COMPANION ANIMAL CAPITAL

By
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This Article presents a theory of the economic value of companion animal life. Under the existing United States torts regime, the standard damages award available to an owner for an action arising from a companion animal death is its fair market value. This approach implicitly assumes that pet owners are irrational, given that they generally invest more in their pets than the animal's fair market value. This Article suggests that, based on an economic model that conceptualizes companion animals as an employee-investment hybrid, the value of a companion animal is higher than its fair market value. This model has implications for economic damages calculations in wrongful death lawsuits and for companion animal welfare.

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Dr. Gay launched the Program on Companion Animal Capital (PCAC) in 2008. The PCAC is committed to studying (1) the impact of companion animals on their owners and (2) the companion animal pricing system. Dr. Gay's team has been working with private veterinary practices and specialists in the industry to better understand current issues and measure the value of the life of a companion animal and the contribution of the value of the life of an animal to a value of human life.

I. INTRODUCTION

The majority of jurisdictions in the United States torts regime estimate the value of the companion animal's life as its fair market value at the time of death.[1] Consequently, the owner of a wrongfully killed adult dog can expect to recover a very small amount of damages because the resale value of an adult dog is only slightly greater than zero.[2] Some courts have gone so far as to explicitly compare a companion animal with an inanimate object.[3] For example, when the Superior Court of Delaware was presented with a wrongful companion animal death case wherein Peanut, the plaintiff's dog, was killed by Ricky, the defendant's dog, it considered Peanut's value as an item of personal property.[4] According to the court:

> If Ricky had chewed Plaintiff's $4,000.00 oriental rug, she may recover the value of the rug[—]or if he had broken a vase, the value of the vase. However devoted Plaintiff may be to Peanut, under Delaware law, Peanut is no different from any other item of personal property, and thus, provided a market value can be established, the proper measure of damages for injury to Peanut cannot exceed Peanut's market value.[5]

The fair market value approach has been roundly criticized as unaligned with the reality of the human-animal bond.[6] For example, in one case, the plaintiff brought a lawsuit against a negligent driver who hit and killed her dog, Groucho.[7] The plaintiff sought to recover for the loss of Groucho's companionship on the grounds that the "'real worth' of a pet is not primarily financial, but emotional" and that Groucho's value "should be determined based upon the relationship between the pet and its owner, and not its market value."[8] She argued that companion animals should not be viewed in the eyes of the court as personal property because there is a significant bond between companion animals and their owners that the fair market value approach ignores.[9] The court sympathized with the plaintiff's argument, but ruled that an owner's emotional distress is not recoverable when a compan-

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[1] Robin C. Miller, *Damages for Killing or Injuring Dog*, 61 A.L.R.5th 635, 635 (1998).

[2] Catherine L. Wolfe, Wolfe Pack Press, Inc., *Animals Are "Property" Under the Law*, http://www.wolfepackpress.org/PDF/Animals_not_ Property.pdf (accessed Nov. 20, 2010) (stating that, for example, a 7-year-old dog's fair market value was $0 because older dogs may develop health issues that make them "financial liabilities," despite the fact that the dog's family claimed that they viewed him as a family member and had spent $4,000 on veterinary bills to save him).

[3] *See e.g. Naples v. Miller*, 2009 WL 1163504 at *2 (Del. Super. Ct. April 30, 2009) (comparing the legal status of dogs as property to a sofa, a rug, and a vase).

[4] *Id.*

[5] *Id.*

[6] *See e.g. Zager v. Dimilla*, 524 N.Y.S.2d 968, 969 (1988) (stating that it is impossible to reduce the bond between a human and a dog to monetary terms).

[7] *Carbasho v. Musulin*, 618 S.E.2d 368, 369 (W. Va. 2005).

[8] *Id.* at 370.

[9] *Id.* at 371.

ion animal is negligently killed because the animal is just property under the law.[10] Judge Starcher's dissent in the plaintiff's case acknowledged that many owners love their companion animals as much as they love their children.[11] Judge Starcher concluded that the majority opinion treated companion animals the way courts treated children before the Industrial Revolution.[12] Another court opinion argued that the human-animal bond is so powerful that "it is impossible to reduce to monetary terms."[13] This Article acknowledges these opinions and seeks to offer an economic perspective to the debate.

From an economist's perspective, the fair market value approach contradicts the owner's investment costs. Owners invest thousands of dollars in their companion animals for food, medical care, recreation, and training. According to the 2009–2010 American Pet Products Association (APPA) National Pet Owners Survey, owners spend approximately $1,500 a year for a dog and $1,050 for a cat on basic annual expenses.[14] Basic annual expenses include food, toys, and routine medical care.[15] However, these estimates do not include the more costly high-tech care that owners have demonstrated a willingness to purchase.[16] It is helpful to put these figures in context by comparing them to the fair market value approach. For example, the owner of a 7-year-old toy poodle spends approximately $10,500 on basic care during a seven-year ownership period.[17] In contrast, the market value of that same poodle is estimated at $100 to $200.[18] The value is so low, in fact, that it is not affected by whether the dog has all four legs.[19]

In the aggregate, owners' financial investments in their companion animals have created a formidable market in the United States. According to the APPA 2009–2010 National Pet Owners Survey, 62% of U.S. households own a pet, which equates to 71.4 million homes. [20] In comparison, in 1988, the first year the survey was conducted, only 56% of U.S. households owned a pet.[21] It is estimated that $47.7 billion will be spent on pets in the U.S. in 2010, which represents approximately a 67% increase since 2001. [22]

The emotional investments owners put into their companion animals is similarly well documented. Researchers and journalists have

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10 *Id.*

11 *Id.* at 372 (Starcher, J., dissenting).

12 *Id.*

13 *Zager*, 524 N.Y.S.2d at 969.

14 APPA, *Industry Statistics & Trends*, (accessed Nov. 20, 2010).

15 *Id.*

16 Verena Dobnik, The Boston Globe, *US Pet Owners Paying for High-Tech Veterinary Care*, http://www.boston.com/news/nation/articles/2010/07/20/us_pet_owners_paying_for_high_tech_veterinary_care/ (July 20, 2010) (accessed Nov. 20, 2010).

