknowledging growth, personal consumption, and discounting, the formula is now:

Here is a simplified fictional example of how Feinberg might have calculated a victim’s present value. Take the victim’s age, income, and number of family members. Create age-income tables based on groupings of victims who have similar expected future earnings from salaries, bonuses, and employer contributions to pension plans. To avoid duplicative recovery, deduct any collateral sources from the total (Rabin, 2006), such as the amount of any life insurance payments. Because of the finite nature of the pool of money allocated by Congress, cap any victim’s annual future earnings at $231,000 per year.[[15]](#footnote-16) To try to lessen the gap between awards of highest and lowest earners, give no survivor less than $250,000 and no survivor more than $7.1 million.[[16]](#footnote-17) In fact, Feinberg’s median awards were about $1.7 million, the average was about $2.1 million (White & Hobday, n.d.).

Let us make the procedure clearer by assuming that our imagined victim, Administrative Assistant, was 55 years old, married with one child, and earning $50,000 per year after taxes. Assistant, who was planning to retire at age 65, was receiving annual raises of 3%.[[17]](#footnote-18) Imagine Assistant’s employer was contributing $2,000 annually to her pension plan.[[18]](#footnote-19) Taking all of these assumptions into account, here is Assistant’s expected future household contributions:

Table 1 gives the present value of each year of Assistant’s projected future lost earnings.



Table 1: Present value, *PV*, of decedent’s expected future household contributions assuming current (*t*=0) salary and pension, *E*, of $52,000; annual pay raises at growth rate, *g*, of 3%; less personal consumption, *PC*, at 11.2%; and discount rate, *r*, of 2.7%

As shown, the discounted present value of Assistant’s ten years of future earnings is $530,515. However, two further adjustments are necessary before the award can be finalized.

First, to prevent duplicative payments to survivors for economic loss, we must subtract collateral income that may come to them from other sources. If Assistant has, for example, a life insurance policy that has paid the survivor $25,000, then that figure should be subtracted from *PV* so that survivors are not compensated twice for the same value. We are now at $505,515 ($530,515 - $25,000).

Second, we must address the value of the victim’s *noneconomic* losses.

The Zadroga Act defines noneconomic loss as losses for physical and emotional pain, suffering, inconvenience, physical impairment, mental anguish, disfigurement, loss of enjoyment of life, loss of society and companionship, loss of consortium (other than loss of domestic service), hedonic damages, injury to reputation, and all other non-pecuniary losses of any kind or nature (U.S. Department of Justice, 2018).

Can a dollar figure be placed on the “loss of enjoyment” of a victim’s life, or is that value incommensurable with monetary valuations? This is a fundamental philosophical question. Some philosophers hold that noneconomic values cannot be converted to pecuniary figures (Chang, 1997; Raz, 1986). However, Special Master Feinberg, undaunted by the argument that noneconomic value cannot be quantified, insisted on remunerating survivors on this score. However, he actively resisted all requests to associate the amount of noneconomic loss with the amount of economic loss. Refusing to see the one as a mirror of the other, he rejected calls to assess the degree of emotional distress suffered either by the victim or survivor. As he would later observe:

Did the Congress expect me to calculate different amounts of noneconomic loss in each and every case? That was impossible. I could not engage in such a claim-by-claim determination. I refused to exercise Solomonic judgment in calibrating individual degrees of pain and suffering and emotional distress. . . . Not only was such a task impossible, but any attempt at it would fuel family divisiveness and discontent (Feinberg, 2005, p. 35).

Instead, for the noneconomic harm suffered by the victim, Feinberg concluded that “the most rational and just way to approach the imponderable task of placing a dollar amount upon the pain, emotional suffering, loss of enjoyment of life, and mental anguished suffered . . .” was to grant each victim’s estate the same, “scheduled” and non-negotiable, amount, $250,000. Why this amount?

That $250,000 figure is roughly equivalent to the amounts received under existing federal programs by public safety officers who are killed while on duty, or members of our military who are killed in the line of duty while serving our nation. See 38 U.S.C. §1967 (military personnel); 42 U.S.C. § 3796 (Public Safety Officers Benefit Program).

Feinberg added a scheduled award of $100,000 for the noneconomic harm suffered by each spouse and dependent. The following formula represents these two adjustments and calculates the Award (*A*) for Assistant:

+ $250,000 + $100,000 (spouse) + $100,000 (child)

Given our assumptions, the final amount of the award would be $955,515 (505,515 + 250,000 + 100,000 + 100,000). I note parenthetically that this amount fits comfortably within the range of actual 9/11 awards, a fact that goes some way toward confirming the plausibility of the example.

**§ 1.2 Companion animal capital value**

As we have seen, the human capital approach honors two robust intuitions: that people have *different* future expected earnings and *the same* moral worth. As we turn to the animal case, do we have the same intuitions? Not according to the received view of animals. On the received view, dogs have neither earnings nor moral worth. On the received view, it makes little sense to try to calculate a dog’s future expected earnings and no sense to try to calculate her moral worth.

I will argue that the received view is wrong. The two intuitions *should* hold in the animal case if they hold in the human case. However, let us begin by noting something less controversial. The human capital model suggests a reason to predict that an unjustly killed animal’s present value will generally exceed her fair market value. That reason is that fair market value ignores the value of the services the animal renders to her guardian. Following Sebastien Gay, call this the animal’s capital value. To determine it, assume withthat a dog’s value to her guardian will be the dog’s “earnings,” or the amount the guardian would be willing to pay the animal for the animal’s services (Gay, 2011). To adopt this view is already to begin to move away from the received view of animals. But if we adopt it, as I now will, how would we go about determining the dog’s “wages” for her services?

Gay suggests three common economic assumptions. First, assume dog guardians are rational and will not invest in their animals unless they expect a return greater than the investment, a return in terms of enjoyment or services. Second, assume dog guardians will not invest more than the animal’s value to them. Third, assume that the enjoyment any rational guardian receives from a possession over time is greater than their investment in it. In the case of animals, guardians have the option of selling their possession, giving up the animal up for adoption, or in some other way putting an end to their responsibility for the animal.

These assumptions entail that an animal’s present value will fluctuate over time as the guardian’s enjoyment or need for the animal’s services fluctuates. A mature trained dog is usually more valuable to a guardian than an immature untrained puppy. An elderly sickly cranky dog is likely of less value than a robustly healthy middle-aged dog. As a dog’s physical infirmities render her less successful in providing services she once provided easily, and as the animal’s medical expenses become more burdensome to her guardian, the dog’s present value is likely to decline.

How do we determine *E*? Imagine that a puppy is a new “employee” of the guardian. The animal’s initial employment period is a time devoted mostly to training exercises when the guardian dedicates hours to educating the new “hire.” Calculate the number of hours the guardian is investing in the animal and determine the cost of those hours. Let us assume Anderson earns $52,000, roughly the annual median income of a US worker in 2016, or approximately $24 per hour. A common assumption in economics is that a worker’s hourly wage is a fair representation of the value of their time. A plausible thought is that your wage is a reasonable approximation of the amount of money you would accept to choose to spend an hour of your life working rather than doing something else. Under these assumptions, the cost of Anderson’s investments in his dog in Year 1 are the opportunity cost of each hour he spends with the animal. This is the amount he could have made as income had he spent the hour working, or $24/hr.

Suppose Anderson spends a little less than an hour a day training Chucky during Year 1, or about 300 hours, and a little more than an hour a day during Year 2, or about 400 hours. In the middle of Chucky’s life, the training periods increase and, later, decrease when Chucky has perfected all of the target skills. Late in Chucky’s life, let us assume, Anderson invests virtually no hours in training.

How do we assign a number to these investments? Adopt again the conceit of the dog as an employee of the guardian. In this thought experiment, the guardian pays the dog a wage or, more accurately, a “shadow-wage,” that is, the marginal value of a unit of labor at the optimal point of a company’s production function. The guardian, in other words, might “pay” the dog to learn to protect, entertain and exercise the guardian. Since some guardians have invested more in their dogs (think, for example, of a show dog) and the dogs consequently have more advanced skills than other dogs, the dogs with heavy investments may command, as it were, higher future wages. For example, a woman might not be willing to pay her dog much as a puppy, but when the dog begins winning purebred blue ribbons at competitions, she might substantially increase the wage. Different dogs might “command” different wages from the same guardian, as the show dog might get “paid” more than the conspecific yard dog in the same household. Along these same lines, a guardian might not be willing to pay her lap dog as much as she pays her hunting dog if the latter provides her with a reliable, strenuous workout not provided by the lap dog. To the extent that dogs have different capital valuations, as they do, any model of animal value must be sensitive to this fact, as ours will be.

How then do we determine *E*? To answer this question we must decide what the dog’s “wages” are. Several possibilities present themselves. We could set them as equivalent to the guardian’s hourly wage. However, this approach is wrong-headed. The guardian’s wages are set by two rational contractors who negotiate the value of the employee’s time and labor. But a dogs’ wages are not similarly set by two rational contractors because dogs are not capable of contracting or negotiating. So this approach leaves us at an impasse. We must, rather, find a reasonable way to compensate a laborer when that laborer is incapable of understanding compensation or negotiation.

Four assumptions are reasonable to get us started on this question.

First, assume that the guardian is rational, and that the sum of *E* across time is likely to be higher than the sum of *I* across time. The idea here is that the guardian will not invest more in the companion than the guardian thinks the companion is worth. During any year, that is, the sum of future expected earnings must be higher than the sum of future expected costs. This is the reason a guardian will frontload investments, spending many hours training a puppy while knowing that the dog may not be able to return the services until much later in life.

Second, assume that *E* will vary with the guardian’s age, personality, economic prospects, emotional health, and other personal characteristics. Third, assume *E* will vary with the dog’s age, personality, training, breeding, etc. Fourth, assume that the amount of investment early in the animal’s life will broadly predict the amount of the guardian’s enjoyment late in the animal’s life. For example, consider two guardians. Uninterested Guardian spends less than an hour a day nursing and playing with a puppy when the dog first comes home. Interested Guardian spends six hours a day with the puppy. Interested Guardian may be expected to “pay” more than Uninterested Guardian in wages to the dog, to engage the dog longer and so to “hire” the dog for more hours, and to invest more in the dog’s medical care at the end of life.

Third, assume that hours a guardian spends with the companion will mostly be hours of considerable enjoyment. However, there may be periods when the interactions are of comparatively low quality if either the dog or the guardian is sick, distracted, or stressed. For example, if a guardian’s job suddenly requires 60 hours of work per week, the guardian may have no time for the dog. However, if the dog is mature and has advanced capacities, even a few minutes spent with the dog may be deeply rewarding for the guardian. On the one hand, if a dog is especially attentive and responsive, the guardian’s appreciation of the animal will be in the higher ranges, especially with dogs that have made significant self-investments by learning, for example, to run obstacle courses, hunt, or catch Frisbees at a professional level. On the other hand, if a dog is ill or anxious, the guardian’s appreciation may be lower.

Fourth, assume that a guardian’s enjoyment of the animal will fluctuate over time and vary to some degree with the guardian’s financial situation. For example, the wealthier of two guardians will be able to spend proportionately less of their overall income pursuing activities they enjoy with their companion than will the less wealthy of the two guardians. With more economic resources at one’s disposal, the wealthier guardian will also spend proportionately less of their overall income taking care of the animal’s medical bills. We may not assume what is not true, that the more money one makes the more one will enjoy one’s animal companion. Higher income does not translate into higher quality time spent with an animal.

If we followed the human capital model to determine companion animal capital, then we would assume a steady annual growth rate in the animal’s earnings, as follows:

However, because we anticipate that a companion animal’s “salary” may fall as well as rise, and that it may do so dramatically and independent of other economic forces, we cannot assume gradual changes in, much less a constant value for, *g*. Therefore, we must change the formula to allow us to account for fluctuations in Chucky’s earnings year by year. If Chucky’s expected life span is 14 years then, before any discounting, the present value of his future contributions would be the total of each year of lost earnings, or:

Now, before turning to discounting, how do we determine earnings?[[19]](#footnote-20) Here is one way. Count the number of pleasant hours the guardian spends with the animal, estimate the value to the guardian of a pleasant hour spent with the animal, and add up the results. Along these lines, notice that guardians receive different sorts of returns on their investments from their pets. All dogs, insofar as they are appreciated by their guardians, provide companionship. Many provide leisure activities, such as hunting dogs. Many provide essential perceptual information, such as seeing eye dogs. Many provide critical psychological stability, such as emotional support animals and so-called lap dogs and cats. Loyal and agreeable dogs serve as catalysts for community, conduits for guardians to get to know neighbors better. Dogs can create new social support networks and strengthen existing friendships (Arkow, 2013; Wood et al., 2015).

Companion animals cannot do everything that is sometimes claimed on their behalf. For example, in dealing with the wrongful deaths of children, some states allow awards to compensate survivors for the lost “society” of the child. If Chucky played the role of Anderson’s child, Anderson might, by analogy and as a result of changes to the law, be entitled to compensation for some pecuniary losses. The state of Ohio, for example, specifies that in the case of a lost child, the loss of the child’s society includes loss of

… companionship, consortium, care, assistance, attention, protection, advice, guidance, counsel, …[[20]](#footnote-21)

But neither Chucky nor any other companion animal lacking language can provide their guardian with advice, guidance, or counsel. However, animals can provide acceptance (companionship), commonality in pursuit of shared goals (consortium), solicitude (care), physical and psychological aid (assistance), concern (attention), and safety (protection). Can we set a dollar value on those services? At least five strategies are available.

First, we might simply ask each guardian to set the amount of compensation they would accept for the loss of their unjustly killed companion. However, and as is apparent, this method would be susceptible to abuse by self-interested guardians. Reasonable guardians would request, and deserve, guidance. What sort of guidance could they be given?

We might, secondly, tell guardians to estimate the amount they would pay to spend an hour with their animal rather than spending that amount for an hour of some similar activity (e.g., entertainment, education, self-improvement or self-protection). We may illustrate the idea by referring again to Chucky. Imagine that Anderson is willing to pay his dog up to $2 per day to entertain and comfort him plus another $5 per day for the dog’s role in persuading Anderson to walk twice a day. (Imagine that a health club membership costs $5/day and Anderson figures that he does not need to buy a membership because Chucky insists that he walks twice a day.) Under these assumptions, Chucky’s “wage” is $7/day.

Suppose now that Anderson thinks Chucky is not a sufficient guard dog (perhaps because he warms too readily to strangers), so Anderson must invest in a home security system at $10 per day. Had Anderson a larger, more menacing dog, he might not need electronic security. If he had, say, a German Shepherd, Anderson might “pay” the German Shepherd $2 for entertainment and $5 for exercise—the same amounts he pays Chucky--but he would save the money he now spends for security and could afford to pass along the savings to the bigger dog. Here the German Shepherd’s shadow-wage would be $17 ($2+$5+$10). However, we must now subtract the guardian’s relative costs for each dog, costs that also vary. Suppose a German Shepherd’s food and medical costs average $12/day whereas Chucky’s average $2/day. In this case, the cost-adjusted shadow-wage for each dog would be the same; $5 for the German Shepherd ($17-$12) and $5 for Chucky ($7-$2).

This second method seems promising, especially because it shows that different activities the dog engages in may be of variable worth to the guardian. But, whatever its merits, this option is also susceptible to ahbuse by unscrupulous grieving guardians. Fortunately, there are three more possibilities.

Fourth, we might discover the actual amounts of insurance in force for these losses. Unfortunately, as far as I know, pooled pet insurance data is not easily accessible and so, as it happens, this approach is not likely to give us the results we need.[[21]](#footnote-22)

A fifth method remains. Assume that the average American earning $52,000/yr spends $2,000/yr on entertainment (Scott, 2012), and $2,000 on fitness equipment, fees, and gym access. Assume further that Anderson earns the median American wage, would spend the median amount on entertainment and fitness were it not for Chucky, and would spend an additional $4,000 for mental health counseling to treat his anxiety were it not for the “therapy” he receives from his hours with Chucky. Assume further that in Year 4 with Chucky, Anderson spends most of his free hours enjoying the dog. The number of hours are not the 3 ½ hours per day recommended by professional dog trainers but, let us say, a solid average of 2 hours per day for the entire year (Spieser, 2011). For these hours, Anderson “pays” Chucky $2000 each year to entertain him, $2000 to walk, hunt, and stay fit together, and $4000 to help him keep his mental equilibrium. The total, or about $8,000, represents the savings in fees Anderson would have to lay out were it not for his companion.

We might be tempted to think this is a complete account of Chucky’s capital value. The approach admirably captures certain negative utilities, such as the expenditures Anderson is spared because of Chucky’s services. However, it does not recognize Chucky’s positive utility, the pleasure, satisfaction, and sense of meaning with which Chucky imbues Anderson’s life. For example, when dog walkers are asked whether they consider their activity of walking their dog more of “a chore” or “a pleasant experience,” 85% say the latter (Newport, Jones, Saad, & Carroll, 2006). Sixty percent of pet guardians believe pet guardians “lead more satisfying lives” than others (Newport et al., 2006). Assume a guardian can rank the complexity and intensity of their time with their companion and pay them accordingly. An hour with an animal who is contributing nothing to the relationship might be worth $1/hr or less. However, an hour when the guardian is wholly engaged with their companion—and is receiving essential, complex, and intense emotional support, or the guardian reports that they could not have spent the hour in any better way—then the hour might be worth $25/hr or more, equal to or greater than a guardian’s own wage. That guardians take days off to spend with sick animals attests to the reality that nonhuman companions, like children or elderly parents, can be worth a person’s wage.

Assume further that the guardian factors these benefits into the animal’s shadow wage, increasing the wage paid as the work done increases in value. At times, an hour of an immature dog’s time that drags by may be worth far less than the wage the guardian is earning from her employer. Suppose these hours are valued at closer to the $1/hr end of the scale. At other times, as I say, an hour packed with the affections of a faithful trusted companion animal may be worth more than the wage the guardian is earning. Assume the dog’s wage is set when the animal first arrives in the household as a novel, anticipated guest and that it will rise as the animal matures, as his personality fills out, and as he reaches the height of physical prowess. Finally, the wage may plateau and eventually decline with the approach of the animal’s end of life. As his ability to engage and repay his guardian’s emotions diminishes, so does his capital value. Given our assumptions, we should expect *E* to appreciate over time.

However, it is not clear that the New York court is correct when it claims that “depreciation is no factor at all; manifestly, a good dog’s value increases rather than falls with age and training” (*Stettner v. Graubard, 82 Misc.2d 132*, 1975). To the contrary, some dogs’ capital value clearly depreciates as their lives become more onerous for them. And, should a guardian suffer a financial or emotional blow, the dogs earnings may fall as well. A combination of dog ill health and a guardian responding to an unrelated personal calamity by losing interest in the dog might produce a significant decrease in earnings. However, we do not show this possibility in our example because even in the event of catastrophe for the guardian, the dog’s earnings may well increase if the guardian responds to hard times by finding in the dog an even more important source of support and companionship.

Table 2 presents an estimate of Chucky’s present value consistent with these assumptions.

It sets *w* at $5 in Year 1, rising to $25 in Year 9, dipping in Year 13 to $15, and rising again the last year to $20.[[22]](#footnote-23) The value rises at the very end of the dog’s life because his impending death occasions deep emotions for the guardian, primarily grief but including a renewed appreciation of the animal.



Table 2: Dog’s expected annual earnings

We now turn to two discounts. First, we must discount Chucky’s personal consumption costs. Anderson spends time grocery shopping for Chucky and taking him to the veterinarian.[[23]](#footnote-24) Anderson also pays for Chucky’s food, medical expenses, pharmaceuticals, vaccines, annual municipal licensing fees, collars, treats, toys, and gifts. Second, we must discount the future.

If we assume *PC* = 11.2% and *r* = 2.7% and carry over from Table 2 Chucky’s annual earnings, then Table 3 will represent Chucky’s present value in Year 7.



Table 3: Present value in year 7 of decedent’s expected future household contributions

Had Chucky lived a typical lifespan, he would have lived another 7 years. The present value in year 7 of the seven lost years is $144,944. Is this, then, the amount due to Anderson? At least three answers are possible.