17 APPA, *supra* n. 14.

18 *Nichols v. Sukaro Kennels*, 555 N.W.2d 689, 690 (Iowa 1996).

19 *Id.*

20 APPA, *supra* n. 14.

21 *Id.*

22 *Id.*

explored the emotional bond that owners share with their companion animals. For example, the BBC News Magazine published an article on the mourning process that owners experience after the loss of their pet.[23] One owner interviewed for the article confessed that the death of his dog caused him greater emotional distress than the loss of his father.[24] There is also the recent phenomenon of the "pet trust," which owners put in place to ensure that their companion animals are cared for after the owner's death.[25] Moreover, owners often change their travel plans to care for their sick companion animal.[26] In addition, one out of three married women (33%) reported that their pets are better listeners than their husbands.[27] Finally, a Reuters-Ipsos survey of 24,000 people in twenty-three countries found that 21% of adults would rather spend Valentine's Day with their pet than with their spouse.[28] These findings provide support for a conclusion that is intuitively obvious: Owners invest considerably in their companion animals and develop strong, lasting bonds.

Even though many companion animals will not be victims of a wrongful death, the incentive structure established by the torts regime affects all companion animals and their owners. Deterrence refers to the economic calculation made by a rational agent.[29] If the expected penalty—measured as the severity of the punishment discounted by the probability that it will be imposed—exceeds the gain to the offender to commit the crime, the offender will refrain from committing the crime.[30] If the value of a companion animal is only a few hundred

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[23] Finlo Rohrer, BBC News, *How Much Can You Mourn a Pet?*, http://news.bbc.co.uk/2/hi/8454288.stm (updated Nov. 20, 2010) (accessed Nov. 20, 2010).

[24] *Id.*

[25] *See* Galye Yam Inc., Fat Cats & Lucky Dogs, *How to Leave Some of Your Estate to Your Pet: Fat Cats & Lucky Dogs*, http://www.fatcatsandluckydogs.com/ (accessed Nov. 20, 2010) (discussing a book written about testamentary provisions for pets, through trusts and other mechanisms).

[26] *See e.g.* Catherine Hamm, Los Angeles Times, *Readers Say Sick Pets Come First*, http://travel.latimes.com/articles/la-trw-petlovers9-2008nov09?PackageType=2 (Nov. 5, 2008) (accessed Nov. 20, 2010) (showing responses to the question of whether people would postpone a vacation for a sick pet).

[27] Petside Team, Petside.com, *Who's the Better Listener, Your Husband or the Dog?*, http://www.petside.com/the-sidewalk/whos_the_better_listener_your_husband_or_the_dog.php (Apr. 28, 2010) (accessed Nov. 20, 2010).

[28] Belinda Goldsmith, Reuters Africa, *Fifth of Adults Choose Pet Over Partner on Valentine's Day—Poll*, http://uk.reuters.com/article/idUKTRE61716R20100208 (Feb. 8, 2010) (accessed Nov. 4, 2010).

[29] *See* Gary S. Becker, *Crime and Punishment: An Economic Approach*, 76 J. Political Econ. 169, 176 (1968) (developing the modern economic theory of crime and explaining that persons become criminals after undertaking a cost-benefit analysis of committing the criminal act); Philip M. Bodman & Cameron Maultby, *Crime, Punishment and Deterrence in Australia: A Further Empirical Investigation*, 24 Intl. J. Soc. Econ. 884, 885 (1997) (analyzing Becker's argument and explaining that the modern economic theory of crime is "based on the assumption that rational individuals act to maximize their utility given the possibility of assigning time or resources to different activities").

[30] Becker, *supra* n. 29, at 177–78.

dollars, it is difficult to deter veterinary malpractice or to incentivize drivers to be careful in the presence of animals.

This Article introduces a solution to this problem that aligns the legal recovery regime with owners' investment costs. More specifically, this Article proposes a model of companion animal capital. Companion animal capital is the intrinsic value of the companion animal. Similar to human capital, companion animal capital refers to the stock of competences, knowledge, personality attributes, and characteristics that comprises the companion animal's ability to produce economic value for its owner. The attributes of companion animal capital are acquired through training and experience, to name a few examples. The model assumes that owners are rational agents that gain utility from their pets through services the pets provide to their owners. The pet, contrary to many other forms of property, appreciates in value over time as the owner develops a stronger relationship with it. The model estimates the value of the services rendered by the animal for its owner.

It may seem contrary to common sense notions about companion animals to hypothesize an employer-employee relationship between a companion animal and its owner. However, from an economics perspective, that is precisely how a companion animal should be properly valued. One court made the following statement about the relationship between owners and companion animals:

> Obviously, the animal cannot be deposed, there is no provision for independent veterinary examinations, a pet dog is not likely to have lost earning capacity, and there is no loss of consortium claim (as dogs do not marry), nor are there any other similarities between a personal injury case involving an injured human plaintiff and an owner's loss of her dog, as in this case.[31]

This Article does not claim that animals can be deposed or that dogs can marry; however, it does challenge the court's proposition that a pet dog is not likely to have lost earning capacity. Formally, a companion animal may generally not receive a paycheck for its services, but for purposes of economic valuation, this Article argues that companion animals are paid a "shadow wage" by their owners.

This Article proceeds in three Parts. Part II provides background on the categories of damages available to owners in wrongful companion animal death lawsuits. It then reviews the academic literature on companion animal valuation. Part III presents this Article's model of companion animal capital. Part IV discusses applications and implications of the model for the legal arena.

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[31] *Naples*, 2009 WL 1163504 at *3.

II. BACKGROUND: COMPANION ANIMAL VALUATION

A. Economic and Noneconomic Damages

There are two types of damages that may be available in wrongful companion animal death cases: economic and noneconomic damages.[32] Economic damages, also commonly referred to as property damages, are calculated by estimating the fair market value of the animal.[33] To determine economic damages, a court reviews the available evidence to determine the resale value of the animal on the companion animal market.[34] The underlying rationale for this damages approach is that companion animals are categorized as property. For example, under tort law:

> The measure of recovery for property destroyed through negligence is the fair market value of the property at the time of destruction. The measure of recovery for negligent damage to property not destroyed, where the damage is of a permanent nature, is the diminution in the market value of the property by reason of the injury.[35]

This approach to economic damages has yielded contradictory results in court opinions. For example, in *Naples v. Miller*, the Superior Court of Delaware noted that the fair market value approach is problematic in cases of a "pound dog" because a dog available for adoption seems to have no market value.[36] The court suggested that when the fair market value approach is inapplicable, the "value of the property to the owner will be given."[37] Therefore, if the court's methodology were applied, a dog adopted from an animal shelter may have a higher value in a wrongful death lawsuit than a dog purchased by the owner, merely because there was evidence that the former had no value on the open market. In contrast, another court has acknowledged that "there are no true marketplaces that routinely deal in the buying and selling of previously owned pet dogs."[38]

The second type of damages, noneconomic damages, is significantly more variable than economic damages. This form of damages may include the owner's emotional distress or veterinary costs.[39] Some

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[32] *See* Elaine T. Byszewski, *Valuing Companion Animals in Wrongful Death Cases: A Survey of Current Court and Legislative Action and a Suggestion for Valuing Pecuniary Loss of Companionship*, 9 Animal L. 215, 217, 225 (2003) (surveying the availability of both economic and noneconomic damages in companion animal wrongful death cases).

[33] *Carbasho*, 618 S.E.2d at 371.

[34] David Favre, Animal Leg. & Historical Ctr., *Overview of Damages for Injury to Animals—Pet Losses*, *The Traditional Calculation—Fair Market Value*, § 1, http://www.animallaw.info/articles/ovuspetdamages.htm#traditional (2003) (accessed Nov. 20, 2010).

[35] 80 S.E.2d 889, 891 (W. Va. 1954).

[36] *Naples*, 2009 WL 1163504 at *2.

[37] *Id.*

[38] *Burgess v. Shampooch Pet Industries, Inc.*, 131 P.3d 1248, 1252 (Kan. App. 2006).

[39] *Zager*, 524 N.Y.S.2d at 969.

courts embrace noneconomic damages, reasoning that they are necessary to make the owner whole after the injury or death of her animal.[40] Other courts reject noneconomic damages entirely on the grounds that noneconomic damages are generally unavailable in property-based lawsuits.[41] Courts falling into this latter camp have argued that noneconomic damages should not be available in companion animal cases because they are not available when a spouse or child is wrongfully killed.[42] Moreover, these courts note that there may be no way to quantify the emotional bond between an owner and her companion animal.[43] To support this position, one court noted that an expert testified that the value of a companion animal to a loving owner "could be as high as the national debt."[44]

A third category of courts allows for noneconomic damages, but only in cases of intentional harm to a companion animal.[45] For example, in *La Porte v. Associated Independents, Inc.*, the plaintiff saw a garbage man throw an empty garbage can at her miniature dachshund.[46] The garbage man laughed when he saw he had injured the dog.[47] The dog later died from its injuries.[48] The plaintiff's doctor testified that the plaintiff was so upset that she could not "recount the experience coherently."[49] The court concluded that the plaintiff's emotional distress was recoverable, explaining:

> The restriction of the loss of a pet to its intrinsic value in circumstances such as the ones before us is a principle we cannot accept. Without indulging in a discussion of the affinity between 'sentimental value' and 'mental suffering,' we feel that the affection of a master for his dog is a very real thing and that the malicious destruction of the pet provides an element of damage for which the owner should recover, irrespective of the value of the animal because of its special training such as a Seeing Eye dog or sheep dog.[50]

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[40] *See e.g. Mercurio v. Weber*, 2003 WL 21497325 at *2 (E.D.N.Y. June 20, 2003) (stating that "companionship is an important part of the value of a dog to the owner, and the primary goal of a remedy in torts is to make the owner whole again").

[41] *See e.g. Naples*, 2009 WL 1163504 at *2 (stating that Delaware law does not allow for noneconomic damages for killing of a dog because dogs are classified as property); *Pacher v. Invisible Fence of Dayton*, 798 N.E.2d 1121, 1123 (Ohio App. 2003).

[42] *Pantelopoulos v. Pantelopoulos*, 869 A.2d 280, 284 (Conn. Super. 2005) (quoting *Harabes v. Barkery, Inc.*, 791 A.2d 1142, 1146 (N.J. Super. L. Div. 2001)).

[43] *See e.g. Zager*, 524 N.Y.S.2d at 969 (stating that "it is impossible to reduce to monetary terms the bond between man and dog").

[44] *Harabes*, 791 A.2d at 1145 (quoting *Nichols*, 555 N.W.2d at 690).

[45] *See e.g. La Porte v. Associated Independents, Inc.*, 163 So.2d. 267, 268–69 (Fla. 1964) (noting that a plaintiff might be able to recover noneconomic damages where a companion animal is harmed deliberately but not where a companion animal is harmed negligently).

[46] *Id.* at 267–68.

[47] *Id.* at 268.

[48] *Id.*

[49] *Id.*

[50] *Id.* at 269.

The policy considerations discussed by the courts are reasonable. Courts addressing the matter of noneconomic damages seek to reconcile wrongful companion animal death lawsuits with wrongful human death lawsuits, but are restricted by the limitations of the fair market value approach. This Article offers courts a way to properly reconcile these competing interests by reexamining the appropriateness of the fair market value approach from an economist's perspective.