Since Anderson was robbed in Year 7 of all future enjoyments of Chucky, the first answer is yes. The award should equal the discounted present value of all future years. Adding the lawyer’s fees of $53,025 to $144,944 gives a total of $197,969. Call this strategy *Maximal*. If it is the right answer, then the jury in Chucky’s case under-estimated the dog’s value by nearly half ($100,000 versus $197,969).

A second answer holds that much of the value found in Chucky’s lost latter years is not eligible for compensation because Anderson may replace Chucky with a new companion to provide Chucky’s services. While this argument may seem to undervalue Chucky’s life, it gains respectability when we remind ourselves that capital value is not an assessment of the intrinsic value of Chucky’s life but an assessment of Chucky’s instrumental value to Anderson. On this point, empirical evidence is relevant that loved ones seem not to be as irreplaceable as is commonly claimed. “The death of a loved one is a loss from which one will never recover.” We hear this said; we expect the bereaved to express their grief in such terms.

But the evidence suggests the sentiment is not true, strictly put. Nearly half of those losing a spouse do not show signs of depression (Zisook, Paulus, Shuchter, & Judd, 1997), and younger people often remarry quickly, men at a median interval of 1.7 years and women at 3.5 years (Cleveland & Gianturco, 1976). “[M]any, and sometimes the majority, of bereaved individuals exhibit only short-lived grief-reactions and a relatively rapid return to baseline functioning” (Bonanno, Moskowitz, Papa, & Folkman, 2005).

If guardians of deceased companion animals quickly find other animals with whom to share their lives, thus ameliorating if not eliminating the pain associated with the death, it seems reasonable to discount the animal’s future value. On the approach we might call *Minimal*, awards would equal only the value of the animal in the year the animal is killed. In Chucky’s case, this value is $25,230. Adding the lawyer’s fees of $53,025 to $25,230 gives a total *Minimal* award of $78,255, about $20,000 less than Chucky’s jury’s estimate.

However, *Minimal* seems uncharitable because overly optimistic in evaluating the speed at which bereaved guardians recover their psychological equilibrium. It is more generous to provide a guardian with two years to overcome their loss, even when comforted by a new companion. According to this approach, call it *Moderate,* the right strategy is to identify Chucky’s present value as the value of two of his lost years, or the present value of Year 9, that is, $59,289. After adding lawyer’s fees of $53,025, *Moderate* would be $112,314, about $10,000 more than Chucky’s jury’s award.

Which of the three answers should we recommend? All seem plausible, and *Maximal* mirrors the procedure followed in the 9/11 settlements, one reason to adopt it. However, in light of three additional principles, I find *Moderate* the most reasonable.

*Deterrence* Awards must be high enough to deter future crimes.

All three methods satisfy this condition. The minimal award should be as effective in deterring future crimes as the higher awards. The second principle is:

*Replaceability* Awards must recognize that guardians may try to replace their lost

companions, that grieving companions often claim that adding a new companion to the household ameliorates some of the harm, and that empirical evidence suggests grief is often almost entirely relieved within three years.

The third principle is:

*Affordability* Awards must be low enough that they neither bankrupt the payer (thereby

preventing payment of the penalty) or make pet guardianship excessively expensive (thereby making it impossible for average consumers to afford pets).

Only *Moderate* accords with *Replaceability* and *Affordability*. As the results found in Chucky’s case suggest, *Moderate* sets reasonable monetary awards in amounts not likely to overly inflate the costs of guardianship. One study suggests (Green, 2004, p. 218) that if emotional damages for a dog’s loss are set as high as $25,000, a guardian’s annual veterinary costs increase by less than 13 cents. A veterinarian’s annual insurance premiums increase by less than $213. *Moderate* awards would allow dog losses to be set as high as $125,000, a five-fold increase over the amounts mentioned. But even this increase does not seem to violate *Affordability*. A five-fold increase would mean only a 65-cent increase in veterinary costs to the consumer and a $1,065 increase in insurance premiums to the veterinarian. These are modest increases, not likely to undercut participation in animal guardianship or veterinarian business models. If we accept the three principles, as I think we should, *Moderate* is the more reasonable approach.

To this point, we have analyzed Chucky’s capital value, an essential exercise insofar as it prepares the way for the next argument, the argument I am most at pains to present. For while we have found a way to estimate Chucky’s instrumental value to his guardian, we have not considered the intrinsic value of Chucky’s future for himself, the subject to which I now turn.

**§ 1.3 Companion animal self-investment value**

We are now in position to try to define companion animal self-investment value.

To determine a pet’s non-economic value in a non-arbitrary way, *tie self-investment value to capital value.* This approach refuses to leave the problem to the unpredictable intuitions of solitary jurors and it provides critical guidance for forming a “collective enlightened conscience.”

Here is what I propose. First, estimate capital value using the *Moderate* method described above. Second, determine self-investment value as a function of capital value by principles to be explained. Ensure that one’s procedures are transparent, recognize that capital and self-investment value are dissociable, and acknowledge that self-investment value can rise (as when a dog begins spending pleasurable solitary hours hunting for himself in the woods) even as capital value falls (as when a guardian spends less and less time with that same dog).

*A wrong-headed approach: fine-grained*

Two approaches are possible. The first approach uses a shadow-wage schema. On this model, we imagine that the dog pays itself hourly wages (*wt* ) and we define the animal’s self-investment at *t* as *sit*. Determine this value as the product of the wage and the sum total of hours spent in guardian learning (*glt*), that is, educational and training activities with a human tutor, plus solitary learning (*slt*), the educational and training activities apart from the companion.[[24]](#footnote-25)

Call this approach *Fine-grained*. Its formula is:

*sit* = *wt* (*glt* + *slt*)

Whatever its merits, this approach is wrong-headed for two reasons.

First, it is nonsensical to think a dog grasps the idea of paying herself for her services. We can only estimate the dollar value humans put on their time and efforts because adult humans trade in the monetary ecosystem of exchanges. We understand what money is and how it functions to replace the act of bartering goods for services. We grasp, some better than others, the possibility that a powerful person might use intimidation and obfuscation to corrupt negotiations and undermine the trust that is essential to exchange. By contrast, nonhuman animals do not—and presumably cannot—understand these concepts, much less engage in the prescribed practices. This is the first reason that *Fine-grained* is unworkable; it is not possible to make sense of the idea of a dog paying wages to anyone, much less herself.

Second, *Fine-grained* assumes we can make subtle judgments about animals’ mental states. How intently is the dog trying to learn a new trick? Is it worth $10 or $100 to the animal? Or $10 or $11? How would a dog even begin to make such judgments? She could not, and would not. Nor can we. This method requires us to set values in a way that is unjustifiable. As Aristotle noted, one should not aim at a level of scientific precision when one’s subject matter does not permit it. *Fine-grained* requires us to think we can apply the concept of a wage to situations in which a dog is negotiating with herself over how to spend her time. It also requires us to think the dog understands agreements, compensation, and power relations. Unfortunately, neither possibility is plausible; dogs have no access to fundamental economic ideas.

We must reject *Fine-grained*. It assumes what is likely false, that nonhuman animals can deliberate about their value.

*A better approach: coarse-grained*

A second, more promising model, is available. This view, call it *Coarse-grained,* mimics the procedure followed in the 9/11 deliberations by setting a flat rate for the part of the award meant to compensate for loss of enjoyment of life. However, we face a problem that Special Master Feinberg did not. He had guidance from Congress in setting the amount at $250,000; Congress had set aside a fixed amount of money that Feinberg could not exceed. We do not have a similar basis for calculating our awards. Here is what I propose.

Form groups of similar animals so that we can compare like to like. All dogs with capacities similar to those of the dog killed are gathered together and their capital value determined. These classifications of individuals provide us with some measure of comparison on which to base our decisions. Here, a dog’s self-investment value will not be determined individually. Rather, it will be determined as the median point between the lowest and highest capital values of all dogs similar in relevant respects to the lost dog. The method recognizes differences between various groups of dogs without committing itself to the questionable idea that we can fairly establish differences between the self-investment values of individual dogs. The approach is motivated by the desire to set a flat rate for all relevantly similar cases. Here is an illustration.

Chucky’s *Moderate* capital value at death is $59,289. Suppose there are eight other surviving dogs similar to Chucky in age, breeding, training, personality, disposition, and so on. Rank all nine individuals’ capital values in ascending order, from lowest (*lc*) to highest (*hc*). To make things easy for us, assume that four dogs have lower capital value than Chucky, and four higher. Since the number of animals in this set is odd, and the individuals {*x*1, *x*2, *x*3, … , *xN*} are rank ordered with *N* members, the self-investment value (*SI*) of any given animal in the class at *t* will be:

*SIt*  = *xt(N+1)/2*

Call this approach *Coarse-grained.* Here, Chucky’s self-investment value is the median value of the 9 dogs, that is, Chucky’s value, or $59,289. However, and this point is worth underscoring, the method sets the self-investment value of the other 8 dogs—to include *lct* and *hct* –at $59,289 as well. But, given the differences among these dogs’ capital values, is this fair?One might think that the method underestimates *hct*, the dog with a capital value potentially much higher than Chucky, while overestimating *lct* the dog with a capital value potentially much lower than Chucky.

We should resist the conclusion that Coarse-grained is unfair. To estimate an animal’s self-investment value is to operate in murky territory. Since we are trying to estimate a dog’s value to herself using measures derived from her value to her companion, our method should reflect the uncertainties. We should not pretend to a level of precision our subject matter does not admit. *Coarse-grained* honestly reflects the vagaries of our problem; to set one self-investment value for the whole class of relevantly similar dogs is the best we can do. These are all points in favor of *Coarse-grained*. The method is open, its assumptions are clear, it reduces the subjectivity and uncertainty surrounding awards, and its results are available for debate and refinement. Choosing the median of the class rather than the mean also makes the method resistant to the skewing effects of outliers. *Coarse-grained* does not weaken a judgment’s deterrent effects by setting awards too low or render defendants unable to pay restitution by setting awards too high. It is reasonable, transparent, and enforceable.

*Application of the method to Chucky’s case*

The theory proposed here implies that a companion animal’s total value on the day he is killed, *TVt* , is the sum of his present capital value and his self-investment value:

*TVt = PVt  + SIt*

or, in Chucky’s case, $118,578 ($59,289 + $59,289).

If members of the Anderson v. Hayles jury had been guided by our model, they would have realized they made two mistakes in calculating Anderson’s award. The first mistake was that the jury under-estimated Chucky’s present capital value in Year 7 by some fifteen thousand dollars. Recall that the jury arrived at a $46,975 capital value by adding together $10,500 for Chucky’s special hunting skills and $36,475 for Anderson’s emotional distress. Our *Moderate* model returns a figure of $59,289. According to the model, therefore, the jury underestimated Chucky’s capital value by $13,714 ($59,289 – $46,975).

The jury’s second mistake was failing to recognize Chucky’s self-investment value. According to the model, the jury’s calculation ($0) should have been $59,289 higher than it was. In sum, how far off was the jury? Perhaps not far. The jury shorted Chucky’s capital by $13,714, and Chucky’s self-investment value by $59,289. If we add those two figures to the jury’s award of $100,000, the new award would be $173,003. So, according to our model, the jury’s award was too low by $73,003 ($173,003 - $100,000). We can, however, admire their work. For, given their lack of adequate tools for the job, their results were not radically inconsistent with ours. By my lights, then, the new model has relatively conservative legal implications.

The approach defended here does not portend radical changes in the results of judicial deliberations, but it does provide a more transparent procedure by which to conduct those deliberations. Courts adopting it will reduce award arbitrariness and increase award predictability.

**PART 2: The model defended**

In this Part, I defend the model against criticisms, dealing at length with the central objection, that companion animals lack the mental wherewithal to make investments in themselves. To this point I have simply assumed that dogs are autonomous, capable of controlling their desires to accomplish things they want to do (Comstock, 2017b; Varner, 2012). I have presumed that dogs value themselves insofar as they form hypotheses about how to achieve their goals, remember what they want to do even after their plan has exited from active memory, and over-ride their immediate inclinations in order to achieve longer-range desires. These assumptions require defense. In the rest of the paper I provide behavioral evidence that dogs can think about their futures, shape their behaviors in light of their aims and, therefore, invest in themselves.

**§ 2.1 Self-investment value: definition**

Recall that self-investment value is the benefit one derives from dedicating a portion of one’s current resources to behaviors one believes will at some future time produce egoistic rewards. To invest in oneself, therefore, one must be able to think about the future, deliberate about which things one wants to do, and set out to pursue one’s preferred path over alternatives.

By egoistic rewards I mean those that accrue to the individual seeking them. To make deposits in oneself, therefore, is to set-aside resources now with the intent of using them with interest later.

By the future I mean a period that begins when the temporal reach of my current thoughts ends. If I am thinking about finishing this paper this afternoon, writing the paper is in my present; dinner tonight is in my future. On this understanding, thoughts about behaviors that are responses to stimuli in one’s proximal environment and working memory are not thoughts about the future. On this view, occurrent thoughts about one’s present projects do not qualify as self-investments because no time elapses between the goal one is pursuing and the achievement of it. However, when I have the chance to reflect on goals that will take dozens of minutes or hours to achieve (eating well tonight) and will involve other short-term distractions (polishing the last paragraph) before I can achieve the longer-term goal (enjoying the roasted cauliflower).

We can distinguish longer and shorter periods on next year’s calendar. By long-term future, I mean a time that does not begin for several days or weeks. By short-term, I mean something in the range of dozens of seconds or minutes. By intermediate-term, I mean something in the middle between short and long, on the order at the minimum of dozens of minutes or, at the maximum, sometime tomorrow.[[25]](#footnote-26)

*Some self-investments are conscious and long-term …*

A woman taking out a loan to buy a business must carefully consider the many risks she is taking while weighing potential gains against the possibility of losses. She may fear contracting a serious illness or failing to attract customers before she has repaid her financial obligations. She must, therefore, assess her present talents and limitations, her current suite of skills and liabilities. She must think about her future self, the chances that she will stay healthy, be able to acquire the necessary professional skills and avoid the pitfalls that lead to failure. She must also estimate the value of the activities she is considering. Will she continue to find meaning in the new business venture after the first few years of novelty and excitement, managing to keep the doors open despite the day-to-day drudgery when the rush of adrenalin has worn off?

To have explicit or conscious long-term self-investment value one must be able to travel mentally to a time after one has forgotten one’s initial thoughts about one’s goal. Familiar examples of self-investment include life insurance policies, pennies stored in a piggy bank, and purchases of self-help books. As the examples show, we make variable investments in ourselves depending on our resources and our assessment of how much loss of enjoyment we would suffer were we to fail to achieve the objective.

One’s egoistic future has a unique value that is potentially quite different from another’s future value. The reason is that each of us has a unique set of interests and values—what Don Marquis describes as “experiences, projects, activities, and such” (Marquis, 1989). If every person is irreplaceable because each of us is *sui generis*, then if we are murdered we lose the opportunity to enjoy our friends, our stories, our places, our moods and talents. If someone kills us, we lose everything we have invested in ourselves. Murderers do not simply deprive their victim’s loved ones of the victim’s company; they deprive the loved one of all of the value of the loved one’s future, their *conscious self-investment* value. This value is not accurately represented by the value of any life insurance policy, but the variability in the value of different victim’s insurance policies is a reminder that self-investment values differ. Recall that the 9/11 awards provided some victims’ families with a million more dollars than other victims’ families. And I argued that this variability was justified insofar as different victims had invested differentially in themselves.

*… and some are unconscious and short-term*

To have implicit or unconsciousness self-investment value one must be aware of one’s body, be ready to explore one’s physical powers, and be willing to learn how to plan for the future from older, more experienced self-investors. While conscious self-investment is a familiar idea to adults, its practice is not innate. Children must be taught to take interest in their future. They learn how to do so, if they are lucky, from older, more experienced self-investors. As the behaviors of two-year old children suggest, we are prepared to make deliberate self-investments before we are conscious of doing so. I will call this implicit or unconscious short-term prospection.

In the classic Stanford marshmallow experiment, a three-year old is given a marshmallow and told that if they wait a few minutes to eat it, they will receive a second marshmallow. If they eat it immediately, they will receive only the one treat. The younger the child, the more difficult it is to wait; the older the child, the more likely it is that they will have success in delaying their gratification. Some successful children are able to distract themselves by turning around so that they cannot see the treat, or by kicking the table, or by tugging on their hair (Mischel, Ebbesen, & Raskoff Zeiss, 1972).[[26]](#footnote-27) These behaviors are implicit self-investments, undeliberated practices employed to restrain oneself from acting on the impulse to make an early withdrawal.

Two-year olds may not be conscious of themselves as persisting temporal subjects, but they are aware of their bodies and their bodies’ relationship to external objects and processes. I will call the condition of being aware of one’s mind self-consciousness and, following David DeGrazia, the condition of being aware of one’s body or appendages bodily self-awareness (DeGrazia, 2009). A three-year old successfully delaying gratification in favor of a future larger reward is making an implicit self-aware investment.

Notice that implicit self-aware investors need not travel mentally through time or run simulations of future scenarios. Very young children who are not yet conscious of themselves as temporally-extended psychological subjects lack the capacity to imagine themselves at some yet-to-come time in some other-than-this location. However, they are aware of the pleasures and frustrations of their bodies and, convinced that they would like two marshmallows later rather than one now, they manufacture strategies by which to achieve the goal.

I turn now to companion animals. Do dogs, like young children, make unconscious investments in themselves? As we have seen, the neurotypical dog is aware of her body, ready to explore her physical powers, and willing to learn how to plan for the future from older, more experienced self-investors. These dogs, therefore, meet the minimal requirements for implicit self-investment.. But, again, dogs differ. They vary, for example, as to when they begin investing and differ, too, in the amounts they eventually invest. The reason is that dogs vary in personality and rates of maturation (Gosling, Kwan, & John, 2003). This one has a consistent propensity to snap and attack, that one does not. This one is often found staring, barking, baring his teeth, and growling, but that one is abidingly obedient, never threatening. This dog is fearful, frequently flees, shrinks, tongue flicks, lifts the front paw, and squeaks. That dog is usually courageous, curious, a risk taker eager to try to solve problems (Berg, Schilder, & Knol, 2003; Turcsán et al., 2018).

If dogs self-invest, they probably do not do it at a young age. Canine self-control develops over time, and older dogs tend to have more stable behaviors (Fratkin, Sinn, Patall, & Gosling, 2013). **When experimenters hide a toy under Box A and then move it to Box B, puppies perseverate in searching for the toy under the first box even though they have seen it being moved to the second box. Adult dogs typically are not fooled and successfully resist the temptation to check the first box** (Zentall & Pattison, 2016**;** MacLean et al., 2014). [[27]](#footnote-28)

Dogs differ in their ability to act independently, tolerate frustration, and inhibit impulses (Turcsán et al., 2018). The dog mentality assessment quantifies these individual differences, measuring playfulness, chase-proneness, curiosity/fearlessness, sociability, aggressiveness, and distance-playfulness (Svartberg, 2005). The fact that dogs vary in so many ways lends support to the assumption here that different dogs will have different self-investment values if they have this value at all.

**§ 2.2 Self-investment value in companion animals**

Are dogs the sorts of beings who *can* make the kinds of implicit short-term self-investments made by toddlers? We cannot expect a dog to answer this question since dogs lack the sophisticated language required to formulate a response. Observation, however, suggests that dogs do not have autobiographical prospection; they do not appear to travel through time, imagine themselves at distant places or years off into the future. And yet their behaviors clearly suggest that dogs set goals, act on hypotheses to achieve them, and react flexibly in the face of obstacles.

Do they? The rest of this paper responds to this question. Here is an overview of the points I will make. Implicit self-investment requires an openness to the future, the ability to desire to bring certain future states into existence while avoiding bringing others into existence, the capacity to establish goals and choose rationally among various means to those goals, and the flexibility to negotiate obstacles along the way. I will argue that dogs have these capacities and are similar to three-year old children in this way. While neither is self-conscious, both are self-aware, and both act in ways that strongly suggest they are investing in their futures.

*Some are convinced dogs value themselves …*

Some philosophers have no doubt that dogs value their lives and act as autonomous agents (Andrews et al., 2018; Engel, Jr. & Comstock, 2016; D. Jamieson, 2018). If the central philosophical questions are resolved, the time may have come to move on to political action. For some observers, continuing to debate abstract questions deflects attention from the real issue, the amount of suffering we blithely and routinely visit upon animals (Harnad, 2014, 2015, and personal correspondence).

For example, Donaldson and Kymlicka argue that philosophers should already have turned their full attention away from the empirical, metaphysical, and epistemological questions. They think philosophers should be addressing the political, policy, and character questions that must be answered to ensure adequate legal protections for animals. Accordingly, they call for the creation of laws, institutions, and new cultural visions that will support “a mixed human-animal society [that] can provide the preconditions for [any animal] moving out into the world *as a self-determining agent”* (Donaldson & Kymlicka, 2016, emphasis added)*.* If animals are agents, humans are obliged to allow them to roam as freely as possible and let animals pursue their interests in ways compatible with other individuals pursuing their interests. We must create the “mental space” in which animals can freely think “about [the animal’s] *life beyond* [the animal’s] basic survival needs” (Donaldson & Kymlicka, 2016, emphasis added). For these philosophers, further philosophical investigation is wasted intellectual effort. Dogs are famously adept at sharing attentional states with humans (B. Hare, Call, & Tomasello, 1998; McPhee, Manzone, Ray, & Welsh, 2015; Miklösi, Polgárdi, Topál, & Csányi, 1998; Miklósi & Soproni, 2006; Piotti & Kaminski, 2016;Hare and Tomasello, 2005; Kaminski et al., 2012; Miklósi and Topál, 2013).

Why doubt that they are also autonomous, self-conscious agents?

This position gains credibility from at least two experiments. The first study shows that dogs can take the visual perspective of their human companion. In the study, dogs were forbidden to take food under one of two conditions. In the first condition, the dog could see that the human could see the dog’s actions through a window in a barrier, in which case the dogs tended to obey commands. In the second condition, when the dog could see that there was no window in the barrier and the human’s vision was occluded, the dog had cover to disobey. That is, dogs appear to know when their human companion can and cannot see them, and so the dog can tell when it’s safe, and not safe, to disobey. When the dog thinks the companion cannot see them, the dog is much more likely to disobey, a result that suggests dogs can take a human’s perspective (Bräuer, Call, & Tomasello, 2004; see also Maginnity & Grace, 2014).

The second experiment seems to show that dogs can think about their thoughts. In the experiment, a dog faces a human who sits facing the dog. Two V-shaped barriers flank the human. Each barrier has a gap between the two walls so that the dog can look through it to see what is inside. In the first phase, the dog is allowed to see a toy being placed behind one of the two barriers, and then encouraged to retrieve it (Belger & Bräuer, 2018). Dogs mostly walk straight around the barrier to the reward without first looking through the gap to check to see whether the reward is in fact where they have seen it placed. In the next phase, the dog is not allowed to see where the toy is placed. When encouraged to retrieve the toy, the dog bows in front of the human, lowers her head, makes quick barks or in other ways seeks additional information. The dog often looks through the gaps of the barriers to see whether the toy is in there.

The paper’s title suggests that dogs engage in higher order thought: “Metacognition in dogs: Do dogs know they could be wrong?” For if the dog knows when she knows where the reward is, and knows when she does not know where the reward is, then she is accessing her memory bank to ascertain her state of knowledge. To access one’s memories and evaluate the truth of one’s beliefs is to metacognize. If dogs metacognize, this higher-order mental capacity would seem to be fully capable of supporting autonomy, future planning, and self-investment, too.

*… and some are not*

Other thinkers, however, doubt that dogs are sufficiently intentional and agential to value themselves or their future (Udell & Wynne, 2008; Wynne, 2007; Penn, Holyoak, & Povinelli, 2008; Povinelli & Bering, 2000; Peter Carruthers, 1992, 2004, 2008; Crystal & Foote, 2009). Support for the deflationary view is found in several quarters.

First, the deflationist will point out that a higher order explanation is not required to explain the dogs’ behavior in the Belger & Brauer experiment. A first-order, non-metacognitive, explanation is available (Carruthers, 2008; Carruthers & Ritchie, 2013; Comstock & Bauer, 2018). One need only attribute to the dog a complex set of world-directed beliefs and desires. Suppose, for example, that the dog has two competing first-order beliefs: *reward may be behind first barrier* and *reward may be behind second barrier*. Postulate in the dog’s mind a gatekeeper mechanism that weighs beliefs against each other in order to decide which belief to act upon. Combined with the dog’s desire to *obtain reward*, no metacognition need occur because the dog’s behavior will be explained by the lower level processes preventing the dog from acting immediately on its desire. In fact, Belger and Brauer do not claim that the experiment shows metacognition, only that dogs, like apes (Call, 2010), “seek additional information in uncertain situations” (Belger & Bräuer, 2018).

Two earlier studies seem to support the conclusion that dogs lack metacognition. In the first study, Brauer et al. presented dogs with two boxes, the first of which allowed the dogs to see its contents and the second of which was opaque. When dogs could see the reward in the box, they selected the correct box. However, when they could not see the reward, they performed only at chance in selecting the correct, or opaque, box. Notably, in both conditions the dogs were given the option to seek more information before making their choice. This information would be useful because it would significantly raise the dog’s chances of making the right choice. However, the dogs did not check the boxes before making their selection, leading the experimenters to write that they “found no evidence suggesting that dogs have access to what they themselves have seen, which contrasts with the positive evidence about visual perspective taking in others…” (Bräuer et al., 2004).

In the second study, McMahon et al. tested whether dogs would remember when they had seen a cue indicating a reward. An experimenter hides an object the dog wants. If the dog sees that a reward is hidden in one of two possible locations, the dog moves, as expected, directly to the right location. If the dog has not seen where the reward is hidden, then we would expect the dog to move to a spot where she can see behind one of the barriers, check to see if it is the right location, and proceed to make her choice. In the McMahon study, dogs who had not seen where the reward was placed were expected to seek new information before choosing to walk behind one of the two barriers (McMahon, Macpherson, & Roberts, 2010). Without additional information, the dog had only a 50 percent chance of choosing correctly whereas with new information their chances would improve to virtually 100 percent. The dogs did not seek new information, choosing instead to walk randomly behind one of the barriers without first checking out either one. The results of both experiments suggest that dogs do not consciously monitor their memories or have access to their own knowledge states

Further support for the deflationary view comes from two other common assumptions about dogs. First, we have no evidence of mental time travel in dogs (Suddendorf, 2017; Suddendorf & Busby, 2005; Suddendorf & Corballis, 1997, 2007; Suddendorf, Corballis, & Collier-baker, 2009). If thinking about the future requires the ability to imagine oneself in different places in different times, and if dogs cannot do this, then the argument that dogs can consciously invest in their future selves is in trouble. Second, we have no evidence of sophisticated language in dogs. If language is required for belief, and belief is required for cognition, then dogs may not even be thinking conscious thoughts, much less thinking about their own thoughts. How could this counterintuitive idea—that dogs are not even *conscious*—convince anyone? Here is how one might try to defend it.

To think about the future, this argument assumes, requires that one have a sophisticated language of thought. A sophisticated language of thought will be recursive—its elements infinitely recombinable—and will satisfy the generality constraint—its elements will be capable of identifying abstract features of new objects so as to identify accurately when an apparently new object is in fact the same as a known object (Penn et al., 2008; Povinelli & Bering, 2000). Furthermore, such language can only be acquired by triangulating the meaning of one’s expressions with the meaning of others’ expressions (Davidson, 1975, 1987, 1991). According to this objection, animals cannot have higher order thoughts because they lack the kind of language necessary to think about their thoughts. And, if some version of a Higher Order Thought theory is correct, one cannot have conscious thoughts unless one has higher order thoughts (Carruthers, 2000, 2016; Rosenthal, 2005). So, any animal that lacks metacognition may lack propositional attitudes, or conscious thoughts, altogether (Carruthers, 1989, 1992).

Dogs don’t have conscious thoughts? This would certainly come as news to those who study dogs (Allen, 1995), so allow me to say something in support of it. Suppose all cognition is a private enactment of a public practice. Youngsters do not innately possess language and must learn that the vocalizations of a natural language contain words that refer to things. Children learn the semantics of a natural language as well as the recursive and syntactical rules that govern its grammatical expressions. And they must learn that others have minds—intentions and desires like their own—a difficult lesson that unfortunately seems lost on some adults. Through social linguistic interactions, young humans acquire the ability to understand themselves as individuals with values that differ from others’ values. This capacity, mindreading, requires the ability to understand more than nouns, verbs, syntax, and grammar. It requires the ability to follow, form, edit, and deploy the elements of narrative: plot, character, mood, and setting. Until these tools are acquired, however, children are not truly conscious of themselves or others as minds. If dogs never acquire sophisticated narrative language, they cannot actually think.

Is this right? Isn’t the conclusion that dogs don’t think clearly contradicted by the fact that dogs clearly communicate? Dogs appear to teach their young simple referential expressions (Pongrácz, Molnár, & Miklósi, 2010; Simpson, 1997) using long and short yelps, soft and loud whines, and various barks, growls, sighs, groans, squeals, and howls, “a vast and flexible repertoire of visual, acoustic, and olfactory signals that allow an expressive and fine tuned conspecific and dog–human communication” (Elgier, Jakovcevic, Barrera, Mustaca, & Bentosela, 2009; see also Faragó, Takács, Miklósi, & Pongrácz, 2017; Kaminski & Nitzschner, 2013; Kaminski & Piotti, 2016; Kaminski, Schulz, & Tomasello, 2012; Piotti & Kaminski, 2016; Simpson, 1997; Siniscalchi, d’Ingeo, Minunno, & Quaranta, 2018). However, the deflationist may respond to this argument by pointing out that, as far as we know, dogs do not employ with each other or teach their young any more sophisticated linguistic constructions beyond the word. I will discuss shortly the case of the border collie who appears to comprehend sentences (Pilley, 2013a). Suffice it to say here that we know of no grammar of canine sounds such that a dog rearranging the same sounds temporally can communicate to a hearer a meaning different from the meaning of the sounds’ original arrangement. If there are no canine compositional rules there can be no canine narratives. Without narratives, I will argue shortly, one’s world can have no characters. For characters develop along subterranean plot lines, display alternating melancholic and wistful moods, and surprise us when an otherwise bad character shows a glimmer of goodness. To track a character, one must understand plots, moods, and settings—that is, narratives.

Here is why I think individuals not furnished with narrative lack the cognitive tools necessary to be mindreaders; minds are characters. Minds are individuals enmeshed in variable plot lines that involve reactions to the changing motives and machinations of other minds (Comstock, 2017b; Dennett, 1992; MacIntyre, 1984; Ricœur, 1984). Without the ability to understand minds, one cannot understand oneself as a mind. If this view of narrative understanding is correct, and if dogs are not capable of understanding narrative, then dogs cannot value themselves, much less make investments in themselves, because they cannot understand themselves as minds. So, while the dog’s lack of sophisticated language may not prove the more ambitious, dubious, claim that dogs are not conscious, a dog’s lacking narrative understanding is some evidence for the deflationary view that dogs are not mindreaders.

To summarize, the deflationary account implies that dogs cannot invest in themselves. The remainder of this paper replies to this objection by arguing that dogs are what I have called far-persons (Comstock, 2017b). I assume that the deflationary view is largely correct about animal mental states. However, I do not assume that the deflationary view implies untoward moral implications for how we should treat dogs (Comstock & Bauer, 2018) because I do not believe that view implies that dogs cannot invest in themselves.

**§ 2.3 Objection: A dog cannot value herself because she has no concept of herself as a mind**

The most common way to test a child for consciousness of herself is the mirror mark test. The child is first trained to use a mirror. Subsequently and surreptitiously, the experimenter smears an orange mark on the child’s cheek. If the child moves her hand to the spot upon looking in the mirror, experimenters take this as strong evidence that the child has a concept of herself. At one year old, few youngsters see the mark. By age three, all normally developing children do.

While the Great Apes, dolphins, and an elephant, among others, have passed the test, dogs have not (nor have most mammals). Dogs tend to treat the image in the mirror as a strange animal, often urinating by the mirror (Cazzolla Gatti, 2016; de Waal, Dindo, Freeman, & Hall, 2005). According to the most commonly accepted measurement, then, it might seem justified to say that a dog has no concept of herself.

Dogs are blind to their bodies in mirrors. Are they blind to their minds, too? We have already reviewed several studies that suggest dogs do not think about themselves or their thoughts. By contrast, nonhuman primates may indeed be fully self-conscious. According to the Gardners, when asked who was being tickled when Washoe was being tickled, Washoe would respond by making the sign for “I-me” (Gardner & Gardner, 1969). We have no reports of dogs responding to this question in anything like the way Washoe did, nor does it seem likely dogs could acquire this capacity.

I will not challenge the idea that dogs lack metacognitive powers. Instead, I want to show that they have sufficient world-directed first-order capacities to recognize and value themselves as bodily members of a community.

**§ 2.4 Rebuttal: Having a concept of oneself as a mind is not necessary to value oneself**

Dogs do not have to recognize themselves in mirrors in order to recognize themselves. That a dog is unable to recognize herself in a mirror is not surprising. Sight is not her strong suit. Unlike other species, dogs cannot see the Müller-Lyer illusion, a visual trick in which two lines of equal length have arrows on both ends so that one line appears longer than the other (Keep, Zulch, & Wilkinson, 2018). Since dogs rely on their nose more than their eyes to acquire information (Vonk & Leete, 2017), a more species appropriate test for self-awareness would test the dog’s propensity to identify objects by their odor.

Dogs appear to pass the olfactory equivalent of the mirror test, the odor mark test. When snow marked with a dog’s urine is moved to another spot, the dog upon discovering the new location will re-urinate over it but quickly move on to other dogs’ urine marks which he will pause and investigate, suggesting the dog recognizes his scent (Bekoff, 2001, 2003). When a dog’s urine is mixed with a foreign-smelling substance, the dog will spend more time sniffing his own doctored urine than he will smelling his un-doctored urine or the urine of other dogs (Bekoff, 2001, 2003; Cazzolla Gatti, 2016; Horowitz, 2017). Does the addition of an unexpected odor to the smell of one’s urine function for a dog in a way analogous to the way the addition of a mark to one’s forehead functions for children and chimpanzees in the vision test? I see no good reason to deny this conclusion. The substitution of odor for vision in the mirror mark test shows that while dogs may lack propositional attitudes about their psychological states, they have an awareness of their bodily states. Dogs understand unique features of their physical identities and that their bodies differ from other bodies.

Can a dog have the concept of her body without having the concept of her mind? The answer depends in part on whether dogs have any concepts at all. What are concepts?

According to one influential view, concepts are not, as was once thought, definitions. For example, the concept *companion animal* does not consist of a set of individually necessary and collectively sufficient traits. Given that domestic hedgehogs, pygmy goats and miniature pigs join dogs and cats as companion animals, it is impossible to formulate necessary and sufficient conditions for the concept. Rather, according to prototype theory, a concept is a group of family traits in which each trait has a certain conceptual distance from the other traits (Mervis & Rosch, 1981; Rosch, 1975, 1978). The closer a trait is to the others (e.g., “is alive,” “must be fed,” and “is cared for by a human being”) the more weight it has in defining the concept. Traits that are detached from or apply to a small subset of other traits (e.g., “barks,” “has horns,” or “likes to root”) have less weight. Those who believe developed language is necessary in order to have any concepts at all may argue that since dogs are not taught these prototypes, dogs do not have concepts.

However, according to a more plausible, naturalistic, theory, concepts are tracking devices that allow one’s sensory system to track when a clump of reality is identical with another clump. For example, Ruth Millikan argues that the traditional idea of a concept is misleading insofar as it directs attention to classification. Instead, she recommends that we think instead of what she deems “unitrackers.”

A unitracker for a thing takes in a diversity of proximal stimulations over time and interprets or translates them as signs carrying information about one and the same thing . . . It funnels . . . information about the same into immediate use or into storage in a way that marks it as all concerning the same . . . (Millikan, 2017, p. 43)

On this view, any dog that can recognize her pup by his sight alone and, later, by his smell alone and, later still, by his bark alone, has a unitracker for her pup. While some theories require that concepts can only be meaningful representations when they are shared with others, Millikan’s theory does not have this liability. On the social view, I only acquire the concept “snake” by checking my understanding of the concept against others’ uses of that word. On this view, concepts must be fixed by “triangulation” (Davidson, 1982, 1987, 1991). To the contrary, on Millikan’s view an individual can have her own totally idiosyncratic way of tracking the identity of an object. If Millikan’s naturalistic theory is correct, and I see no compelling reason to reject it, then the twin facts, if they are facts, that animals do not teach their young linguistic signs and do not engage in the public practice of sharing concepts present no barriers to the claim that animals have unitrackers, the equivalent, for present purposes, of concepts.

Do intelligent beings need narratives to have concepts? It seems odd to say so and, in fact, the opposite seems more likely, that we need concepts to have narratives. The twelve-month old learning to say his first word, water, acquires the concept *water* as soon as he recognizes that what his father is saying reliably corresponds to the liquid his father is swirling in his bath. When father splashes his hand in the tub and, pointing to the liquid, says water, baby boy gets the concept as soon as he understands what daddy is referring to. It may be days or weeks before the boy can coordinate his lips to say the word himself. It may be months before he can understand a story about water. But he must have the concept very early on, before any of the rest can take place.

The puppy who is learning to bark the canine equivalent of *I’m hungry!* acquires the canine equivalent concept of *the body that feeds me* as soon as he recognizes that what he is vocalizing reliably corresponds to his mother’s predictably offering him a teat from which to drink. When his mother repositions her body so that he reach the teat, the puppy gets the concept *the body that feeds me* as soon as he understands that his vocalization has caused his mother to behave in the desired way.

To have a concept is to have an understanding of when the world is presenting itself in such a way that the content of the concept is either present or absent. That is, to have a concept is to able to distinguish true from false beliefs. Can dogs recognize when they have false beliefs?

In an experiment with 48 dogs, some of them “family” dogs without special professional training and some of them highly accomplished rescue and police dogs, dogs were tested to see whether they understood that a specific odor tracks a specific object (Bräuer & Belger, 2018). A dog, call him Chucky, is shown two Kongs, a four-inch long snowman-shaped rubber toy. One, Target A, is stuffed with a substance, for example, peanut butter that has a different odor from the other, Target B, which might be stuffed with kibble. After Chucky proves that he is equally interested in playing with both toys, he is removed from the room. An experimenter proceeds to drag one of the toys 18 meters across the floor from the starting point into a second room, where the toy is hidden. Suppose it is the peanut butter Kong. Chucky is brought back into the room, released, and encouraged to find his toy. He smells the peanut butter and sets off expecting to find the Kong stuffed with peanut butter. However, when he arrives at the end of the trail in the second room, the experimenters have replaced Target A with Target B. So, Chucky finds at the end of the peanut butter trail a Kong filled, instead, with kibble.

According to Brauer and Belger, violation-of-expectation experiments such as this one test for an animal’s capacity to represent things they perceive. If animals are not forming cognitive representations of objects, we should not expect them to hesitate when they find the unexpected object. However, if they are representing, if they are tracking objects with concepts, we should expet them to act surprised when they realize they have misrepresented it (Bräuer & Belger, 2018). So, upon finding Target B rather than Target A, should Chucky show no signs of surprise, then he probably cannot recognize when he has a false belief. But if he hesitates, acts confused, sniffs the ground, looks about, and continues his searching behavior, then his surprised response indicates that he is capable of representing, and misrepresenting.

A statistically significant number of dogs, both family and trained dogs, act surprised when they do not find what they expected to find. The experiment suggests that the animals, at the beginning of the sequence, are looking forward to finding a specific object. As the authors conclude, “dogs *represent* what they smell and search flexibly” (Bräuer & Belger, 2018, emphasis added). The result also suggests that dogs understand causal relationships. The dog infers a cause—a peanut butter kong having passed along a certain trail in the room—from its effect, the odor trail it has left.