B. Literature Review

This Article breaks new ground in the literature on companion animal valuation. In part, it is an extension of the theory on the value of a human life as applied to companion animals. This Article borrows from human life valuation literature because it is an established area of economic thought that draws on a person's education and investments, both of which can be applied to companion animals. The authors of human life valuation literature seek to develop valuation methods to standardize judicial decisions and policy programs based on methods that rely on cost-benefit analysis.[51] For judicial decisions, economists estimate the statistical value of human life in order to measure the compensation for loss of life.[52] For policy programs, economists estimate the statistical value of human life and then measure the costs of policy programs.[53] If the benefits of saving human lives exceed the costs of the policy program, the government implements the program.[54] The willingness-to-pay method, which measures the price at which an individual values her life, is the most efficient human life valuation method and the method most frequently utilized in the literature.[55]

This Article introduces the concept of a "shadow wage" that an owner theoretically pays her companion animal for services rendered. The shadow wage concept follows from the economic literature on a

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[51] Rachel Dardis, *A Critical Evaluation of Current Approaches to Life Valuation in Cost/Benefit Analysis*, 15 J. of Consumer Affairs 46, 46 (Summer 1981) ("Some government agencies have refused to assign a value to a life on the grounds that such values are unquantifiable. However, as Prest and Turvey note in their review of cost-benefit analysis, there is some finite value attached to life by society since there are avoidable deaths. They comment that this value is worth obtaining since it would lead to more consistent decision making by policy makers.") (referencing A. R. Prest & R. Turvey, *Cost-Benefit Analysis: A Survey*, 75 Econ. J. 683 (Dec. 1965)).

[52] Ann Laquer Estin, *Love and Obligation: Family Law and the Romance of Economics*, 36 Wm. & Mary L. Rev. 989, 1026 (1995).

[53] Daniel A. Farber & Paul A. Hemmersbaugh, *The Shadow of the Future: Discount Rates, Later Generations, and the Environment*, 46 Vand. L. Rev. 267, 272–74 (Mar. 1993).

[54] *Id.*

[55] *Id.* at 274; *see also* Dardis, *supra* n. 51, at 56 ("The willingness[-]to[-]pay approach has strong justification with respect to efficiency since the benefits from life-saving are based on the value attached to the activity by the population at risk. While the life cycle model of Usher has been criticized on the ground that it does not measure the 'value of living per se' it avoids many of the measurement problems associated with the use of questionnaires and market data which are discussed in the next section.").

human's willingness to pay as a technique to measure the value of human life. Economists agree that the willingness to pay for life is the most efficient human life valuation method, but disagree about the specific methodology.[56] At first, the literature focused on wage-risk tradeoff valuation.[57] The wage-risk tradeoff method measures the value of human life with wage premiums observed in risky occupations.[58] There is a tradeoff between mortality reduction and quality of life, and workers are willing to risk death if they are compensated accordingly.[59] Economist Sherwin Rosen measured the wage-risk tradeoff for middle-aged workers with a median age of forty-two and found that the value of a human life was $630,000 in 1986 dollars.[60]

The wage-risk tradeoff human life valuation method faces strong criticism. Economists Jason Shogren and Tommy Stamland have argued that the more recent wage-risk tradeoff values of individual human life are biased upward: since the individual is randomly selected, the wage-risk tradeoff must account for the marginal worker "who tends to be low skill/high risk."[61] The marginal worker must be compensated more than any other worker in order to accommodate occupational risk. Therefore, the value of human life for all workers with higher skills and lower risk is an overestimation.[62] In response to the criticism of the wage-risk tradeoff valuation method, economists turn to the willingness to pay for health improvements to measure the value of human life.[63] Economists Kevin Murphy and Robert Topel's 2006 paper introduces a utility model to calculate the aggregated willingness to pay for health improvements in both quality and longevity

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56 Farber & Hemmersbaugh, *supra* n. 53, at 274.

57 *Id.*

58 *Id.* at 274–75.

59 *Id.*

60 Sherwin Rosen, *The Value of Changes in Life Expectancy*, 1 J. of Risk & Uncertainty 285, 298 (1988) (stating that "[u]sing (27) to transform the risk-earnings estimate of T-R to a wealth estimate (with annual hours worked at the sample mean in the denominator because the estimate refers to one year each of risk and wage rates) implies a value for V(a) of $630,000 converted to dollars of 1986 purchasing power").

61 Jason F. Shogren & Tommy Stamland, *Skill and the Value of Life*, 110 J. of Political Econ. 1168, 1169 (2002) (concluding that "[t]he highest required wage differential—that of the marginal worker who tends to be low-skill/high-risk—is divided by the workers' average risk, which causes an upward bias in the VSL [value of statistical life]").

62 *Id.* at 1170 ("By the definition of r, this means that VSL overestimates the average value of life [VOL] unless the following condition holds. CONDITION 1. $(q_t - p)\mathrm{VOL}_t = (q - p)\mathrm{VOL}$ for all t. For this condition to hold there must be a strong inverse relationship between $q_t - p$ and VOL_t. This relationship need not be as strong as having perfect negative correlation or a perfect inverse relationship. It must be the case, however, that whenever one variable is a given percentage *above* its mean, the other variable must be at least the same percentage *below* its mean. While possible, it is unlikely that there will be such an inverse relationship between the two variables among the workers in the dangerous job, particularly if the number of workers in the dangerous job is large.").

63 Kevin M. Murphy & Robert H. Topel, *The Value of Health and Longevity*, 114 J. of Political Econ. 871, 872 (2006).

of life.[64] The aggregated willingness to pay for health improvements is $3.2 trillion per year, and this value will probably rise substantially.[65]

There have been at least two other attempts to value companion animals in legal literature, but these attempts have not sought to apply the human life valuation literature to the companion animal context. First, Margit Livingston, a law professor, introduces the concept that pet owners might be reluctant to replace a deceased companion animal.[66] Owners who do not wish to replace their animal should be compensated for the emotional loss of their companion animals. Livingston also theorizes about a value of a companion animal that is different from its fair market value. Livingston's method compensates pet owners for the fair market value of the animal, recourse for loss of companionship for a reasonable replacement period, and emotional damages with a reasonable cap in order to avoid sympathetic juries and from excessively valuating the companion animal.[67] Livingston, however, does not define reasonable replacement periods or emotional damage caps. As a result, courts are not likely to adopt Livingston's method because it is open to interpretation and may result in inconsistent and unpredictable judicial outcomes.