We might be skeptical about this last claim. How do we know that a dog can identify an object it expects to encounter in the future with an object it has encountered in the past? Experimenters have investigated this question, too. In tests for object permanence, dogs watch an experimenter place a plastic toy inside a box to the dogs’ left side (Miller, Rayburn-Reeves, & Zentall, 2009). The box is attached to a beam that has a matching, empty, box attached to its right side. The beam is rotated ninety degrees, and observers record whether the dog looks first on its left or right for the toy. Many, although not all, dogs can solve the puzzle and accurately identify the correct location of the toy. This experiment and others provide evidence that dogs have both object permanence and an understanding of cause and effect.

Here is an inference to the best explanation argument for the conclusion that dogs recognize when they have false beliefs. Dogs behave in ways that suggest: they believe a specific object is at the end of a trail; they have a desire to retrieve it; they pursue a course of action that shows they anticipate finding it at the end of a temporal sequence of actions; and they realize their prospective belief is false when they arrive at their goal and find a different object. The best explanation of these behaviors is that dogs know when their concept of an object is not mapping onto the thing in front of them. Dogs know when they have false beliefs.

**§ 2.5 Objection: A dog cannot value herself because she cannot read her mind**

We have previously noted studies suggesting that dogs do not have conscious access to what they have seen. Let us assume that this is true, that dogs are not self-conscious in this way. However, if we also assume, as studies suggest, that dogs *can* take the visual perspective of their companions, we seem to face a dilemma. For we now seem to be claiming that dogs *cannot* read their own minds but *can* read the minds of humans. How could that be possible?

Let us first identify the most plausible reason that a dog cannot read her own mind. Here is my suggestion.

To think about one’s self as a mind is to think about a character. To think about a character one must think about a plot for characters are not static. A plot explains a character’s mutations, revealing how, for example, our geographical locations helps to form our identities and how, for example, other people influence our moods. Narrative is the explanatory vehicle that ties together the beginnings, middles, and ends of the episodes in one’s life. To acquire such a sophisticated vehicle of understanding requires engaging in shared linguistic practices; initially we need parents and teachers to tell us stories. Since dogs do not tell each other stories, engage in public linguistic practices or, for all we know, understand themselves as characters in stories, dogs lack narrative understanding. That, I propose, is the most likely explanation of why dogs cannot read their own minds.

This line of argument may have inspired Darwin’s opponent, Friedrich Max Muller, to claim that language is “our Rubicon which no brute will dare to cross” (Müller, 1891). Muller argued that language could not have evolved, as Darwin hypothesized, from emotional animal “shrieks” because language has to have “roots” in concepts (Müller, 1887: 180). Vocalizations only express an individual’s feelings. It is consistent with Muller’s view to think that concepts enable rational thought by allowing individuals to group like things with like things and then to share their groupings with others. In keeping with this line of thought, concepts are abstractions used in concert with others for various purposes.

This line of argument bears on the question whether dogs can value themselves. It seems true that individuals must start with simple linguistic practices such as syllables, words and interjections if one is eventually to acquire sophisticated concepts. It also seems true that no animals have the sophisticated concepts that constitute a grammar, much less narrative. If so, then no animals, “strictly speaking,” can value themselves because they cannot have the concept of themselves. To say that a dog is a conscious agent who values herself, argues Stoecker,

… is almost like calling specially drilled bears dancing bears. Although they somewhat behave like (particularly bad) human dancers they obviously cannot dance. Dancing is a social art that presupposes a lot that will be forever beyond the horizon of a bear (Stoecker, 2009).

If dogs are not self-conscious agents their behaviors may mislead us into thinking that they have more sophisticated mental capacities than they do. True, my opponent might argue, a dog will withdraw his limb when it is injured. However, that behavior by itself may show only that he’s trying to protect his body from more pain and more damage—and not that he places a high value on his *self*. True, my opponent might continue, the dog growls when an enemy threatens her life, but that behavior shows only that she is trying to survive while avoiding struggle, not that she has a mental space in which she thinks “it would be desirable for *me* to continue to exist in the future.” True, the dog will bury a bone and later dig it up. But far from showing genuine foresight and planning, the behavior shows only routinized movements, fixed action patterns that are genetically encoded in all members of the species. Or that, at least, is what this objection holds.

**§ 2.6 Rebuttal: A dog can value herself by reading her body without reading her mind**

It is open to us to argue that dogs self-invest without the concept of self-consciousness. How so? Dogs have the ability to engage in joint attention, joint attention allows them to attend to objects attended to by their companions, and their companions often attend to them. By virtue of others’ attention to their bodies, dogs can be aware of their bodies. By virtue of others investing in their bodies, dogs indirectly invest in themselves. Or so I shall now argue.

To establish this point, notice first that while dogs lack narrative language, narrative language is not required to engage in joint attention. Human infants share concepts with their mothers well before they can speak, as early as nine months old (Carpenter, Nagell, & Tomasello, 1998). Likewise, a puppy can share concepts with her mother even before the puppy shares vocalizations with her mother. So, like humans, dogs acquire concepts “publicly,” that is, in the company of others through social cognition. Like us, they triangulate their representations of objects (e.g., *water*) with representations vocalized or gestured by their teachers (e.g., father swirling his hand in the bathwater while saying “water”). If social cognition is the communal act of at least two referrers successfully pointing to the same thing (Davidson, 1982, 2001; Grice, 1989, 2001), having concepts does not require one to have sophisticated linguistic forms such as grammar and narrative. It requires only semantics and joint attention—both of which, as we have seen, dogs have. Consequently, there is no language Rubicon preventing dogs from having a concept of their bodies, even if a Rubicon separates them from their own minds.

There are concepts and concepts, and the concept of a self is perhaps the most difficult and complicated of the all. A self, arguably, is a person. A person, arguably, has a temporal identity that persists through interactions with others fraught with the potential for good or ill. That a toddler lacks as sophisticated concept as one’s self is not a sign that she lacks concepts but only that she lacks this particular concept.

Toddlers have many simple concepts, *safe human*, for example, and *fearful human*, and they use concepts to respond appropriately to friends and foes. Four year-olds do not yet have temporal concepts of periods longer than a day and often cannot tell the difference between the past or future status of events (Friedman, 2005), but they do not lack the past-oriented concept of *mother just left me* or the future-oriented concept of *not yet fed*. Youngsters who fail the mirror test value their bodies despite lacking the ability to value their minds or the distant past or future. To value one’s body one need only have the ability to track one’s body (it smells like this and not like that), know it relates to the external world (I am not strong enough to pull myself up onto that counter), and to desire pleasurable things. Toddlers are in this sense self-aware. They can participate as agents in routines that will be critical to their future wellbeing. They can make short-term investments in themselves by trying to pay attention at bedtime, fighting sleep until mother has gotten to the last word of her story.

So with animals. Animals who lack the ability to value their minds can value their bodies so long as they are awake, can use concepts, can know how their body relates to the world and can control their behaviors now in order to satisfy a desire later. Let’s start with concepts.

Dogs have many simple concepts: *companion human* and *noncompanionable human*; or *bowl-from-which-other-animals-in-the-household-eat* and *my-bowl*. They have the concepts of specific words used by their human companions. The Border Collie named Chaser knows the words for more than a thousand of her toys (Pilley, 2013; for a contrary opinion, see Bloom, 2004; and for cautionary notes, see Tempelmann, Kaminski, & Tomasello, 2014). Chaser understands that different nouns refer to different objects (a toy lamb and a toy set of lips), and can figure out when her companion is using a word as a verb rather than a noun. She will paw at the lamb toy when told “paw lamb” and will nose at the lip toy when told “nose lips.” What’s more, she can change her response appropriately when word order is changed, paying the lips or nosing the lamb when told to do so (Pilley & Reid, 2011). Furthermore, she can reason inferentially by figuring out the name of a novel toy when she is given a set of names all of which are names of toys she already knows plus an additional name which she does not know. She can figure out that the name of the new object is the new word. As Chaser exemplifies, dogs do not lack for concepts.

So do dogs have the sophisticated concept *my human companion’s mind*? Current experimental evidence is indecisive, and I have previously given an argument to doubt it. However, at least two experiments hint at a positive answer. McMahon et al. tested whether a dog could discriminate between a human who possessed information relevant to the dog’s interests and a human who did not possess the information. Dogs would be allowed to see one human hide food and another human who would not be able to have seen where the food was hidden. Dogs would then be given the choice to select one of the two humans for assistance in finding the food. Dogs successfully selected the informed from the non-informed. The second trial suggests that even if dogs cannot monitor their own knowledge states, they may be able to monitor the knowledge states of humans (McMahon et al., 2010).

In another experiment, Piotti and Kaminski asked whether dogs playing with a favorite toy would break off their interest in the object when they became aware that a human companion needed their help to reach another object. They found that when a dog establishes joint attention with a human she can understand when the human has taken an interest in an object and may initiate a helping action to assist the human in obtaining the object. Piotti and Kaminski seem to agree that the dogs are reading their companion’s mind. As they observe,

The dogs mainly directed their behaviour towards the object they had an interest in, but dogs were more persistent when *showing* the object relevant to the human, suggesting that to some extent they took the humans’ interest into account. … [The results may support] the hypothesis that the dogs understood the objects’ relevance to the human (Piotti & Kaminski, 2016).

These two experiments suggest that dogs have knowledge of human mental states. This may seem puzzling since we have already reviewed the reasons that suggest dogs are not conscious of their own mental states. Could dogs have a theory of human minds while lacking a theory of their own minds? How could my dog understand my mind without being able to understand her own? If the arguments are sound to this point, we seem to be committed to affirming each of the following, apparently contradictory, propositions.

1. Dogs cannot read their own minds.
2. Dogs can read others’ minds.

In response, notice first that the two claims are not contradictory. Dogs may be in the state described. However, the conjunction of the two propositions seems psychologically implausible because we commonly assume that we know ourselves first and come to know about others’ minds only because we first know ourselves.

One response to the allegedly uncomfortable situation is, as I say, to embrace it as a plausible description of the dog’s mental capacities. Growing empirical evidence from the social sciences suggests that humans come to know ourselves by watching what our bodies do. It is entirely possible that we may have one mindreading facility, and we develop it first by observing others and only later turn it inward, introspectively, on ourselves (Carruthers, 2011a, 2011b). If the Higher Order Thought cognitive architecture Carruthers calls interpretive sensory-access (ISA) is correct, as I shall now assume it is, then the capacity to read one’s own mind is dissociable from the capacity to read others’ minds. According to ISA, humans come to know the contents of our own minds by first (or at least concurrently) developing our mind reading skills *on others*, skills we subsequently (or concurrently) turn inward on ourselves. If, as Carruthers argues, our minds our opaque to us until we develop this skill, then it is not implausible that a subject could read others’ minds without being able to read their own (Carruthers, 2011a, 2011b). And, if some humans are in this condition, that is some reason to think that dogs may be in it, too. Consequently, the seemingly curious state described by the two propositions is not so unlikely for dogs after all (Comstock, 2016).

But this is not the solution I propose. Attributing higher order powers to the dogs is not required to explain the dogs’ behavior in any of the experiments. We need only appeal in deflationary spirit to a dog’s ability to perceive stimuli and to learn to associate the appropriate response with it. Since first-order explanations are available, we need not postulate that dogs read human minds. Dogs are very careful observers of human bodies, as we have noted, and they are able to make subtle predictions about how humans will behave. The flexible repertoire of canine responses to humans make it easy for us to interpret dogs’ behaviors as sensitive to our mental states. But, in fact, the experimental data so far do not require that we postulate canine mindreading.

Here is my preferred, first-order, solution. Human companions typically have ideas about what skills their dogs may possess. They want to help their dogs develop them. Their dogs in turn are skilled at reading, predicting, and encouraging their companion’s behaviors. And dogs value their companion’s positive responses and rewards. The situation, then, is this. Companion directs dog to behave in ways consistent with the companion’s interpretation of the dog’s innate skills. Dog, in turn, learns to act in ways consistent with companion’s direction and takes pleasure in perfecting the skills she is learning. In this way, the dog makes implicit investments in herself every time she succeeds in behaving in the way her companion desires. For insofar as the companion is successful in teaching her dog the targeted behaviors, she assists the dog in making voluntary deposits in her body that will pay dividends in the future.

But can dogs think beyond the present moment? This leads us to the next objection.

**§ 2.7 Objection: Dogs cannot think about their future**

To think about one’s future is to do more than respond to a stimulus, which micro-organisms do. It is to do more than associate a particular environmental cue with a particular rewarded behavior, which worms do. It is to engage in prospection, teleological thinking (Buckner & Carroll, 2007; Gilbert & Wilson, 2007; Seligman, Railton, Baumeister, & Sripada, 2013), a kind of conscious mental state dogs lack.

**§ 2.8 Rebuttal: Dogs can think about their future**

Or do they? When Chucky arrives at the end of his trail only to be puzzled by what he finds there, doesn’t he think teleologically about himself? Isn’t it possible he thinks in something like the following way?

*A.* I am stumped. My companion never treats me this way. He knows I’m looking for my peanut butter Kong but he’s substituted my kibble Kong. What kind of joke is that supposed to be? Can I ever trust him again? Or am I judging too quickly? Perhaps he just made a mistake? Is he trying to teach me a new lesson? If so, I don’t understand what it is. Then again, he might just be in a bad mood and purposefully trying my patience? Whatever. This doesn’t seem like him, and it doesn’t seem right.

If Chucky is having these kinds of thoughts, he is clearly thinking about what possibilities the future may hold for him. For to think these thoughts he must travel mentally through time, see himself in relation to others, and wonder what other possible scenarios await him. He is thinking autobiographically, telling himself a story about how he might eventually come to relate to another mind. This interpretation of the content of Chucky’s thought would be plausible if we were trying to interpret a human’s thoughts in an analogous situation. However, we have no reason to believe that Chucky can ruminate about his guardian’s motives, character, and long-range strategizing in anything like the way *A* suggests. I continue to maintain that dogs lack the ability to engage in the kind of self-directed internal dialog and subtle moral reflection found in *A*.

However, this kind of autobiographical thinking about the future is not necessary for implicit prospection. It is necessary for explicit, self-conscious, higher-level prospection. But conscious, autobiographical, prospection is only one member—granted, the most impressive member—of the category. And the lower level form of prospection is the only kind one needs to prospect. Consider the next interpretation of Chucky’s mental state at the end of the trail.[[28]](#footnote-29)

*B.* BELIEF [if toy is found, peanut butter playtime]

BELIEF [if toy is not found, no peanut butter playtime]

DESIRE [peanut butter playtime]

According to this interpretation, Chucky is engaged in implicit or intuitive prospection. According to *B*, Chucky has beliefs and desires about his future which he can use to evaluate the courses of action open to him. He has maps of alternative paths. He silently explores several of them. He evaluates the obstacles present in each pathway, weighing his chances of successfully negotiating them. This ability to engage in “forward activation” allows Chucky to weigh and compare options (Seligman et al., 2013). Unlike the autobiographical prospection found in *A*, the implicit, intuitive prospection found in *B* is not self-conscious or involved in mindreading. Consequently, it need not involve conceptualizations of the contents of other minds or pictures of one’s self in the future. It need only illustrate “teleological control,” that is, the ability to foresee future options, explore them as potential blueprints for action, and plan one’s decisions in light of the rewards and punishments they promise.

Here is the picture I have in mind. A dog reads her human companion’s behaviors. Among those behaviors are movements the dog interprets as the human desiring to reach an object. Since the dog can share attentional states with her companion, she can perceive not only that her companion is reaching for an object but, also, which object is the specific one desired. Since the dog has the desire to make her companion smile and the knowledge that when she helps her companion her companion smiles, the dog points at and retrieves the object for her companion. In the course of these early conjoint activities, the dog is practicing behaviors that will eventually render her even more proficient in eliciting smiles from her companion. The dog, in other words, is implicitly and indirectly investing in herself by engaging in social practices she can come to value intrinsically, practices that, once perfected, will produce future, greater, rewards for her. Her joint activities with her companion develop her own skills. As such they are implicit self-investments.

This is what I insist upon; some companion animals are intuitively aware of their future (Comstock, forthcoming). To be intuitively aware of one’s future is to be engaged in an implicit state, the fast and automatic processes of our ancient affect and reward systems. When these systems look backward in time, they draw on what Tulving called implicit memories. Those unstated memories can guide us in typing words and responding to easy questions. When these systems look forward in time, they draw on what we may call implicit prospections. These unstated future projections can guide us in deciding how to get to where we want to go. Panksepp considers such intuitive prospection to be a part of what he calls the unknowing, or *anoetic* consciousness, and the work of the “core-Self” (Panksepp, 1998; Tulving, 1985; Vandekerckhove & Panksepp, 2009); Damasio calls it a state of the *protoself* (Damasio, 1999). As Railton points out, this system has evolved to help us make quick, good decisions when we cannot think about them, and to create informed, habitual patterns of thought on which we can draw when we have time to deliberate. The affect and reward system, he writes,

seems designed to learn complex statistical relationships, subserving the building of abstract casual/evaluative models that guide attention, perception, and action along expected-value maximizing lines (Railton, 2017).

To be intuitively prospective is to engage in the quick, automatic, non-deliberative process of looking forward unconsciously. It is to be aware of one’s future as consisting of multiple possible states and desiring for one of them, or some set of them, to come into being. To be consciously prospective, on the other hand, is to engage in the slower, rational, deliberative process of thinking through how one should move oneself forward. We engage in conscious prospection whenever we look forward in time and engage in what, looking backward in time, Tulving called episodic memory. For Tulving, episodic memory identifies the who, what, where, and when of an event. When these details involve the future, one is engaged in episodic prospection. For Damasio, this would be a part of “core” consciousness; for Panksepp, “noetic” consciousness (Damasio, 1999; Panksepp, 1998).

Like conscious prospection, intuitive prospection is pragmatic and useful because it joins together past and future events, forming into a meaningful whole otherwise discrete events spread randomly across time (Baumeister, Vohs, & Oettingen, 2016). Unlike conscious prospection, unconscious prospection does not require long-term autonoetic mental time travel or a representation of one’s future self. It requires only noetic consciousness of one’s body and its relationship to future states of the world. It is “perspectival” in that it sees the world from the vantage point of the animal’s integrated point of view, but it does not require that one conceive of oneself as a self, that is, as a character capable of writing and rewriting one’s own story. While conscious prospection is autobiographical—the narrative is accessible to the agent and told from the first person perspective—intuitive prospection is by contrast merely biographical. The narrative is not accessible to the agent and can only be told from the third person perspective. Unlike acts of conscious prospection, acts of intuitive prospection are not accessible for introspection.

While dogs probably do not deliberate about their futures episodically, they do think about the future intuitively. And that is sufficient, as it is in the case of toddlers, to value one’s future. Chucky is capable of intuitive prospection. He has a concept of the future that is egoistically-indexed to his current beliefs and desires. He sees the future from his perspective and has a pragmatic interest in it. As third-party observers, we can tell the story that connects Chuck’s past and future into an intelligible whole even though Chucky cannot do this himself.

It is one thing for a dog to have implicit prospection, and another for her to use her prospections to shape her future. Are dogs capable of controlling how they behave? This leads us to the next objection.

**§ 2.9 Objection: Dogs cannot control themselves, they act only on instinct**

According to the classical behaviorist paradigm, all dog behaviors are in fact the result of inflexible homeostatic monitoring systems. According to this Cartesian view, all dogs are automata and all canine movements are explained by a combination of environmental changes, blind neural processes, and involuntary motor responses. On this view, dogs lacks beliefs and desires entirely. Defenders f this view hold, like Descartes, that animals are in fact mindless. Various reasons may be given, including the claim that dogs lack language and having beliefs requires having language (Davidson, 1982, 2001; Frey, 1980, 1988, 2011). **If a dog’s purported decision is in fact the result of unfelt automatic algorithms, the dog’s apparent control over itself is an illusion.**

**What is self-control? Let us distinguish two kinds.**

**The first, moral autonomy, is the feeling of being in control of the principles on which we act. We need not here decide whether humans actually have this kind of autonomy; it is enough to note that we often feel as if we have free will, or Kantian moral agency. This, the more sophisticated kind of control, may or may not actually exist. The facts be as they may, however, it is clear that almost everyone at some time or other experiences their actions as being under their control. We at least feel, on occasion, that we can decide to treat others according to principles of justice, or not.**

**Do dogs have the feeling of moral autonomy? They can certainly experience the frustration of being chained and mistreated, and they certainly enjoy the freedom to run, eat, mate, and make their own decisions about how to spend their time. But are they able to act in a principled way, to understand and do what justice requires? In the interest of time and space, I will not argue that they do. Going forward, I assume no dog has moral autonomy in the strong Kantian sense.**

**The second kind of control is executive control, the feeling of being the one who decides what to do with one’s body. It is the feeling I have when, faced with a decision, I believe conditions permit me to determine my choice. I feel as if I am in executive control when I experience the future as something I can shape and not as something whose shape will be determined by forces beyond my control. Executive control requires being free of “chains,” either environmental constraints, psychological compulsions, or the coercive power of others. It is the feeling of being able to pursue my goal impeded only by the ordinary environmental challenges that typically arise in the pursuit of that goal. We can lose the feeling of executive control in two ways, physically and psychologically. Physically, we can be restrained and confined by others. Psychologically, we can be constrained and undercut by disruptive thoughts. These observations show that the cause of feeling out of executive control can be external or internal.**

**Call individuals with executive control over themselves agents. Agency is the fundamental explanation of the movements one chooses for one’s body. As Steward puts it,**

An agent is a *settler* of matters concerning certain of the movements of its own body, i.e., the actions by means of which those movements are effected are considered to be non-necessitated events, attributed always first and foremost to the agent, and only secondarily to environmental impacts or triggers of any sort (Steward, 2009).