Second, attorney Geordie Duckler argues that, although fair market compensation is meant to pay for a replacement pet, companion animals are inherently unique and not easily replaceable.[68] Duckler's models try to explicitly value companion animals.[69] In one model, he valuates the compensation for wrongfully injured dogs by adding repair expenses and then subtracting future expenses saved.[70]

In Duckler's second model, he evaluates the compensation for wrongfully killed dogs by dividing the age at death by the life expectancy of the animal and then multiplying that value by the strength of attachment over time and, finally, subtracting future expenses that

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[64] *Id.*

[65] *Id.* ("From 1970 to 2000, gains in life expectancy added about $3.2 trillion *per year* to national wealth, with half of these gains due to progress against heart disease alone. Looking ahead, we estimate that even modest progress against major diseases would be extremely valuable. For example, a permanent 1 percent reduction in mortality from cancer has a present value to current and future generations of Americans of nearly $500 billion, whereas a cure (if one is feasible) would be worth about $50 *trillion*.") (emphasis in original).

[66] Margit Livingston, *The Calculus of Animal Valuation: Crafting a Viable Remedy*, 82 Neb. L. Rev. 783, 848 n. 229 (2004).

[67] *Id.* at 823–24.

[68] Geordie Duckler, *The Economic Value of Companion Animals: A Legal and Anthropological Argument for Special Valuation*, 8 Animal L. 199, 203 (2002).

[69] Geordie Duckler, *Between Price and Pricelessness: Calculating the Specific Monetary Value of a Dog Intentionally Harmed by Another*, 3 J. Animal L. & Ethics 121, 135–39 (2009).

[70] *Id.* at 137 (suggesting that "[a]n example of the first part of the scheme could result in a formula something like this: (a) $6000 in veterinary repair expenses + (b) $4000 in lost progeny – (c) $3000 in investment expenses saved for a specific period = $7000 in lost value").

are likely to be saved.[71] The second model's variables make it difficult to consistently value an individual companion animal. First, future expenses saved should not be a variable in the equation for wrongful injury because injured animals will be more costly to care for and supervise. Second, Duckler measures attachment strength in quality hours spent between an owner and a dog.[72] The measurement of quality hours is loosely defined and will therefore result in inconsistent judicial decisions. Third, Duckler emphasizes that a companion animal's value increases over time.[73] But when a companion animal is close to its death, there is a rational expectation that the owner knows that the pet is close to death and the value of the companion animal might thus be reduced.

III. MODEL OF COMPANION ANIMAL CAPITAL

A new valuation model is needed to accurately reflect the primary elements of the companion animal-owner relationship: employment and investment. This Article proposes such a model. One of the critical assumptions of this model is that owners are rational—that is, owners invest in their companion animals because they expect a certain return from their investments. An irrational owner, by contrast, invests in her companion animal without an expectation of return related to the amount of her investment. The companion animal and owner develop a special bond as they spend time together. 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. Specifically, the companion animal offers its owner loyalty, enjoyment, company, and safety. Over time, the bond between the companion animal and its owner strengthens; therefore, the value of a companion animal should appreciate over time as a result of the owner's financial and emotional investment.

This model estimates the value of a companion animal for a given owner at a certain time t. Therefore, a companion animal may yield different values if it has multiple owners, such as a husband and wife who co-own the animal.[74]

Consider the following notations: $e_{t,s}$ the owner's enjoyment; $i_{t,s}$ the owner's investment at t, where s represents the species we consider. Consider also the following dates: t_0 the date when the companion animal arrives in the household; t_d the date the animal dies; t_{M_s} the time invested in the animal's medical care. Let t be the amount of con-

[71] *Id.* at 137–39 (stating that "[a]n example of this second part of the scheme could result in a formula like this: (a) 5 years in age ÷ (b) 8 years in lost lifespan x (c) 2500 hours in time spent together over current lifespan + (d) $5000 in lost progeny – (e) $3000 in investment expenses saved for a specific period = $3500 in lost value").

[72] *Id.* at 138.

[73] *Id.* at 136.

[74] For additional information, see the discussion *infra* pt. IV(B) about a multiple-owner case.

scious hours, i.e., when the owner is awake; t_{T_s} the amount of time invested in the animal's training; and t_L the amount of leisure time with the animal. Consider the following costs: $C_{M_{t,s}}$ the medical costs for the companion animals; $C_{F_{t,s}}$ the cost of food; $\vec{C}_{t,s}$ are all of the other costs (toys, bedding, etcetera). Further, consider $I_{t,s}$ the investment of the owner up to the period t; i_0 is the initial investment by the owner, carried out by a third party (who, for example, teaches the animal to be clean and provides for the first vaccines; this value would be zero if the animal has already been nurtured and all previous costs where paid by the animal's previous owner); e_0 is the initial enjoyment upon the animal's arrival; $E_{t,s}$ is the enjoyment up to period t.

The model thus far is the following: $i_t = w_t(t_T + t_M) + (C_{M_t} + C_{F_t} + \vec{C_t})$ and $I_t = \sum_{\tau=1}^{t} i_\tau + i_0$. In addition, note that $E_t = \sum_{\tau=1}^{t} e_\tau + e_0$.

The value of a companion animal is considered to be of the following form:

$$(1)\quad V_t(Animal) = \sum_{t=a}^{L}\left(\frac{1}{1+r}\right)^{t-a} w_t K_t(f,m,g,h,q,Z,\theta)$$

under the constraint (2)

$$(2)\ V_t(Animal) \geq \sum_{t=0}^{a} \frac{1}{1+r_t}.\frac{1}{1+\rho_t} C_t$$

C_t represents the sum of the costs of the companion animal for each time period t. L is the expected life expectancy of the animal, while a is the current age of the animal when the estimation is made. The interest rate, r_t, is calculated between periods and represents the inflation. Yearly interest rates are considered in this model, but it can be replicated on a monthly basis as well. The other interest rate, P_t, is the opportunity cost. Simply put, it represents the potential choice for an owner to save the money she would have spent on the companion animal on a risk-free bond.

The wage—or shadow wage[75]—perceived by the animal, W_t, corresponds to the fair market value of the services rendered by the companion animal to the owner. It represents the amount of money that the companion animal has the potential to earn as a watchdog, care provider, and entertainer for the owner, discounted for the costs of liv-

[75] This wage is an important component to the value of the animals, as animals provide their owners with many services: entertainment (expenses for companion animals are classified under "entertainment" in the Bureau of Labor Statistics's Consumer Expenditure Survey), security (owners try to use their dogs as a deterrent to crime and the wage of the animal as a watchdog depends on the size of the dog and the training it has received), and companionship. Bureau of Lab. Statistics, *Consumer Expenditure Survey: Glossary*, *Expenditures*, http://www.bls.gov/cex/csxgloss.htm (updated July 24, 2008) (accessed Nov. 20, 2010).

ing incurred by the owner. The shadow wage is animal-specific and does not vary by owner. It may change because of the age or breed of the animal. The shadow wage is based on a number of work activities for the companion animal. See the table below for an example of two dogs with different work performance scores:

	Guard the House	**Entertain the Owner**	**Walk with the Owner**
German Shepherd ("Max")	10	2	5
Miniature Poodle ("Sam")	2	2	5

Figure 1: Max versus Sam

As demonstrated in the illustration above in Figure 1, the German Shepherd ("Max") is better at guarding the house than a Miniature Poodle ("Sam"). The dogs in this illustration are given specific names to reinforce the point that the shadow wage is specific to each animal and dependent on its unique characteristics. Given that the dogs score equally on the other two variables, the German Shepherd has a greater shadow wage than the Miniature Poodle. Therefore, adjusting for lodging and food, the shadow wage would be the competitive wage at which the animal would perform the services. This wage could potentially depend on the enjoyment and the investments made by the owner, $E_{t,s}$ and $I_{t,s}$, respectively, but does not directly represent the human-animal bond.

The following coefficient of appreciation, $K_t(f,m,g,h,q,Z,\theta)$, is an important component of the model. The value of a companion animal should appreciate—not depreciate—as its owner invests in her animal's life and cares about it more over time. The coefficient $K_t(f,m,g,h,q,Z,\theta)$ represents the bond between the owner and her companion animal. It is a function of the owner's expenditures on the animal—food (f), gifts (g), medical expenses (m), health status of the dog (h), quality time with the animal (q), and the income of the owner (Z). The parameter θ represents the characteristics of the animal (e.g., species, breed, and color). The idea behind this coefficient θ is to differentiate between all the characteristics of the companion animal, as the coefficient might vary depending on the type of animal considered. For example, the demand for products and services is higher for dogs than for cats.[76] However, the coefficient may vary within the animal category. For example, a 10-year-old Golden Retriever and a 5-year-old Golden Retriever with similar characteristics may have different coefficients of appreciation because of health status, financial investments, or time investments by the owner. The coefficient of appreciation var-

[76] *See e.g.* Am. Veterinary Med. Assn., *U.S. Pet Ownership & Demographics Sourcebook* 57, 67 (Am. Veterinary Med. Assn. 2007) (showing that, in 2006, the mean amount an owner spent on dogs was $200, while the mean amount an owner spent on cats was $81).

ies over time and over the health, enjoyment, and potential continual investment in the animal. Additionally, there is another way to justify the existence of the coefficient of appreciation. At each point in time, the owner has the choice of continuing the relationship with her animal or euthanizing it. Owners generally choose the more costly option of continuing the relationship, unless there are extenuating circumstances such as the animal suffering extreme pain. Given that owners are rational, this phenomenon shows that there is a missing value in the owner's cost-benefit analysis. Thus, the cost of keeping the animal alive is constantly in flux, based on the animal's health, training, age, and appetite.

At least one court has acknowledged something akin to the coefficient of appreciation proposed by this Article. In *Harabes v. Barkery, Inc.*, the plaintiffs brought a lawsuit against their dog's groomer because their dog allegedly died from exposure to extreme heat while under the groomer's care.[77] According to the court:

> Most animals kept for companionship have no calculable market value beyond the subjective value of the animal to its owner, and that value arises purely as the result of their relationship and the length and strength of the owner's attachment to the animal. In that sense then, a household pet is not like other fungible or disposable property, intended solely to be used and replaced after it has outlived its usefulness.[78]

This language demonstrates that this concept—though not formally represented in an economic model until this Article—is not entirely foreign to judges.

Shown projected over time, the value of the companion animal takes a bell curve form. Figure 2 illustrates the companion animal capital for a hypothetical companion animal that lives for fifteen years. The value increases at an exponential rate at the beginning of the companion animal's life as its owner invests in its training and reaps enjoyment from spending time with the animal. At the end of the animal's life, the value begins to decrease. The rate of change is not sufficiently rapid to cause the value to drop below the animal's value in its early years because of the owner's past investments.[79] During the

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[77] 791 A.2d at 1143.

[78] *Id.* at 1143–44 (quoting *Hyland v. Borras*, 719 A.2d 662, 664 (N.J. Super. App. Div. 1998)).

[79] Note that the value of the animal's life might change if the animal dies or gets injured. The coefficient of appreciation could increase greatly due to the loss. This is related to the endowment effect, or the tendency for people to place a higher value on goods they own than on goods they do not own. Richard Thaler, *Toward a Positive Theory of Consumer Choice*, 1 J. of Econ. Behavior & Org. 39, 44 (1980). Additionally, under the phenomenon known as loss aversion, individuals tend to perceive losses as less desirable than foregone gains. Daniel Kahneman et al., *Experimental Tests of the Endowment Effect and the Coase Theorem*, 98 J. of Political Econ. 1325, 1326–28 (1990) [hereinafter Kahneman et al., *Experimental Tests*]. Thus, the economic literature explains that the value of a good could be doubled or tripled. *Id.* at 1339 (describing an experiment in which participants were either given a coffee mug and asked to state a price for which they would sell it or not given a mug and asked what price they would

interval between the early life and the death of the animal, there is a maximum point at which the companion animal has the highest value, given that it has full health and has fully integrated the training. At that point, the owner reaps the benefits without incurring many costs.