To be an agent of this sort requires that one exercise control over one’s actions so as to get some non-immediate reward. Agency, in this sense, requires four capacities: a sentient point of view, a way of thinking about the future, the ability to value one’s future, and the autonomy to make decisions for oneself (cf. Shepherd, 2014). Lacking any of these capacities, one would either not be a sentient being able to enjoy a reward or be harmed by a punishment, not be an agent capable of understanding that one’s rewards were causally connected to one’s actions, or not be sufficiently self-aware to know in whom one is investing, or not be a decision-maker able to be credited or blamed for the choices one makes. Furthermore, agents must be able to understand the temporal links between past causes and future rewards so that they can judge whether a present sacrifice is worth an expected benefit. Dogs, goes this objection, cannot do this.

**§ 2.10 Rebuttal: Dogs can control themselves**

**Are dogs the settlers of any matters concerning the movements of their bodies? Does the dog as an agent effect any of her corporeal motions? Well, why not? For many people it is simple commonsense, claims Steward, that an animal has “…a certain freedom and control…”**

*It* decides, we think, precisely where it will go in search of food or shelter or to evade predators. Our natural inclination is to think of an animal as a creature that can, within limits, direct its own activities and which has certain choices about the details of those activities. … it goes deeply against the grain to suppose that each exact detail of each movement orchestrated by an animal was settled at any point prior to a period broadly coeval with what we think of as the period of the animal's action (Steward, 2009).

**But is there experimental evidence to support the claim?**

Let us begin, again, at the beginning. Since dogs, like humans, vary in personality, we should expect to find that different dogs have different levels of control, if they have it at all. And that is what we do find. Like us, dogs have greater success controlling themselves when they are not stressed, not sucrose-depleted, and not worn out from prior exercise (Belke, Pierce, & Powell, 1989; Comstock, 2016; Miller, Pattison, DeWall, Rayburn-Reeves, & Zentall, 2010; Robinson, 2010; Segerstrom & Nes, 2007; Angle et al., 2014). Like us, some dogs do not deal well with impediments to self-control (Piotti, Satchell, & Lockhart, 2018), responding with stereotypies such as lip licking, uncontrollable yawning or circling (Palestrini et al., 2017). Like us, some dogs are quite successful in controlling themselves in unpredictable situations. They are likely to become therapy, disaster, police, cadaver, or other kinds of working dog. Dogs who habitually face unpredictable situations successfully are able “constantly [to] adapt physiologically and behaviorally to maintain homeostasis” (Karatsoreos & McEwen, 2011; Riezzo et al., 2014). While some dogs never learn to sit, stay, roll over, come, or shake, other dogs easily learn to restrain their instincts in accordance with such commands.

Since dogs share attentional states with humans, extensive experience with us can improve an animal’s self-control. Well-trained explosives-search dogs tend to do better when working with their own handler than when working with a stranger. However, this is not true for all dogs (L. T. J. Jamieson, Baxter, & Murray, 2018). Curiously, some, but again not all, explosives-search dogs do better when their handlers are stressed. Zubedat’s speculation about the cause of this behavior is worth citing:

We postulate that since the handlers’ exposure to stress elevated anxiety level and impaired their attention, it may have led to less control over the dog. Consequently, it allowed the dogs to ‘take control’ and manifest their training outcomes. This alleged locus of control transfer may explain the improved performance of the dogs . . . (Zubedat et al., 2014).

If Zubedat et al. are correct, the control exercised by a handler over a dog is dissociable from the dog’s control over herself. Like us, dogs apparently develop self-control more efficiently when given a measure of control over their situation.

Another study emphasizes the point that a dog’s control may, or may not, depend upon her relationship with her guardian. Some dogs left in unfamiliar rooms with strangers quickly move to their guardian’s side upon the guardian’s return. Others do not (Rehn, Lindholm, Keeling, & Forkman, 2014). Dogs whose guardians think the dog is attached only to them and predict the dog will not move to a stranger’s side are often surprised to see the dog cozy up to a stranger in the absence of the owner. So, some dogs’ values are dissociable from her guardian’s values. Guardians who are convinced their dog is exclusively bonded to them may be caught up short to learn that their dog does not share their opinion.

**One way to test for agential control in a nonhuman is to ask whether the animal can inhibit a strong desire for an immediate reward in order to satisfy a strong desire for a better, longer term, reward. Scientists have devised at least four paradigms to study the phenomenon:**

… inhibition of consumption of current food contingent on future receipt of either a larger quantity or more preferred food, choice between quantities of food contingent on future pilfering or replenishment of food, carrying foods to different locations contingent on future access to those locations, and selection of tools for use to obtain food in the future (Roberts, 2012).

Three experiments strongly suggest dogs exercise executive control.

In Go-no-Go, dogs are first trained to nose a button when they hear a whistle (the “Go” sign). If they respond appropriately they receive a food reward. In the next phase of the trial they are presented with the following challenge. The experimenter raises their palm in a “stop” sign, a sign the dog has been trained to understand as a signal not to move (“no Go”). After the signed “stop,” the “go” whistle sounds. If the dog can refrain from “acting on instinct” and can successfully refuse to act on her desire to touch the button, she receives a food reward.

Can dogs do this? As one might expect, some can and some can’t. Predictably, the age of the animal plays a role, and so does the individual’s genetic background. Furthermore, structural and functional differences in neuroanatomy are correlated with success or failure in response inhibition. In a test using awake dogs trained to lay quietly in fMRI machines, researchers showed that parts of a dog’s frontal cortex are more active when the dog is successfully inhibiting her behavior (Cook, Spivak, & Berns, 2016). Two of the regions are the canine proreal cortex, which the authors speculate “may be comparable to frontal regions supporting inhibition in humans,” and the canine ventrolateral pre-sylvian cortex, “a likely candidate for analog to human pre-supplementary motor area, also involved in [human] inhibition” (Cook et al., 2016).

In a second experimental paradigm, A-not-B, an animal is allowed to see a food reward being hidden under one of three buckets, say, Bucket A. They are permitted to nose the bucket and retrieve the treat. The food is left in the same bucket for three trials. In the next, so-called reversal, phase, the animal sees the food hidden under A and subsequently removed and placed under B. The animal’s challenge is to learn to inhibit his conditioned association of A with food and to choose instead the correct location, B. When 12 month-old human infants are presented with the reversal trial, they perseverate and look under the wrong bucket, Bucket A (Topál, Gergely, Miklósi, Erdohegyi, & Csibra, 2008). However, by two years of age, typically developing infants have learned to inhibit that response and they look under bucket B. In the intervening year, infants display individual variances in their performances. Like 18 month-old babies, dogs display varying capacities to inhibit their responses in both Go-no-Go and A-not-B tests (Cook et al., 2016). Adult dogs generally succeed at Go-no-Go but often fail at A-not-B (Sümegi, Kis, Miklósi, & Topál, 2014).

In a third experiment, dogs were tested to see whether they could retain a habitual response when faced with a novel task. First, they were shown food being placed in an opaque container. To retrieve it, the animals had to avoid knocking the cylinder over so as to retrieve the food from behind the cylinder. When the food was placed in a transparent cylinder, dogs could inhibit their impulse to reach straight for the food, remembering to perform the habitual response, that is, to approach the visible food from behind (MacLean et al., 2014). **Typically developing adult dogs track the location of objects, learn how to respond in patterned ways to get what they want, and can respond flexibly to reversals in those patterns.** Trying to explain these behaviors as “mere associations” or “learned instincts” need no more undermine the argument that dogs implicitly self-invest than a similar reductionist explanation of a toddler’s behavior under the same test conditions need undermine the argument that toddlers implicitly self-invest (Comstock, 2016). For the following claims are all consistent with the reductionist claims: dogs can inhibit their initial responses, change their behaviors to align with their longer-term desires, and reason about means and ends. I take these experiments as behavioral evidence for canine **agency.**

Like young humans, dogs can control themselves, develop their own skills and make deposits in their future by aiming at intermediate-term payoffs. Kindergarteners earn returns for their teachers when they learn their lessons. But they also earn returns for themselves because they acquire the capacity to identify conditions in which their beliefs are false. For example, they may think that the rule “take turns” does not apply to the bathroom line, but when they are reprimanded for cutting into the queue they learn that this belief is false. Learning the scope of a rule and then working to bring one’s conduct in line with the rule, is an implicit investment in oneself. The investment pays off in the future when one succeeds in determining whether the rule applies in novel situations.

Dogs who learn their guardians’ household norms earn returns for their guardians. But they also earn returns for themselves because they acquire the capacity to identify conditions in which their beliefs are false. For example, they may think that the rule “stay in the yard” does not apply when they see a bunny across the street. But when they are reprimanded for chasing the rabbit they learn that this belief is false. Learning the scope of a rule and then working to bring one’s conduct in line with the rule is an implicit investment in oneself. The investment pays off in the future when the dog succeeds in determining whether the rules applies in novel situations.

What is sauce for the goose is sauce for the gander. Whatever reasons ground the claim that we must credit 3-year old humans with achievements in developing themselves also grounds the claim that we must credit dogs with achievements in developing themselves when the dogs exhibit behaviors analogous to the toddlers’ behaviors. And analogous canine behaviors are what we see in the experiments discussed in this section.

**§ 2.11 Objection: A dog’s alleged prospection is in fact a Clever Hans illusion produced by canine responses to human cues**

This objection holds that dogs deceive us into thinking they think about their future. But the truth is that canine prospection is not prospection at all. It is rather an illusion foisted upon humans. Evolutionary forces and processes of domestication, goes this objection, blindly conspired to produce faux-prospective behaviors in, and only in, individuals of those species whose genomes have been selected to succeed in conditions of proximity with humans. Pre-eminently, dogs.

Through millennia of domestication, dogs have come to understand human desire. They can decipher what we intend when we point, gesture, and gaze; they engage with us in joint attention (Duranton, Range, & Virányi, 2017; B. Hare et al., 1998; Miklösi et al., 1998; Soproni, Miklósi, Topál, & Csányi, 2001). But a dog’s attending jointly to something with someone is not the same thing as the dog reading that person’s mind, not if the dog’s behavior can be explained in first-order terms. Not if the dog is responding automatically to human cues in the way that the horse Clever Hans responded to his handler by seeming to do arithmetic (Pfungst, 1911).

Having evolved successfully to live in human households by developing mechanisms by which to decode and satisfy human expectations, dogs behaving in apparently prospective ways may only be engaging a module evolved to move the dog to behave in a way that will lead a human to interpret the dog’s behavior anthropomorphically. So goes this objection.

**§ 2.12 Rebuttal: A wild relative of the dog engages in prospection**

If wild wolves (*Canis lupus*), the dog’s closest living relative, prospect, then objection **§** 2.11 cannot be true. If the example I describe next is one of genuine prospection, as I believe it is, then prospection in dogs cannot be a behavior that requires that an animal have a relationship with a human being.

A pair of hungry wolves is tracking a herd of prey animals. Rather than pursuing the prey directly, they take off on a tangent, wait in ambush for several hours, and then attack from a spot not within sight of the wolves’ original vantage. The example suggests the following interpretation. A wolf has a mental map of her area, expectations about the directions prey animals may take, and the ability to time their movements to anticipate the route most likely to be taken by the prey. By foreseeing possible ways the future could go, the wolf is able schematically to plan her route of attack and, by renouncing her inclination to spring, optimize her chances of success.

On 6 July 2006, around 2:30 pm, the wildlife biologist David Mech saw two wolves discovering a herd of twenty muskoxen positioned 1.6 km northeast of the wolves’ den (Mech, 2007). Throughout the afternoon the wolves continued to spy on the prey, who had not detected the predators. Around 8:30 pm, some six hours later, Mech saw that the two wolves

… had gone down the den valley and then up onto the flats to within 300 m south of the muskoxen. The wolves had moved around 200 m on the flats toward the muskoxen when they stopped, stared toward the herd for a few minutes, and then backtracked about 50 m. They headed east about 100 m and then back north about 50 m, moving toward the muskoxen along a parallel to their original route. They then lay down out of sight, about 100 m from a green, wet sedge meadow about 15 m wide and 40 m long, still about 300 m from the herd. … There they waited for about three hours, intermittently popping up and looking toward the muskoxen.

Around midnight, the wolves charged the muskoxen, who repelled their attackers. Mech comments:

When the wolves first saw the muskoxen hours before, the herd had been traveling west, yet the wolves positioned themselves southeast of the herd. When the wolves first started toward the herd, I could not have predicted which direction the herd would move.

The wolves had positioned themselves correctly, accurately predicting that the herd would move to the southeast toward the meadow. “If so,” concludes Mech, “that strategy … implied foresight, understanding, and planning” (Mech, 2007). The wolves at 2:30 pm probably did not foresee themselves nine hours into the future, or say to themselves, “attack at midnight.” However, they may well have foreseen themselves having to wait some number of hours before the time would be ripe for attack. And, during those hours of waiting, they had to control their hunger and their inclination to attack sooner than later. **T**he animals did not remain vigilant, their goal constantly in active memory. According to Mech (private correspondence), they spent most of the afternoon sleeping.

**It appears that wolves can want to do things that they cannot finish doing *now*. It** may take the wolf several hours to accomplish the goal, and she may have to wait to realize it until after she has completed an unrelated activity, such as awakening from sleep. The distal action cannot be explained as a response to a proximal stimulus, much less to a human stimulus since no humans are involved.

The relevance of the wolf hunt is this. Nonhuman implicit intermediate-term prospection is a cognitive skill the development of which does not depend on domestication. It is not surprising, therefore, that captive wolves perform equally as well as dogs on tasks requiring social communication and are superior in following causal cues (Lampe, Brauer, Kaminski, & Viranyi, 2017). If wild wolves **make** deposits in their future every time they decide to wait—every time they decide to defer current expenditures of energy and effort in order to use those resources later—then it cannot be true that training by humans is a prerequisite for nonhuman prospection.

I have shown that to be capable of implicit self-investment, an individual does not need self-consciousness, mental time travel, or recursive language. One need only to be aware of one’s body, of multiple possible future states of the world relative to that body, to prefer some future states over others, and to be able to respond flexibly to challenges that arise to block the attainment of the future desired state. Dogs have these capacities. They represent their bodies, understand the passage of time, remember plans that have been extinguished from active memory, and learn social norms. They have what it takes to invest in themselves.

I now take up three different kinds of objections. All three grant the claim that dogs have self-investment value but present some additional worries about the method I proposed in Part 1.

**§ 2.13 Objection:** **Guardians don’t deserve awards for a dog’s self-investment value**

If a dog’s self-investment value is independent of the capital value her guardian derives from the dog, as it is, then why should the guardian be compensated for the animal’s loss of future opportunities to enjoy *the animal’s* self-investments? Whereas guardians deserve some compensation for the loss of their animal, it seems reasonable to believe that this compensation should be limited to fair market value and capital value.

**§ 2.14 Rebuttal:** **Guardians are the best candidates by default to receive awards**

Guardians are entitled to compensation for the loss of the animal’s self-investment value by default. It is true that they are not responsible for the animal’s efforts to improve itself. However, the harm of the loss of one’s future is a wrong done by the criminal to the dog and the criminal should be penalized for depriving the dog of her self-investment value. Who should receive the award? The dead animal cannot be compensated. Her canine siblings or relatives are candidates, and giving them the award might strike some as plausible. However, as these animals cannot appreciate the meaning of the award, the payer might rightly object that the funds are being mis-spent. The state is also an eligible party, but this solution seems unjust insofar as the state has not been involved in the animal’s life. The surviving guardian companion has been involved and therefore is the only party with a legitimate interest in the award.

**§ 2.15 Objection: The proposed method is inconsistent**

This objection worries about an alleged inconsistency in the method. On the one hand, the method is sensitive to differences between two deceased animals’ economic values. On the other hand, it is not sensitive to differences in their respective noneconomic values.

**§ 2.16 Rebuttal: The proposed method is not inconsistent**

The method does, in fact, treat economic and noneconomic value differently. But two reasons show that this is not a problem. First, awards are not intended to compensate survivors for the *meaning* or *worth* of their animal’s life, supposing the dog has such traits. They are meant only to provide a measure of compensatory justice reflecting the deceased animal’s *value*. Second, we do not ask whether the deceased animal *deserves* for his survivors to be compensated. We make the awards irrespective of the animal’s moral merit, again assuming it has such a quality.

**§ 2.17 Objection: The proposed method has counterintuitive implications for wild animals**

If domestic animals invest in themselves, wild animals do so, too. However, the argument given here entails the radically counterintuitive conclusion that we owe compensation to some human whenever a wild animal dies prematurely.

**§ 2.18 Rebuttal: The implications for wild animals are plausible**

I have two rebuttals. First, because humans are not involved in the lives of most wild animals those wild animals have no capital value. When animals have no capital value, we have no way to determine their self-investment value and, therefore, cannot pay reparations for their deaths. Note that I do not claim that wild animals have no self-investment value but only that we cannot calculate it. Second, if humans are involved with some wild animal—perhaps by studying or enjoying her—then the animal has capital value and we have a basis for estimating it. In cases of wrongful killings of such animals, interested parties may deserve awards.[[29]](#footnote-30)

**Conclusion**

Some companion animals have the mental capacity to make implicit investments in themselves. These self-investments are occasions when the animal acquires new skills to develop and satisfy novel interests, interests she would not possess absent her self-investment activity. Such self-investments are initially simple: unconscious, automatic, and short-term. The simpler elements include activities required to meet daily physiological needs, such as finding suitable things to eat and drink, safe places to relax and sleep, and conspecifics willing to play and mate. Mastering these simple self-investments prepares one to develop more complex forms later on. For insofar as an animal’s rudimentary self-control skills become part of a behavioral pattern that grows into more nuanced forms of self-control, an animal may unconsciously begin to make longer-term, intermediate-term, self-investments. In that case, she may well reap rewards later, in the form of improved capacities to play and hunt, more sophisticated strategies to evade foes, deepened nuances of pleasure in the maturing affections of conspecific and human companions. She may well profit later from early efforts to learn household norms, benefitting in the end from continued attention to the idiosyncratic dispositions and expectations of other community members.

How should courts value the loss of such self-investments? Part 1 proposes a transparent and portable method with distinct advantages over current procedures. It is likely to reduce court time, resolve standing legal controversies, and lower litigation costs. In addition, it seems to have conservative legal implications because it produces results generally in line with the findings of current models.

However, looking ahead, the model may not have conservative implications for the valuation of so-called food animals. Any animal with capital value may have self-investment value and, as their carcasses and by-products amply show, pigs and cows have substantial capital value. The prices consumers currently pay for these values, however, do not capture the animal’s self-investment value, which is externalized. This is a sign of market failure. According to basic principles of economics, external costs should be internalized, paid by the consumer.