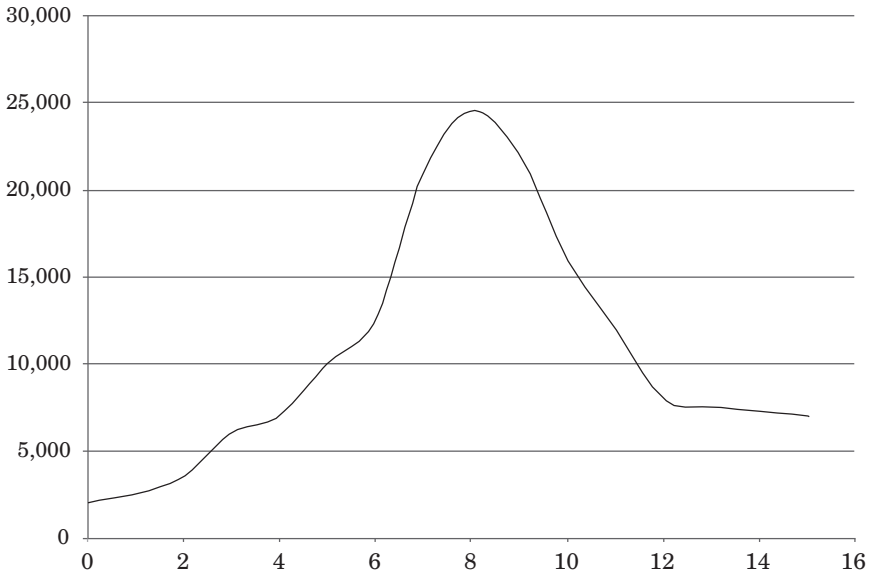

Figure 2: Shape of Companion Animal Capital. Numbers along the left of the chart indicate the value of the pet in U.S. dollars and numbers along the bottom indicate the pet's age in years.

IV. DISCUSSION OF THE COMPANION ANIMAL CAPITAL MODEL

The previous Part presented a new economic model of the value of a companion animal. This Part first estimates the companion animal's economic value and considers potential criticisms of the model. This Part then examines applications of the model to significant companion animal issues, namely, the role of the owner and methods to improve companion animal welfare. In addition, this Part reexamines noneconomic damages and offers the model as a resolution to the debate on economic and noneconomic damages.

A. Model Estimations

Current data is not sufficient to estimate the coefficient of appreciation and the shadow wage across all animals. The shadow wage de-

offer to buy one. The sellers stated a median value over double that stated by the mugless buyers). Applying the same logic here, we could potentially imagine that the value of the life of the animal could be multiplied by two or three, and hence increase the potential value of a companion animal, even if it was old, if the owner was not expecting the animal to die suddenly.

pends on the characteristics of the pet, such as age, breed, and training, as detailed in Part III. It would require significant data gathering on a representative sample of a given population to be able to estimate the model that gives coefficients that are close to the true value in the population. However, a lower-bound estimate can be calculated by aggregating the owner's total financial investment costs. It is useful to estimate the lower bound in order to establish minimum expectations for the value of a companion animal

Considering only basic annual expenses (including, e.g., food, routine veterinarian visits, vitamins, and toys), to get a rough estimate, an average dog costs $1,490 a year and an average cat costs $1,045 a year.[80] Suppose that these costs increase at the rate of 3% a year and that the opportunity costs are controlled such that the owner could place the money in an account and get the average risk-free interest rate of 2% as a return. Using formula (2) in Part III, an average dog living for twelve years would be worth at least $25,000, and an average cat living for twelve years would be worth at least $17,535. The inclusion of the opportunity cost is important, but has been omitted in the previous companion animal valuation models. As the definition of companion animal capital suggests, the companion animal has a capital that increases in value. By way of illustration, the owner invests in a stock of companion animal capital over time. Each period, the owner has the option of killing the companion animal and investing the money in a risk-free bond, where she could receive a risk-free interest rate on the money saved. This is the corresponding opportunity cost used above.

The lower-bound estimation is not the end of the analysis, however. It is also necessary to consider the "endowment effect," which is the tendency for people to place a higher value on goods they own than goods they do not own. This effect stems from the phenomenon of loss aversion or the tendency of individuals to perceive losses as less desirable than foregone gains.[81] As a result, when a person sells a good she owns, she perceives the sale as a loss of that good, and requires more compensation for that transaction than she would be willing to pay to buy the same good. Thus, the amount that someone is willing to pay for a good (WTP) tends to be less than the amount of compensation she would require to be willing to accept the loss of that good (WTA). The difference between WTP and WTA can be several orders of magnitude.[82] Applying the endowment effect to companion animal capital, the true value of an animal to its owner would likely be much higher than what the owner would have been willing to pay for the animal

[80] APPA, *supra* n. 14.

[81] Kahneman et al., *Experimental Tests*, *supra* n. 79, at 1326–28.

[82] *See e.g. Id.* at 1325–26 (finding "measures of willingness to accept greatly exceed measures of willingness to pay"); Thaler, *supra* n. 79, at 44; Daniel Kahneman et al., *Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias*, 5 J. of Econ. Persp. 193, 194 (Winter 1991) (noting that "people often demand much more to give up an object than they would be willing to pay to acquire it").

before she owned it. Some experiments need to be conducted to measure an accurate value of the endowment effect for a companion animal.

B. Model Applications

The companion animal capital model has a myriad of applications. First, it provides guidance for courts when there are multiple owners of a companion animal. Second, it ensures a minimum standard of companion animal treatment by instituting proper deterrence incentives. Third, it reconciles the judicial debate over economic and noneconomic damages. There are certainly additional applications of this model, but the following Sections will discuss these primary three applications in turn.

1. Owner Considerations

The role of the owner is an important variable to consider when estimating the companion animal's coefficient of appreciation. The value of the companion animal will change depending on the owner through the coefficient of appreciation. For example, the same companion animal may have different values for the owner and another person in the household. The owner of the animal will certainly have a more important bond with the animal than other members of the household because she will have more responsibility for, and will spend more time with, the animal. Nevertheless, when a companion animal is killed or injured, both the primary and secondary owners may be emotionally distraught.

Courts have grappled with the question of who should qualify as the owner for purposes of noneconomic damages in wrongful death suits. For example, in *Rabideau v. City of Racine*, the plaintiff's dog was shot by the defendant, an off-duty police officer, who tried to break up a fight between the plaintiff's dog and defendant's dog. [83] The court stated that "it is difficult to define with precision the limit of the class of individuals who fit into the human companion category. Is the particular human companion every family member? [T]he owner of record or primary caretaker? [A] roommate?"[84] The companion animal capital model may be used to answer these questions.

It is often the case that two or more people will co-own a companion animal in the same household, such as a parent and child, or a husband and wife. In these cases, the value of the companion animal should be measured by the animal's value to the household, rather than by the animal's value to the individual owner. The total value of the companion animal is the summation of the values of each individual relationship weighted by the significance of each relationship. This approach can also be applied to divorce proceedings. In divorce pro-

[83] 627 N.W.2d 795, 798–800 (Wis. 2001).

[84] *Id.* at 802.

ceedings, the parties should estimate the percent of co-ownership depending on the nature of each party's independent relationship with the animal. Under this adjusted framework, the value of the companion animal could be measured more accurately.

2. Companion Animal Welfare

The implications of this model for animal welfare are also important. In cases where there is an unfit owner, the value of the neglected or abused companion animal should not be based on the unfit owner's treatment of the animal. Given the neglect or abuse, the companion animal valuation would be unreasonably low. Rather, the value should be based on the value that a rational, fit owner would have for a companion animal with characteristics similar to the injured animal. Using the lower-bound model, a table of companion animal values could be used. This table would function as a set of guidelines—similar to the criminal sentencing guidelines—for courts to systematically dispense fines in cases of unfit ownership. This approach provides fit and unfit owners alike guidelines for the minimum standard of care that courts will accept. This minimum standard of welfare approach can be applied by courts if a fit owner whose companion animal has been wrongfully injured or killed does not have all of the documents to prove a higher level of connection with their companion animal.

The model can also be applied in veterinarian malpractice cases. The model increases the cost of veterinary negligence. Consequently, application of the model may decrease the number of non-frivolous malpractice cases involving veterinarians. The model similarly increases the cost of manufacturing negligence in the pet food and pet pharmaceutical industries. Manufacturers will have to increase the expected cost of error, given that the value of the companion animal is higher than the fair market value. In light of recent pet food and drug contamination cases,[85] the institution of stronger deterrence incentives in these industries would be welcomed.

3. Reexamination of Noneconomic Damages

Significantly, the companion animal capital model reconciles the judicial debate over economic and noneconomic damages. Noneconomic damages focus on the loss of companionship suffered by the owner.[86]

[85] *See e.g.* American Society for the Prevention of Cruelty to Animals, *Pet Food Recalls*, http://www.aspca.org/pet-care/pet-food-recall-overview.html (accessed Nov. 20, 2010) (stating that "on March 16, 2007, Menu Foods announced a nationwide recall of more than [forty] popular brands of pet food"); Ellen Friedman, Times Herald-Record (Middletown, N.Y.), *Should You Buy Pet Medicines Online?*, http://www.recordonline.com/apps/pbcs.dll/article?AID=/2]0101006/HEALTH/10060328/-1/HEALTH0708 (Oct. 6, 2010) (accessed Nov. 20, 2010) (noting that some pet drugs from outside the U.S. have been found to be contaminated, expired, or stored improperly).

[86] *See* Victor E. Schwartz & Emily J. Laird, *Non-Economic Damages in Pet Litigation: The Serious Need to Preserve a Rational Rule*, 33 Pepp. L. Rev. 227, 229 (2006) (noting that the move to allow noneconomic damages in pet cases results from the

As discussed in Part II, it is difficult to accurately estimate the emotional distress caused by the death of a companion animal. Moreover, it is troubling that noneconomic damages are occasionally available for the loss of a companion animal but are generally not available for the loss of a spouse or child.[87] The companion animal capital model resolves this problem. The model updates the economic damages calculation to more accurately value the human-animal relationship and reduces the uncertainty associated with noneconomic damages.

The companion animal capital approach increases expected economic damages and decreases noneconomic damages, which improves predictability and consistency across jurisdictions. This Article proposes that noneconomic damages should be calculated as the companion animal's value between the time of actual death and the time of its natural, expected death. It is important to remember that an owner will feel distressed over the loss of her companion animal, whether it dies naturally or is wrongfully killed. A defendant should not be required to compensate an animal's owner for the emotional pain she would eventually feel if the animal had died naturally; however, a defendant should be required to compensate an animal's owner for the owner's lost opportunity to enjoy the remaining years of the animal's life. The lost opportunity is the best way to measure noneconomic damages because it represents the difference between the pain felt at the death of the companion animal if wrongfully killed and the hypothetical pain felt when the companion animal would have died naturally.

V. CONCLUSION

The model introduced in this Article is based on the concept of companion animal capital, where companion animal capital is the companion animal's investments, experience, and education. This valuation method is distinct from a valuation of the emotional distress that owners may feel after the loss of their animal. This Article urges courts to adopt this approach rather than relying on the fair market value of the companion animal. The fair market value approach fails to account for the rationality of owners who invest significant financial and emotional assets into their companion animals.

strong emotions pet owners feel when a pet is injured or killed because of another's negligence).

[87] *Id.* at 243; *Pantelopoulos*, 869 A.2d at 284 (quoting *Harabes*, 791 A.2d at 1146).