If cows and pigs can invest in themselves, as they likely can, and if we wrongfully deprive them of the opportunity to recoup their self-investments when we slaughter them, then we must restructure our agricultural markets so that consumers can pay the true costs of animal use. Under those constraints, meat and dairy prices are likely to rise dramatically. Finally, it bears observing that once consumers realize the true economic value of so-called food animals, they may soon turn their attention to the animals’ noneconomic value as well. Doing so will inevitably raise the question of the animals’ moral rights, a question I have not discussed here.[[30]](#footnote-31)

Bibliography

Ackerman, R. M. (2005). The September 11th Victim Compensation Fund: An Effective Administrative Response to National Tragedy. *Harvard Negotiation Law Review*, *10*, 135–229.

Adler, M. D., & Posner, E. A. (1999). *Rethinking Cost-Benefit Analysis* (SSRN Scholarly Paper No. ID 164902). Retrieved from Social Science Research Network website: https://papers.ssrn.com/abstract=164902

Adler, M. D., & Posner, E. A. (2006). *New foundations of cost-benefit analysis*. Retrieved from https://catalog.lib.ncsu.edu/record/NCSU1946551

Adopt Your New Best Friend. (2013). Retrieved September 4, 2017, from The Humane Society of Tacoma and Pierce County website: http://www.thehumanesociety.org/adopt/

Allen, C. (1995). Animal Consciousness. In E. N. Zalta (Ed.), *Stanford Encyclopedia of Philosophy* (Summer 2011). Retrieved from http://plato.stanford.edu/archives/sum2011/entries/consciousness-animal/notes.html#4

Alter, G. C., & Becker, W. E. (1985). Estimating lost future earnings using the new worklife tables. *Monthly Labor Review*.

American Veterinary Medical Association (Ed.). (2012). *U.S. pet ownership & demographics sourcebook*. Schaumburg, Ill: Center for Information Management, American Veterinary Medical Association.

Anderson, E. (1997). Practical Reason and Incommensurable Goods. In R. Chang (Ed.), *Incommensurability, incomparability, and practical reason*. Cambridge, Mass: Harvard University Press.

*Anderson v. Hayles, No. 14-2-51133-0*. , (Franklin County Superior Court August 3, 2016).

Andrews, K., Comstock, G., Crozier, G. K. D., Donaldson, S., Fenton, A., John, T. M., … Walker, R. L. (2018). *The Philosophers’ Brief on Chimpanzee Personhood* (p. 42) [Proposed brief by amici curiae philosophers in support of the petitioner-appellant]. Court of Appeals, State of New York.

Angle, C. T., Wakshlag, J. J., Gillette, R. L., Steury, T., Haney, P., Barrett, J., & Fisher, T. (2014). The effects of exercise and diet on olfactory capability in detection dogs. *Journal of Nutritional Science*, *3*. https://doi.org/10.1017/jns.2014.35

Arkow, P. (2013). The Impact of Companion Animals on Social Capital and Community Violence: Setting Research, Policy and Program Agendas. *The Journal of Sociology & Social Welfare*, *40*(4). Retrieved from http://scholarworks.wmich.edu/jssw/vol40/iss4/4

Baumeister, R. F., Vohs, K. D., & Oettingen, G. (2016). Pragmatic Prospection: How and Why People Think about the Future. *Review of General Psychology*, *20*(1), 3–16. https://doi.org/10.1037/gpr0000060

Bekoff, M. (2001). Observations of scent-marking and discriminating self from others by a domestic dog (Canis familiaris): Tales of displaced yellow snow. *Behavioural Processes*, *55*(2), 75–79. https://doi.org/10.1016/S0376-6357(01)00142-5

Bekoff, M. (2003). Consciousness and Self in Animals: Some Reflections. *Zygon®*, *38*(2), 229–245. https://doi.org/10.1111/1467-9744.00497

Belger, J., & Bräuer, J. (2018). Metacognition in dogs: Do dogs know they could be wrong? *Learning & Behavior*, *46*(4), 398–413. https://doi.org/10.3758/s13420-018-0367-5

Belke, T. W., Pierce, W. D., & Powell, R. A. (1989). Determinants of choice for pigeons and humans on concurrent-chains schedules of reinforcement. *Journal of the Experimental Analysis of Behavior*, *52*(2), 97–109. https://doi.org/10.1901/jeab.1989.52-97

Berg, L. van den, Schilder, M. B. H., & Knol, B. W. (2003). Behavior Genetics of Canine Aggression: Behavioral Phenotyping of Golden Retrievers by Means of an Aggression Test. *Behavior Genetics*, *33*(5), 469–483. https://doi.org/10.1023/A:1025714431089

Berns, G. S., Brooks, A. M., Spivak, M., & Levy, K. (2017). Functional MRI in Awake Dogs Predicts Suitability for Assistance Work. *Scientific Reports*, *7*, 43704. https://doi.org/10.1038/srep43704

Bloom, P. (2004). Can a Dog Learn a Word? *Science*, *304*(5677), 1605–1606. Retrieved from JSTOR.

Bonanno, G. A., Moskowitz, J. T., Papa, A., & Folkman, S. (2005). Resilience to Loss in Bereaved Spouses, Bereaved Parents, and Bereaved Gay Men. *Journal of Personality and Social Psychology*, *88*(5), 827–843. https://doi.org/10.1037/0022-3514.88.5.827

Bräuer, J., & Belger, J. (2018). A ball is not a Kong: Odor representation and search behavior in domestic dogs (Canis familiaris) of different education. *Journal of Comparative Psychology (Washington, D.C.: 1983)*, *132*(2), 189–199. https://doi.org/10.1037/com0000115

Bräuer, J., & Call, J. (2015). Apes produce tools for future use. *American Journal of Primatology*, *77*(3), 254–263. https://doi.org/10.1002/ajp.22341

Bräuer, J., Call, J., & Tomasello, M. (2004). Visual perspective taking in dogs (Canis familiaris) in the presence of barriers. *Applied Animal Behaviour Science*, *88*(3), 299–317. https://doi.org/10.1016/j.applanim.2004.03.004

Bryan, W. R., & Linke, C. M. (1988). Estimating Present Value of Future Earnings: Experience with Dedicated Portfolios. *The Journal of Risk and Insurance*, *55*(2), 273–286. https://doi.org/10.2307/253328

Buckner, R. L., & Carroll, D. C. (2007). Self-projection and the brain. *Trends in Cognitive Sciences*, *11*(2), 49–57. https://doi.org/10.1016/j.tics.2006.11.004

Call, J. (2010). Do apes know that they could be wrong? *Animal Cognition*, *13*(5), 689–700. https://doi.org/10.1007/s10071-010-0317-x

Carpenter, M., Nagell, K., & Tomasello, M. (1998). Social cognition, joint attention, and communicative competence from 9 to 15 months of age. *Monographs of the Society for Research in Child Development*, *63*(4), i–vi, 1–143.

Carruthers, P. (1989). Brute Experience. *The Journal of Philosophy*, *86*(5), 258–269. https://doi.org/10.2307/2027110

Carruthers, P. (1992). *The Animals Issue: Moral Theory in Practice*. Cambridge [England]: Cambridge University Press.

Carruthers, P. (2000). *Phenomenal consciousness: A naturalistic theory*. Cambridge, UK ; New York: Cambridge University Press.

Carruthers, P. (2004). On Being Simple Minded. *American Philosophical Quarterly*, *41*(3), 205–220.

Carruthers, P. (2008). Meta‐cognition in Animals: A Skeptical Look. *Mind & Language*, *23*(1), 58–89. https://doi.org/10.1111/j.1468-0017.2007.00329.x

Carruthers, P. (2011a). *The Opacity of Mind: An Integrative Theory of Self-Knowledge*. Oxford; New York: Oxford University Press, USA.

Carruthers, P. (2011b, October 31). Knowledge of our own thoughts is just as interpretive as knowledge of the thoughts of others [Essay]. Retrieved from On the Human Forum website: http://nationalhumanitiescenter.org/on-the-human/2011/10/knowledge-of-our-own-thoughts/

Carruthers, P. (2016). Higher-Order Theories of Consciousness. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (Fall 2016). Retrieved from https://plato.stanford.edu/archives/fall2016/entries/consciousness-higher/

Carruthers, P., & Ritchie, J. B. (2013). The emergence of metacognition: affect and uncertainty in animals. In M. J. Beran, J. Brandl, J. Perner, & J. Proust (Eds.), *Foundations of Metacognition* (pp. 76–93). Retrieved from http://www.oxfordscholarship.com/view/10.1093/acprof:oso/9780199646739.001.0001/acprof-9780199646739-chapter-005

Cazzolla Gatti, R. (2016). Self-consciousness: Beyond the looking-glass and what dogs found there. *Ethology Ecology & Evolution*, *28*(2), 232–240. https://doi.org/10.1080/03949370.2015.1102777

Chang. (1997). Introduction. In R. Chang (Ed.), *Incommensurability, incomparability, and practical reason*. Cambridge, Mass: Harvard University Press.

Chang, Y., Eisenberg, T., Ho, H.-W., & Wells, M. T. (2015). Pain and Suffering Damages in Wrongful Death Cases: An Empirical Study. *Journal of Empirical Legal Studies*, *12*(1), 128–160. https://doi.org/10.1111/jels.12067

Cleveland, W. P., & Gianturco, D. T. (1976). Remarriage Probability After Widowhood: A Retrospective Method. *Journal of Gerontology*, *31*(1), 99–103. https://doi.org/10.1093/geronj/31.1.99

Comstock, G. (forthcoming). Bovine prospection, the mesocorticolimbic pathways, and neuroethics: Is a cow’s future like ours? In L. S. M. Johnson, A. Fenton, & A. Shriver (Eds.), *Neuroethics and Nonhuman Animals*. New York, N.Y: Springer.

Comstock, G. (2004). Subsistence Hunting. In Steve F. Sapontzis (Ed.), *Food for Thought: The Debate over Eating Meat* (pp. 359–370). Amherst, N.Y: Prometheus Books.

Comstock, G. (2016). La Mettrie’s Objection: Humans Act Like Animals. In M. Engel, Jr. & G. L. Comstock (Eds.), *The Moral Rights of Animals* (pp. 175–198). Lanham, MD: Lexington Books.

Comstock, G. (2017a). Concerning Cattle: Behavioral and Neuroscientific Evidence for Pain, Desire, and Self-Consciousness. In A. Barnhill, M. Budolfson, & T. Doggett (Eds.), *Oxford Handbook of Food Ethics* (pp. 139–169). New York: Oxford University Press.

Comstock, G. (2017b). Far-Persons. In A. Woodhall & G. Garmendia da Trindade (Eds.), *Ethical and Political Approaches to Nonhuman Animal Issues* (pp. 39–72). Retrieved from //www.palgrave.com/us/book/9783319545486

Comstock, G., & Bauer, W. A. (2018). Getting It Together: Psychological Unity and Deflationary Accounts of Animal Metacognition. *Acta Analytica*. https://doi.org/10.1007/s12136-018-0340-0

Cook, P. F., Spivak, M., & Berns, G. (2016). Neurobehavioral evidence for individual differences in canine cognitive control: An awake fMRI study. *Animal Cognition*, *19*(5), 867–878. https://doi.org/10.1007/s10071-016-0983-4

Cook, P. F., Spivak, M., & Berns, G. S. (2014). One pair of hands is not like another: Caudate BOLD response in dogs depends on signal source and canine temperament. *PeerJ*, *2*, e596. https://doi.org/10.7717/peerj.596

Cosgrave, J. (2014, March 19). World’s most expensive dog? Pup sold for $2 million. Retrieved November 9, 2018, from https://www.cnbc.com/2014/03/19/worlds-most-expensive-dog-pup-sold-for-2-million.html

Crystal, J. D., & Foote, A. L. (2009). Metacognition in animals: Trends and challenges. *Comparative Cognition & Behavior Reviews*, *4*. Retrieved from http://comparative-cognition-and-behavior-reviews.org/2009/vol4\_crystal\_foote\_b/

Cudd, A. E. (1990). Sensationalized Philosophy: A Reply to Marquis’s “Why Abortion is Immoral.” *The Journal of Philosophy*, *87*(5), 262–264. https://doi.org/10.2307/2026833

Dalziel, D. J., Uthman, B. M., McGorray, S. P., & Reep, R. L. (2003). Seizure-alert dogs: a review and preliminary study. *European Journal of Epilepsy*, *12*(2), 115–120.

Damasio, A. R. (1999). *The Feeling of What Happens: Body and Emotion in the Making of Consciousness* (1st ed). New York: Harcourt Brace.

Darwall, S. (2003). Moore, Normativity, and Intrinsic Value. *Ethics*, *113*(3), 468–489. https://doi.org/10.1086/345623

Davidson, D. (1982). Rational Animals. *Dialectica*, *36*, 318–3277.

Davidson, D. (1987). Knowing One’s Own Mind. *Proceedings and Addresses of the American Philosophical Association*, *60*(3), 441–458.

Davidson, D. (1991). Three Varieties of Knowledge. In A. P. Griffiths (Ed.), *A.J. Ayer Memorial Essays: Royal Institute of Philosophy Supplement, 30*. Cambridge: Cambridge University Press.

Davidson, D. (2001). *Subjective, Intersubjective, Objective: Philosophical Essays, Vol. 3* (Vol. 3). Oxford : New York: Clarendon Press.

de Waal, F. B. M., Dindo, M., Freeman, C. A., & Hall, M. J. (2005). The monkey in the mirror: Hardly a stranger. *Proceedings of the National Academy of Sciences of the United States of America*, *102*(32), 11140–11147. https://doi.org/10.1073/pnas.0503935102

DeGrazia, D. (2009). Self-awareness in animals. In R. W. Lurz (Ed.), *The philosophy of animal minds* (pp. 201–217). Cambridge, UK; New York: Cambridge University Press.

Dennett, D. (1992). The Self as a Narrative Center of Gravity. In F. Kessel, P. Cole, & D. Johnson (Eds.), *Self and Consciousness: Multiple Perspectives*. Retrieved from http://ase.tufts.edu/cogstud/papers/selfctr.htm

Donaldson, S., & Kymlicka, W. (2016). Rethinking membership and participation in an inclusive democracy: cognitive disability, children, animals (Cambridge University Press, 2016), pp. 168-97. In B. Arneil & N. Hirschmann (Eds.), *Disability and Political Theory* (pp. 168–197). Cambridge: Cambridge University Press.

Douthwaite, G., & Eades, R. W. (1988). *Jury Instructions for Personal Injury and Tort Cases: Current Supplements* (2nd ed.). LEXIS Publishing.

Dubner, S. (2018, April 4). The Invisible Paw. In *Freakonomics*. Retrieved from http://freakonomics.com/podcast/animal-economics/

Duranton, C., Range, F., & Virányi, Z. (2017). Do pet dogs (Canis familiaris) follow ostensive and non-ostensive human gaze to distant space and to objects? *Royal Society Open Science*, *4*(7), 170349–170349. https://doi.org/10.1098/rsos.170349

Dworkin, R. (1981). What is Equality? Part 2: Equality of Resources. *Philosophy & Public Affairs*, *10*(4), 283–345.

Elgier, A. M., Jakovcevic, A., Barrera, G., Mustaca, A. E., & Bentosela, M. (2009). Communication between domestic dogs (Canis familiaris) and humans: Dogs are good learners. *Behavioural Processes*, *81*(3), 402–408. https://doi.org/10.1016/j.beproc.2009.03.017

Engel, Jr., M., & Comstock, G. L. (Eds.). (2016). *The Moral Rights of Animals*. Lanham, MD: Lexington Books.

Fadel, F. R., Driscoll, P., Pilot, M., Wright, H., Zulch, H., & Mills, D. (2016). Differences in Trait Impulsivity Indicate Diversification of Dog Breeds into Working and Show Lines. *Scientific Reports*, *6*. https://doi.org/10.1038/srep22162

Faragó, T., Takács, N., Miklósi, Á., & Pongrácz, P. (2017). Dog growls express various contextual and affective content for human listeners. *Royal Society Open Science*, *4*(5). https://doi.org/10.1098/rsos.170134

Feinberg, K. R. (2005). *What is life worth? the unprecedented effort to compensate the victims of 9/11* (1st ed). New York: Public Affairs.

Feldman, F. (1997). *Utilitarianism, hedonism, and desert: Essays in moral philosophy*. Cambridge, U.K. ; New York, NY, USA: Cambridge University Press.

Frankfurt, H. G. (1971). Freedom of the Will and the Concept of a Person. *The Journal of Philosophy*, *68*(1), 5–20. https://doi.org/10.2307/2024717

Frankfurt, H. G. (1988). *The Importance of What We Care About: Philosophical Essays*. Cambridge [England]: Cambridge University Press.

Fratkin, J. L., Sinn, D. L., Patall, E. A., & Gosling, S. D. (2013). Personality Consistency in Dogs: A Meta-Analysis. *PLoS One; San Francisco*, *8*(1), e54907. http://dx.doi.org.prox.lib.ncsu.edu/10.1371/journal.pone.0054907

Frey, R. G. (1980). *Interests and Rights: The Case Against Animals*. Oxford: Clarendon Press.

Frey, R. G. (1988). Moral standing, the value of lives, and speciesism. *Between the Species*, *4*, 191–201.

Frey, R. G. (2011). Utilitarianism and Animals. In T. L. Beauchamp & R. G. Frey (Eds.), *The Oxford Handbook of Animal Ethics* (pp. 172–197). Oxford University Press, USA.

Friedman, W. J. (2005). Developmental and cognitive perspectives on humans’ sense of the times of past and future events. *Learning and Motivation*, *36*(2), 145–158. https://doi.org/10.1016/j.lmot.2005.02.005

Fugazza, C., Pogány, Á., & Miklósi, Á. (2016). Recall of Others’ Actions after Incidental Encoding Reveals Episodic-like Memory in Dogs. *Current Biology*, *26*. https://doi.org/10.1016/j.cub.2016.09.057

Gardner, R. A., & Gardner, B. T. (1969). Teaching sign language to a chimpanzee. *Science*, *165*(3894), 664–672.

Gay, S. (2011). Companion Animal Capital. *Animal Law Review*, *17*(1). Retrieved from http://papers.ssrn.com/abstract=2515864

Geistfeld, M. (1995). Placing a Price on Pain and Suffering: A Method for Helping Juries Determine Tort Damages for Nonmonetary Injuries. *California Law Review*, *83*(3).

Gilbert, D. T., & Wilson, T. D. (2007). Prospection: Experiencing the Future. *Science*, *317*(5843), 1351–1354. https://doi.org/10.1126/science.1144161

Gosling, S. D., Kwan, V. S. Y., & John, O. P. (2003). A dog’s got personality: A cross-species comparative approach to personality judgments in dogs and humans. *Journal of Personality and Social Psychology*, *85*(6), 1161–1169. https://doi.org/10.1037/0022-3514.85.6.1161

Green, C. (2004). The future of veterinary malpractice liability in the care of companion animals. *Animal Law*, *10*(Journal Article), 163.

Grice, H. P. (1989). *Studies in the way of words*. Cambridge, Mass: Harvard University Press.

Grice, H. P. (2001). *Aspects of reason*. Oxford : New York: Clarendon Press ; Oxford University Press.

Hammerstein, P., & Noë, R. (2016). Biological trade and markets. *Phil. Trans. R. Soc. B*, *371*(1687), 20150101. https://doi.org/10.1098/rstb.2015.0101

*Harabes v. Barkery, Inc. No. 791 A.2d 1142*. , (New Jersey Superior Court November 2, 2001).

Hare, B., Call, J., & Tomasello, M. (1998). Communication of Food Location Between Human and Dog (Canis Familiaris). *Evolution of Communication*, *2*(1), 137–159. https://doi.org/10.1075/eoc.2.1.06har

Hare, B., & Tomasello, M. (2005). Human-like social skills in dogs? *Trends in Cognitive Sciences*, *9*(9), 439–444. https://doi.org/10.1016/j.tics.2005.07.003

Hare, B., & Woods, V. (2013). *The genius of dogs: How dogs are smarter than you think*. New York, New York: Dutton.

Hare, R. M. (1981). *Moral Thinking: Its Levels, Methods and Point*. New York: Oxford University Press, USA.

Harman, G. (2000). *Explaining value and other essays in moral philosophy*. Oxford : New York: Clarendon Press ; Oxford University Press.

Harnad, S. (2014, June 2). Animals are not things: Manifeste pour une évolution du statut juridi…. Retrieved July 2, 2019, from archive.is website: http://archive.is/j8hHu

Harnad, S. (2015, July 2). To Close Slaughterhouses We Must Open People’s Hearts. *HuffPost Canada*. Retrieved from https://www.huffingtonpost.ca/stevan-harnad/vegan-animal-welfare\_b\_7702020.html

*Heiligmann v. Rose 16 S.W. 931, 932*. , (Texas 1891).

Horowitz, A. (2017). Smelling themselves: Dogs investigate their own odours longer when modified in an “olfactory mirror” test. *Behavioural Processes*, *143*, 17–24. https://doi.org/10.1016/j.beproc.2017.08.001

Ireland, T. R., & Ward, J. O. (2002). *The Estate of a Minor Child in a Child Death Case* (SSRN Scholarly Paper No. ID 334560). Retrieved from Social Science Research Network website: https://papers.ssrn.com/abstract=334560

Jamieson, D. (2018). Animal Agency. *The Harvard Review of Philosophy*, *XXV*, 111–126. https://doi.org/10.5840/harvardreview201892518

Jamieson, L. T. J., Baxter, G. S., & Murray, P. J. (2018). You Are Not My Handler! Impact of Changing Handlers on Dogs’ Behaviours and Detection Performance. *Animals*, *8*(10), 176. https://doi.org/10.3390/ani8100176

Jenkins, E. K., DeChant, M. T., & Perry, E. B. (2018). When the Nose Doesn’t Know: Canine Olfactory Function Associated With Health, Management, and Potential Links to Microbiota. *Frontiers in Veterinary Science*, *5*. https://doi.org/10.3389/fvets.2018.00056

Jezierski, T., Adamkiewicz, E., Walczak, M., Sobczyńska, M., Górecka-Bruzda, A., Ensminger, J., & Papet, E. (2014). Efficacy of drug detection by fully-trained police dogs varies by breed, training level, type of drug and search environment. *Forensic Science International*, *237*, 112–118. https://doi.org/10.1016/j.forsciint.2014.01.013

Kaminski, J., Call, J., & Fischer, J. (2004). Word Learning in a Domestic Dog: Evidence for “Fast Mapping.” *Science*, *304*(5677), 1682–1683. https://doi.org/10.1126/science.1097859

Kaminski, J., & Nitzschner, M. (2013). Do dogs get the point? A review of dog–human communication ability. *Learning and Motivation*, *44*(4), 294–302. https://doi.org/10.1016/j.lmot.2013.05.001

Kaminski, J., & Piotti, P. (2016). Current Trends in Dog-Human Communication: Do Dogs Inform? *Current Directions in Psychological Science*, *25*(5), 322–326. https://doi.org/10.1177/0963721416661318

Kaminski, J., Schulz, L., & Tomasello, M. (2012). How dogs know when communication is intended for them. *Developmental Science*, *15*(2), 222–232. https://doi.org/10.1111/j.1467-7687.2011.01120.x

Karatsoreos, I. N., & McEwen, B. S. (2011). Psychobiological allostasis: Resistance, resilience and vulnerability. *Trends in Cognitive Sciences*, *15*(12), 576–584. https://doi.org/10.1016/j.tics.2011.10.005

Keep, B., Zulch, H. E., & Wilkinson, A. (2018). Truth is in the eye of the beholder: Perception of the Müller-Lyer illusion in dogs. *Learning & Behavior*, *46*(4), 501–512. https://doi.org/10.3758/s13420-018-0344-z

Korsgaard, C. M. (1996a). *Creating the kingdom of ends*. Cambridge ; New York, NY, USA: Cambridge University Press.

Korsgaard, C. M. (1996b). *The Sources of Normativity*. Cambridge University Press.

Krueger, K. V., Skoog, G. R., & Ciecka, J. E. (2006). Worklife in a Markov Model with Full-time and Part-time Activity. *Journal of Forensic Economics*, *19*(1), 61–82.

Kujala, M. (2017). Canine emotions as seen through human social cognition. *Animal Sentience*, *2*(14). Retrieved from https://animalstudiesrepository.org/animsent/vol2/iss14/1

Lacitis, E. (2016, August 13). Dog owner gets $100,000 settlement in shooting death of Chucky the spaniel. *The Seattle Times*. Retrieved from http://www.seattletimes.com/life/pets/dog-owner-awarded-100000-settlement-in-shooting-death-of-spaniel/

Lampe, M., Brauer, J., Kaminski, J., & Viranyi, Z. (2017). The effects of domestication and ontogeny on cognition in dogs and wolves. *SCIENTIFIC REPORTS*, *7*(1), 11690–11698. https://doi.org/10.1038/s41598-017-12055-6

Leebron, D. W. (1989). Final Moments: Damages for Pain and Suffering Prior to Death. *N.Y.U. Law Review*, *64*.

Lundqvist, M., Levin, L.-Å., Roback, K., & Alwin, J. (2018). The impact of service and hearing dogs on health-related quality of life and activity level: A Swedish longitudinal intervention study. *BMC Health Services Research*, *18*(1), 497. https://doi.org/10.1186/s12913-018-3014-0

MacIntyre, A. (1984). *After Virtue: A Study in Moral Theory, Second Edition* (2nd ed.). University of Notre Dame Press.

MacLean, E. L., Hare, B., Nunn, C. L., Addessi, E., Amici, F., Anderson, R. C., … Zhao, Y. (2014). The evolution of self-control. *Proceedings of the National Academy of Sciences*, *111*(20), E2140–E2148. https://doi.org/10.1073/pnas.1323533111

Maginnity, M. E., & Grace, R. C. (2014). Visual perspective taking by dogs (Canis familiaris) in a Guesser–Knower task: Evidence for a canine theory of mind? *Animal Cognition*, *17*(6), 1375–1392. https://doi.org/10.1007/s10071-014-0773-9

Marquis, D. (1989). Why Abortion is Immoral. *The Journal of Philosophy*, *86*(4), 183–202. https://doi.org/10.2307/2026961

McMahan, J. (2002). *The Ethics of Killing: Problems at the Margins of Life*. Oxford: Oxford University Press.

McMahon, S., Macpherson, K., & Roberts, W. A. (2010). Dogs choose a human informant: Metacognition in canines. *Behavioural Processes*, *85*(3), 293–298. https://doi.org/10.1016/j.beproc.2010.07.014

McPhee, A. M., Manzone, J., Ray, M., & Welsh, T. N. (2015). Timmy and Lassie (and Clyde? ): Joint attention effects with humans, dogs, and orangutans. *Journal of Exercise, Movement, and Sport (SCAPPS Refereed Abstracts Repository)*, *47*(1), 37–37.

Mech, L. D. (2007). Possible Use of Foresight, Understanding, and Planning by Wolves Hunting Muskoxen. *Arctic*, *60*(2), 145–149. Retrieved from JSTOR.

Mervis, C. B., & Rosch, E. (1981). Categorization of natural objects. *Annual Review of Psychology*, *32*, 89–115.

Miklösi, A., Polgárdi, R., Topál, J., & Csányi, V. (1998). Use of experimenter-given cues in dogs. *Animal Cognition*, *1*(2), 113–121. https://doi.org/10.1007/s100710050016

Miklósi, A., & Soproni, K. (2006). A comparative analysis of animals’ understanding of the human pointing gesture. *Animal Cognition*, *9*(2), 81–93. https://doi.org/10.1007/s10071-005-0008-1

Miklósi, Á., & Topál, J. (2013). What does it take to become ‘best friends’? Evolutionary changes in canine social competence. *Trends in Cognitive Sciences*, *17*(6), 287–294. https://doi.org/10.1016/j.tics.2013.04.005

Miller, H. C., Pattison, K. F., DeWall, C. N., Rayburn-Reeves, R., & Zentall, T. R. (2010). Self-Control Without a “Self”? *Psychological Science*, *21*(4), 534–538. https://doi.org/10.1177/0956797610364968

Miller, H. C., Rayburn-Reeves, R., & Zentall, T. R. (2009). What do dogs know about hidden objects? *Behavioural Processes*, *81*(3), 439–446. https://doi.org/10.1016/j.beproc.2009.03.018

Millikan, R. G. (2017). *Beyond concepts : Unicepts, language, and natural information* (First edition.). Oxford : Oxford University Press, 2017.

Mink, L. (1978). Narrative Form as a Cognitive Instrument. In *The Writing of History: Literary Form and Historical Understanding* (Robert H. Canary and Henry Kozicki, eds., pp. 129-140.). Madison, WI: University of Wisconsin Press.

Mischel, W., Ebbesen, E. B., & Raskoff Zeiss, A. (1972). Cognitive and attentional mechanisms in delay of gratification. *Journal of Personality and Social Psychology*, *21*(2), 204–218. https://doi.org/10.1037/h0032198

Mischel, W., Shoda, Y., & Rodriguez, M. L. (1989). Delay of Gratification in Children. *Science*, *244*(4907), 933–938. https://doi.org/10.2307/1704494

Moore, G. E. (1903). *Principia ethica*. Cambridge: Cambridge University Press.

Mulcahy, N. J., & Call, J. (2006). Apes Save Tools for Future Use. *Science*, *312*(5776), 1038–1040.

Müller, F. M. (1887). *The science of thought*. New York: C. Scribner’s sons.

Müller, F. M. (1891). *The science of language*. New York: C. Scrinber’s sons.

Newport, F., Jones, J. M., Saad, L., & Carroll. (2006, December 21). Americans and Their Pets. Retrieved August 21, 2018, from Gallup.com website: https://news.gallup.com/poll/25969/Americans-Their-Pets.aspx

Nichols, P. (2012). Abortion, Time-Relative Interests, and Futures Like Ours. *Ethical Theory and Moral Practice*, *15*(4), 493–506. https://doi.org/10.1007/s10677-011-9305-8

Noë, R., & Hammerstein, P. (1995). Biological markets. *Trends in Ecology & Evolution*, *10*(8), 336–339. https://doi.org/10.1016/S0169-5347(00)89123-5

Nolen, R. S. (2011). After more than a decade, has pet guardianship changed anything? *JAVMA News*. Retrieved from https://www.avma.org/News/JAVMANews/Pages/110401a.aspx

O’Neill, J. (1992). The Varieties of Intrinsic Value. *The Monist*, *75*(2), 119–137.

Osvath, M. (2009). Spontaneous planning for future stone throwing by a male chimpanzee. *Current Biology*, *19*(5), R190–R191. https://doi.org/10.1016/j.cub.2009.01.010

Osvath, M., & Karvonen, E. (2012). Spontaneous Innovation for Future Deception in a Male Chimpanzee. *PLoS One; San Francisco*, *7*(5), e36782. http://dx.doi.org/10.1371/journal.pone.0036782

Osvath, M., & Osvath, H. (2008). Chimpanzee (Pan troglodytes) and orangutan (Pongo abelii) forethought: Self-control and pre-experience in the face of future tool use. *Animal Cognition*, *11*, 661–674. https://doi.org/10.1007/s10071-008-0157-0

Palestrini, C., Calcaterra, V., Cannas, S., Talamonti, Z., Papotti, F., Buttram, D., & Pelizzo, G. (2017). Stress level evaluation in a dog during animal-assisted therapy in pediatric surgery. *Journal of Veterinary Behavior: Clinical Applications and Research*, *17*, 44–49. https://doi.org/10.1016/j.jveb.2016.09.003

Panksepp, J. (1998). *Affective Neuroscience: The Foundations of Human and Animal Emotions* (1st ed.). Oxford University Press, USA.

Parfit, D. (1984). *Reasons and Persons*. Oxford [Oxfordshire]: Clarendon Press.

Parfit, D. (2011). *On what matters*. Oxford ; New York: Oxford University Press.

Penn, D. C., Holyoak, K. J., & Povinelli, D. J. (2008). Darwin’s Mistake: Explaining the Discontinuity Between Human and Nonhuman Minds. *Behavioral and Brain Sciences*, *31*(02), 109–130. https://doi.org/10.1017/S0140525X08003543

*Petco Animal Supplies, Inc. v. Schuster, 144 S.W.3d 554*. , (Texas Appellate Court 2004).

Pfungst, O. (1911). *Clever Hans (the horse of Mr. von Osten)*. New York: H. Holt and company.

Pilley, J. W. (2013a). Border collie comprehends sentences containing a prepositional object, verb, and direct object. *Learning and Motivation*, *44*(4), 229–240. https://doi.org/10.1016/j.lmot.2013.02.003

Pilley, J. W. (2013b). *Chaser: Unlocking the genius of the dog who knows a thousand words*. Boston: Houghton Mifflin Harcourt.

Pilley, J. W., & Reid, A. K. (2011). Border collie comprehends object names as verbal referents. *Behavioural Processes*, *86*(2), 184–195. https://doi.org/10.1016/j.beproc.2010.11.007

Piotti, P. (2017). Positive emotions and quality of life in dogs. *Animal Sentience*, *2*(14). Retrieved from https://animalstudiesrepository.org/animsent/vol2/iss14/17

Piotti, P., & Kaminski, J. (2016). Do Dogs Provide Information Helpfully? *PLOS ONE*. https://doi.org/10.1371/journal.pone.0159797

Piotti, P., Satchell, L. P., & Lockhart, T. S. (2018). Impulsivity and behaviour problems in dogs: A Reinforcement Sensitivity Theory perspective. *Behavioural Processes*, *151*, 104–110. https://doi.org/10.1016/j.beproc.2018.03.012

Pluhar, E. B. (1995). *Beyond Prejudice: The Moral Significance of Human and Nonhuman Animals*. Durham: Duke University Press.

Pongrácz, P., Molnár, C., & Miklósi, A. (2010). Barking in family dogs: An ethological approach. *Veterinary Journal (London, England: 1997)*, *183*(2), 141–147. https://doi.org/10.1016/j.tvjl.2008.12.010

Posner, E. A., & Sunstein, C. R. (2005). Dollars and Death. *The University of Chicago Law Review*, *72*(2), 537–598.

Povinelli, D. J., & Bering, J. M. (2000). Toward a Science of Other Minds: Escaping the Argument by Analogy. *Cognitive Science*, *24*(3), 509. https://doi.org/Article

Powers, R. (n.d.). Active Duty Death Benefits & Entitlements - US Military Family Members. Retrieved January 8, 2018, from https://www.thebalance.com/active-duty-death-entitlements-3356940

Rabin, R. L. (2006). September 11 through the Prism of Victim Compensation. A Review of Kenneth R. Feinberg, What Is Life Worth? The Unprecedented Effort to Compensate the Victims of 9/11. *Columbia Law Review*, *106*(2), 464–482.

Railton, P. (2017). Moral Learning: Conceptual foundations and normative relevance. *Cognition*, *167*, 172–190. https://doi.org/10.1016/j.cognition.2016.08.015

Rawls, J. (1971). *A Theory of Justice* (Original ed). Cambridge, Mass: Belknap Press.

Raz, J. (1985). Value Incommensurability: Some Preliminaries. *Proceedings of the Aristotelian Society*, *86*, 117–134.

Raz, J. (1986). *The Morality of Freedom*. Oxford: Clarendon Press.

Regan, T. (1983). *The case for animal rights*. Berkeley: University of California Press.

Rehn, T., Lindholm, U., Keeling, L., & Forkman, B. (2014). I like my dog, does my dog like me? *Applied Animal Behaviour Science*, *150*, 65–73.

Reitan, E. (2016). Avoiding the Personhood Issue: Abortion, Identity, and Marquis’s ‘Future-Like-Ours’ Argument. *Bioethics*, *30*(4), 272–281. https://doi.org/10.1111/bioe.12211

Ricœur, P. (1984). *Time and narrative*. Chicago: University of Chicago Press.

Riezzo, I., Neri, M., Rendine, M., Bellifemina, A., Cantatore, S., Fiore, C., & Turillazzi, E. (2014). Cadaver dogs: Unscientific myth or reliable biological devices? *Forensic Science International*, *244*, 213–221. https://doi.org/10.1016/j.forsciint.2014.08.026

Roberts, W. A. (2012). Evidence for future cognition in animals. *Learning and Motivation*, *43*(4), 169–180. https://doi.org/10.1016/j.lmot.2012.05.005

Robinson, W. S. (2010, November 7). Canine Self-Control? Retrieved June 21, 2015, from Your Brain and You website: http://yourbrainandyou.com/2010/11/07/canine-self-control/

Rohrer, F. (2010, January 13). How much can you mourn a pet? *BBC News*. Retrieved from http://news.bbc.co.uk/2/hi/uk\_news/magazine/8454288.stm

Rosch, E. (1975). Cognitive reference points. *Cognitive Psychology*, *7*(4), 532–547. https://doi.org/10.1016/0010-0285(75)90021-3

Rosch, E. (1978). Principles of Categorization. In E. Rosch & B. B. Lloyd (Eds.), *Cognition and Categorization* (Vol. 7, pp. 189–206). Retrieved from http://www.sciencedirect.com/science/article/pii/0010028575900213

Rosenthal, D. M. (2005). *Consciousness and mind*. Oxford ; New York: Oxford University Press.

Ross, W. D. (1930). *The Right and the Good*. Indianapolis/Cambridge: Hackett Pub. Co.

Roukas, M. S. (2007). Determining the Value of Companion Animals in Wrongful Harm or Death Claims: A Survey of U.S. Decisions and an Argument for the Authorization to Recover for Loss of Companionship in Such Cases. *Animal Legal & Historical Center*. Retrieved from https://www.animallaw.info/article/determining-value-companion-animals-wrongful-harm-or-death-claims-survey-us-decisions-and#\_ftnref171

Sapontzis, S. F. (1987). *Morals, reason, and animals*. Philadelphia: Temple University Press.

Scanlon, T. (1998). *What We Owe to Each Other*. Cambridge, Mass: Belknap Press of Harvard University Press.

Schechtman, M. (1996). *The Constitution of Selves*. Ithaca, NY: Cornell University Press.

Scott, L. (2012). How Much Money Does the Average American Spend on Entertainment a Year? Retrieved August 21, 2018, from The Nest website: budgeting.thenest.com/much-money-average-american-spend-entertainment-year-26018.html

Segerstrom, S. C., & Nes, L. S. (2007). Heart Rate Variability Reflects Self-Regulatory Strength, Effort, and Fatigue. *Psychological Science*, *18*(3), 275–281. https://doi.org/10.1111/j.1467-9280.2007.01888.x

Seligman, M. E. P., Railton, P., Baumeister, R. F., & Sripada, C. (2013). Navigating Into the Future or Driven by the Past. *Perspectives on Psychological Science*, *8*(2), 119–141. https://doi.org/10.1177/1745691612474317

Shepherd, J. (2014). The contours of control. *Philosophical Studies*, *170*(3), 395–411.

Simpson, B. S. (1997). Canine communication. *The Veterinary Clinics of North America. Small Animal Practice*, *27*(3), 445–464.

Singer, P. (1975). *Animal liberation*. New York review : distributed by Random House.

Singer, P. (1993). *Practical Ethics* (2nd.). Cambridge: Cambridge University Press.

Siniscalchi, M., d’Ingeo, S., Minunno, M., & Quaranta, A. (2018). Communication in Dogs. *Animals : An Open Access Journal from MDPI*, *8*(8). https://doi.org/10.3390/ani8080131

Sinnott-Armstrong, W. (1999). You Can’t Lose What you Ain’t Never Had: A Reply to Marquis on Abortion. *Philosophical Studies*, *96*(1), 59–72. https://doi.org/10.1023/A:1004224102333

Sirois, L. M. (2015). Recovering for the loss of a beloved pet: rethinking the legal classification of companion animals and the requirements for loss of companionship tort damages. *University of Pennsylvania Law Review*, *163*(4), 1199.

Soproni, K., Miklósi, A., Topál, J., & Csányi, V. (2001). Comprehension of human communicative signs in pet dogs (Canis familiaris). *Journal of Comparative Psychology*, *115*(2), 122–126. https://doi.org/10.1037/0735-7036.115.2.122

Spieser, J. (2011, May 16). Do you have three and a half hours to devote to your dog each day? *The Ann Arbor News*. Retrieved from http://www.annarbor.com/pets/three-and-a-half-hours-coming-soon-to-a-theater-nearyour-dog/

*Stettner v. Graubard, 82 Misc.2d 132*. , (Town Ct 1975).

Steward, H. (2009). Animal Agency. *Inquiry*, *52*(3), 217–231. https://doi.org/10.1080/00201740902917119

Stoecker, R. (2009). Why Animals Can’t Act. *Inquiry*, *52*(3), 255–271. https://doi.org/10.1080/00201740902917135

Suddendorf, T. (2017). The Emergence of Episodic Foresight and Its Consequences. *Child Development Perspectives*, *11*(3), 191–195. https://doi.org/10.1111/cdep.12233

Suddendorf, T., & Busby, J. (2005). Making decisions with the future in mind: Developmental and comparative identification of mental time travel. *Learning and Motivation*, *36*(2), 110–125. https://doi.org/10.1016/j.lmot.2005.02.010

Suddendorf, T., & Corballis, M. C. (1997). Mental time travel and the evolution of the human mind. *Genetic, Social & General Psychology Monographs*, *123*(2), 133.

Suddendorf, T., & Corballis, M. C. (2007). The evolution of foresight: What is mental time travel, and is it unique to humans? *Behavioral and Brain Sciences*, *30*(3), 299–313. https://doi.org/10.1017/S0140525X07001975

Suddendorf, T., Corballis, M. C., & Collier-baker, E. (2009). How great is great ape foresight? *Animal Cognition*, *12*(5), 751–754. http://dx.doi.org.prox.lib.ncsu.edu/10.1007/s10071-009-0253-9

Sümegi, Z., Kis, A., Miklósi, Á., & Topál, J. (2014). Why do adult dogs (Canis familiaris) commit the A-not-B search error? *Journal of Comparative Psychology (Washington, D.C.: 1983)*, *128*(1), 21–30. https://doi.org/10.1037/a0033084

Svartberg, K. (2005). A comparison of behaviour in test and in everyday life: Evidence of three consistent boldness-related personality traits in dogs. *Applied Animal Behaviour Science*, *91*(1), 103–128. https://doi.org/10.1016/j.applanim.2004.08.030

Temkin, L. S. (1993). *Inequality*. New York: Oxford University Press.

Tempelmann, S., Kaminski, J., & Tomasello, M. (2014). Do Domestic Dogs Learn Words Based on Humans’ Referential Behaviour? *PLoS One; San Francisco*, *9*(3), e91014. http://dx.doi.org.prox.lib.ncsu.edu/10.1371/journal.pone.0091014

Thorington, R. W., Koprowski, J. L., Steele, M. A., & Whatton, J. (2012). *Squirrels of the world*. Baltimore: Johns Hopkins University Press.

Tomasello, M., & Kaminski, J. (2009). Like Infant, Like Dog. *Science*, *325*(5945), 1213–1214. https://doi.org/10.1126/science.1179670

Topál, J., Gergely, G., Miklósi, A., Erdohegyi, A., & Csibra, G. (2008). Infants’ perseverative search errors are induced by pragmatic misinterpretation. *Science (New York, N.Y.)*, *321*(5897), 1831–1834. https://doi.org/10.1126/science.1161437

Tulving, E. (1985). Memory and consciousness. *Canadian Psychology/Psychologie Canadienne*, *26*(1), 1–12. https://doi.org/10.1037/h0080017

Turcsán, B., Wallis, L., Virányi, Z., Range, F., Müller, C. A., Huber, L., & Riemer, S. (2018). Personality traits in companion dogs-Results from the VIDOPET. *PloS One*, *13*(4), e0195448. https://doi.org/10.1371/journal.pone.0195448

Udell, M. A. R., & Wynne, C. D. L. (2008). A Review of Domestic Dogs’ (canis Familiaris) Human-Like Behaviors: Or Why Behavior Analysts Should Stop Worrying and Love Their Dogs. *Journal of the Experimental Analysis of Behavior; Malden*, *89*(2), 247–261.

U.S. Department of Justice. (2018, October 17). *September 11th Victim Compensation Fund: Policies and Procedures*. Retrieved from https://www.vcf.gov/pdf/VCFPolicy.pdf

van Schaik, C. P., Damerius, L., & Isler, K. (2013). Wild Orangutan Males Plan and Communicate Their Travel Direction One Day in Advance. *PLoS ONE*, *8*(9), e74896. https://doi.org/10.1371/journal.pone.0074896

Vandekerckhove, M., & Panksepp, J. (2009). The flow of anoetic to noetic and autonoetic consciousness: A vision of unknowing (anoetic) and knowing (noetic) consciousness in the remembrance of things past and imagined futures. *Consciousness and Cognition*, *18*(4), 1018–1028. https://doi.org/10.1016/j.concog.2009.08.002

Vander Wall, S. B., & Joyner, J. W. (1998). Recaching of Jeffrey pine (Pinus jeffreyi) seeds by yellow pine chipmunks (Tamias amoenus): potential effects on plant reproductive success. *Canadian Journal of Zoology*, *76*, 154–162. https://doi.org/10.1139/cjz-76-1-154

Varner, G. E. (1994). The Prospects for Consensus and Convergence in the Animal Rights Debate. *The Hastings Center Report*, *24*(1), 24–28. https://doi.org/10.2307/3562383

Varner, G. E. (2012). *Personhood, Ethics, and Animal Cognition: Situating Animals in Hare’s Two-Level Utilitarianism*. Oxford: Oxford University Press.

Viscusi, W. K. (2005, June). *The Value of Life*. John M. Olin Center for Law, Economics, and Business: Harvard Law School.

Viscusi, W. K. (2008). *The Flawed Hedonic Damages Measure of Compensation for Wrongful Death and Personal Injury* (SSRN Scholarly Paper No. ID 1084933). Retrieved from Social Science Research Network website: https://papers.ssrn.com/abstract=1084933

Viscusi, W. K., & Aldy, J. E. (2003). The Value of a Statistical Life: A Critical Review of Market Estimates Throughout the World. *Journal of Risk and Uncertainty*, *27*(1), 5–76. https://doi.org/10.1023/A:1025598106257

Vonk, J., & Leete, J. A. (2017). Carnivore concepts: Categorization in carnivores “bears” further study. *International Journal of Comparative Psychology*, *30*(0). Retrieved from https://escholarship.org/uc/item/61363164

Watts, T. W., Duncan, G. J., & Quan, H. (2018). Revisiting the Marshmallow Test: A Conceptual Replication Investigating Links Between Early Delay of Gratification and Later Outcomes. *Psychological Science*, *29*(7), 1159–1177. https://doi.org/10.1177/0956797618761661

Weliver, D. (2016, September 1). The Annual Cost Of Pet Ownership: Can You Afford A Pet? Retrieved September 4, 2017, from Money Under 30 website: https://www.moneyunder30.com/the-true-cost-of-pet-ownership

White, J., & Hobday, J. (n.d.). Victim Compensation. Retrieved October 15, 2018, from Cornell University Law School website: https://courses2.cit.cornell.edu/sociallaw/student\_projects/victimcompensation.html

Wolf, S. (2010). *Meaning in Life and Why It Matters:* Retrieved from http://www.jstor.org/stable/j.ctt7t3cm

Wood, L., Martin, K., Christian, H., Nathan, A., Lauritsen, C., Houghton, S., … McCune, S. (2015). The Pet Factor - Companion Animals as a Conduit for Getting to Know People, Friendship Formation and Social Support. *PLOS ONE*, *10*(4), e0122085. https://doi.org/10.1371/journal.pone.0122085

Wynne, C. D. L. (2007). What are Animals? Why Anthropomorphism is Still Not a Scientific Approach to Behavior. *Comparative Cognition & Behavior Reviews*, *2*, 125–135. https://doi.org/10.3819/ccbr.2008.20008

Zentall, T. R., & Pattison, K. F. (2016). Now You See It, Now You Don’t: Object Permanence in Dogs. *Current Directions in Psychological Science*, *25*(5), 357–362. https://doi.org/10.1177/0963721416664861

Zimmerman, M. J. (2015). Intrinsic vs. Extrinsic Value. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (Spring 2015). Retrieved from https://plato.stanford.edu/archives/spr2015/entries/value-intrinsic-extrinsic/

Zisook, S., Paulus, M., Shuchter, S. R., & Judd, L. L. (1997). The many faces of depression following spousal bereavement. *Journal of Affective Disorders*, *45*(1), 85–95. https://doi.org/10.1016/S0165-0327(97)00062-1

Zubedat, S., Aga-Mizrachi, S., Cymerblit-Sabba, A., Shwartz, J., Leon, J. F., Rozen, S., … Avital, A. (2014). Human–animal interface: The effects of handler’s stress on the performance of canines in an explosive detection task. *Applied Animal Behaviour Science*, *158*, 69–75. https://doi.org/10.1016/j.applanim.2014.05.004

1. Intrinsic value is a complex concept (Darwall, 2003; Harman, 2000; Korsgaard, 1996a; O’Neill, 1992; Raz, 1985; Zimmerman, 2015) used in different ways by different philosophers and economists who have different views about whether intrinsic value is commensurable with other kinds of value. Since these controversies are far from resolved, I (mostly) avoid using the term. Self-investment, probably a variety of intrinsic value, is easier to define and operationalize and, consequently, should be more useful in a world where jurors are legally obligated to assign monetary values to cats and dogs. [↑](#footnote-ref-2)
2. I will illustrate my points by reference to the domestic dog (*Canis familiaris*), the companion animal species found in the greatest number of U.S. households (American Veterinary Medical Association, 2012). However, I think of the dog as a metonym for mammalian companion animals generally, and I intend my argument to apply to all companion animals with psychological capacities similar to dogs (for reviews, see Fugazza, Pogány, & Miklósi, 2016; B. Hare & Woods, 2013; Kaminski, Call, & Fischer, 2004; Kujala, 2017; Piotti, 2017; Piotti & Kaminski, 2016; Tomasello & Kaminski, 2009). [↑](#footnote-ref-3)
3. I occasionally use the word *pet* to refer to *companion animal* for variety’s sake, recognizing that the word is controversial. I resist using *owner* to refer to human guardians, agreeing with the implication of a 2001 Rhode Island state legislative document that guardian is always the better word (Nolen, 2011). [↑](#footnote-ref-4)
4. The Harabes decision contains this summary of the refusal of most states to recognize an animal’s noneconomic value (*Harabes v. Barkery, Inc. No. 791 A.2d 1142*, 2001):

   Rabideau v. City of Racine, 243 Wis.2d 486, 627 N.W.2d 795, 798 (2001) (public policy considerations precluded the owner of a companion dog, who observed police officer shoot and kill her dog, from bringing claim for negligent infliction of emotional distress); Fackler v. Genetzky, 257 Neb. 130, 595 N.W.2d 884, 892 (1999) ("[W]e hold that damages for mental suffering or emotional distress may not be recovered for the negligently inflicted death of an animal."); Nichols v. Sukaro Kennels, 555 N.W.2d 689, 691 (Iowa 1996) ("[A]lthough we are mindful of the suffering an owner endures upon the death or injury of a beloved pet, we resolve to follow the majority of jurisdictions that do not allow recovery of damages for such mental distress."); Richardson v. Fairbanks North Star Borough, 705 P.2d 454, 456 (Alaska 1985) (dogs have legal status of personal property and courts generally limit a damage award to the animal's value at the time of death); Koester v. VCA Animal Hosp., 244 Mich.App. 173, 624 N.W.2d 209, 211 (2000), appeal denied, 631 N.W.2d 339 (Mich.2001) ("We decline to allow the recovery of emotional distress damages arising from negligence committed in the care of plaintiff's pet."); Zeid v. Pearce, 953 S.W.2d 368, 369 (Tex.App.1997) ( "[O]ne may not recover damages for pain and suffering or mental anguish for the loss of a pet."); Jason v. Parks, 224 A.D.2d 494, 638 N.Y.S.2d 170, 171 (N.Y.App.Div.1996) ("It is well established that a pet owner in New York cannot recover damages for emotional distress caused by the negligent destruction of a dog."); Carroll v. Rock, 220 Ga.App. 260, 469 S.E.2d 391, 394 (1996) (allowing evidence of pet owner's emotional distress when her cat escaped from the care of her veterinarian was reversible error); Soucek v. Banham, 524 N.W.2d 478, 481 (Minn.Ct.App.1995) (compensatory damages for death of a dog, as item of personal property, are limited to fair market value of animal); Daughen v. Fox, 372 Pa.Super. 405, 539 A.2d 858, 865 (1988), appeal denied, 520 Pa. 605, 553 A.2d 967 (1988), ("Under no circumstances, under the law of Pennsylvania, may there be recovery for loss of companionship due to the death of an animal."). [↑](#footnote-ref-5)
5. (*Petco Animal Supplies, Inc. v. Schuster, 144 S.W.3d 554*, 2004) The judgment was voided on appeal by a review panel that cited (*Heiligmann v. Rose 16 S.W. 931, 932*, 1891), a nineteenth-century ruling in which the Texas Supreme Court said plaintiffs can only receive as compensation either the fair market value of the pet or a “special and pecuniary value to the owner” related to the animal’s services. Loss of companionship and affection were ruled not to be part of the animal’s special and pecuniary value because they were not services to the guardian. [↑](#footnote-ref-6)
6. (*Anderson v. Hayles, No. 14-2-51133-0*, 2016) (last visited Feb 5, 2018). [↑](#footnote-ref-7)
7. Cost-benefit analysis is controversial because it maximizes social utility by aggregating satisfaction of preferences without considering the justice of the resulting distribution (Dworkin, 1981; Rawls, 1971; Temkin, 1993). I follow Adler and Posner here in thinking that while cost-benefit analysis is not a sufficient basis for moral judgments, its results used judiciously are essential for informed public policy (Adler & Posner, 1999, 2006). [↑](#footnote-ref-8)
8. (Gay, 2011) Gay occasionally uses *intrinsic* value to refer to an animal’s capital value, but I have explained why I think this is a mistake. While I adopt his term for capital value, I do not adopt his method for calculating it. [↑](#footnote-ref-9)
9. Gay, *supra* note 9, p. 87. [↑](#footnote-ref-10)
10. (*Anderson v. Hayles, No. 14-2-51133-0*, 2016) (last visited Feb 5, 2018). [↑](#footnote-ref-11)
11. Anderson v. Hayles, *supra* note 11. [↑](#footnote-ref-12)
12. Posner and Sunstein agree with (Leebron, 1989) that awards for distress and loss of companionship in wrongful death cases “have a high degree of arbitrariness” (Posner & Sunstein, 2005). (Geistfeld, 1995) also agrees. [↑](#footnote-ref-13)
13. (Douthwaite & Eades, 1988) §6-17. [↑](#footnote-ref-14)
14. VCF Table 4, “Decedent’s Personal Expenditures or Consumption as Percent of Income.” [↑](#footnote-ref-15)
15. For a detailed account of the specific procedures used in the 911 awards, see (Feinberg, 2005). I have adopted the general procedure while ignoring a few of the finer adjustments as the latter are not relevant for the companion animal case. [↑](#footnote-ref-16)
16. (Posner & Sunstein, 2005) In the U.S., survivors of soldiers fallen in the line of duty are awarded a death gratuity payment of at least $100,000, but both the conditions of death and the final figure are highly variable and render it unsuitable for the kinds of evaluations I make here (Powers, n.d.). [↑](#footnote-ref-17)
17. VCF assumed a 3% growth rate for victims aged 53 and higher (Table 3, “Presumed Age-Specific Earnings Growth Rates”). [↑](#footnote-ref-18)
18. The method does not simply multiply someone’s current salary by the number of years until their retirement, because people enter and exit the workforce. One may go months without a job and workers often become less productive as they age. Consequently, present salary times remaining years of employment likely overestimates future earnings, especially when dealing with younger workers. For this reason, one algorithm, using calculations made in 1985—the time of the study—estimated that a man killed at 30 years of age earning $25,000 annually had a present value (in 1985) of expected total future earnings of $332,000 (Alter & Becker, 1985). The VCF determined the number of expected remaining work years for each victim according to a theory in (Krueger, Skoog, & Ciecka, 2006). For our purposes, since Assistant has but ten years until retirement, we may assume she would have worked fulltime until age 65. [↑](#footnote-ref-19)
19. Again, one might object that the task is impossible because we cannot put a price tag on the extent and depth of a guardian’s love for their companion. However, despite the apparent incommensurability of love and dollars, juries are being asked to do just that, to monetize the value of the human-animal bond. As I have previously argued, we owe the jurors who are charged with assigning such values more guidance than they are currently receiving. [↑](#footnote-ref-20)
20. (Ireland & Ward, 2002) citing *Ohio Revised Code*, n.d. [↑](#footnote-ref-21)
21. Not all experts believe the kind of information being discussed here should be given to a jury. For the concern that methods of estimating the value of a human life will only confuse and mislead juries, see (Viscusi, 2008). For the positive view that juries should be presented with assistance of the sort envisioned here, see (Posner & Sunstein, 2005) [↑](#footnote-ref-22)
22. Table 2 is roughly consistent with presumed values for what Gay calls the guardian’s “coefficient of appreciation.” [↑](#footnote-ref-23)
23. In addition to recurring expenses, guardians have one time start-up costs, such as adoption fees of about $300, $200 for neutering, $70 for a medical exam, $30 for a collar, $95 for a crate, $60 for a carrying crate, and $110 for a training course [estimates from the Humane Society (“Adopt Your New Best Friend,” 2013) and (Weliver, 2016)]. These are probably conservative estimates and costs could be twice as high when animals are purebreds. However, I consider start-up costs comparatively trivial and ignore them here for purposes of simplicity. [↑](#footnote-ref-24)
24. Since guardians, not companion animals, pay the animal’s medical and food bills, we exclude personal consumption here. [↑](#footnote-ref-25)
25. These estimates reflect the human scale. What is a short or long future for a species with a shorter or longer average life expectancy than ours might be different. [↑](#footnote-ref-26)
26. Follow-up studies show correlations between a child’s success at this task and later achievements in school, success at weight control, and other measures of quality of life (Mischel, Shoda, & Rodriguez, 1989; although this finding is now facing scrutiny, Watts, Duncan, & Quan, 2018). [↑](#footnote-ref-27)
27. Differences in aptitude, impulse control, responsiveness, and regulation of behavior are commonly thought to differ between breeds. Experimenters using fMRI in awake dogs have experienced some success in the search for signature neural patterns of dog personality. For example, they have identified a neurobiological phenotype of a dog likely to succeed in intensive service-dog training (Berns, Brooks, Spivak, & Levy, 2017; Cook, Spivak, & Berns, 2014). Behaviorally, pugs are thought, for example, to be better at discriminating large arrays of odors than German Shepherds. German Shepherds are thought to outperform Labradors at detecting narcotics (Jenkins, DeChant, & Perry, 2018; Jezierski et al., 2014). However, breed does not seem to account for the variability in self-control, which differs more between individuals within a breed than between the breeds as a whole (Fadel et al., 2016). Jamieson et al., summarize the main point for trainers: “dogs are . . . not simple minded, easily transferable machines, and should not be managed as such” (L. T. J. Jamieson, Baxter, & Murray, 2018). [↑](#footnote-ref-28)
28. For a similar analysis of bovine behavior, see (Comstock, forthcoming). [↑](#footnote-ref-29)
29. What would the model imply about wild animals? Undomesticated mammals invest in themselves insofar as they form and pursue intermediate-term future projects. By definition, wild animals do not pursue projects human guardians. They do not learn how to optimize their pleasures without violating household norms. They do invest intuitively in themselves, honing their skills in recognizing friends, evading foes, hunting prey, wooing mates, and enjoying the individual personalities and affections of conspecifics. There are a limited number of good reasons to hunt deer and elk: to prevent the pain of death by starvation, whether that of a human or nonhuman. However, the fact that these self-investing animals are agents with desires, interests, emotions, families and social lives argues against sport hunting (Comstock, 2004; Varner, 1994). [↑](#footnote-ref-30)
30. I’m grateful to Steven McMullin, David Austin, Michael Pendlebury, and Sebastien Gay for assistance with the economics of the human capital section. Errors that remain are my responsibility. I presented a version of Part 1 at the 2018 International Society of Utilitarian Studies in Karlsruhe, Germany, and am thankful for comments from members of that audience. I benefitted too from observations of six anonymous journal reviewers. [↑](#footnote-ref-31)