

STONE-AGE PROPERTY IN DOMESTIC ANIMALS:
AN ESSAY FOR JIM KRIER

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How and when the herds were transferred from the collective ownership of the tribe or gens to the proprietorship of the heads of the families, is not known to us. But it must have been practically accomplished in this stage [i.e., the middle stage of barbarism].

—Friedrich Engels, *The Origin of the Family, Private Property and the State* (1884)¹

As befits this Festschrift, I start my essay with a tribute to Jim Krier’s scholarly contributions. I then turn my focus to *Evolutionary Theory and the Origin of Property Rights*, an article in which Jim insightfully speculates about the property rights that prehistoric hunter-gatherers would have recognized.² The Neolithic Period, the final and most dynamic era of the Stone Age, commenced around 11,000 BP (years before present). At around that time, some former hunter-gatherers began to settle down and shift to agricultural activities. I assert that in their narratives about this era, both Krier and illustrious predecessors such as William Blackstone have largely neglected an important ancient innovation—the emergence of property rights in domesticated animals. Through selective breeding, Neolithic peoples transformed various wild ungulates into sheep, cattle, and other herdable animals. By the outset of the Bronze Age, c. 5,000 BP, livestock had come to constitute a major fraction of human wealth.

To incentivize husbandry of livestock, members of prehistoric bands had to create a system of informal property rights in tame

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1. FRIEDRICH ENGELS, *THE ORIGIN OF THE FAMILY, PRIVATE PROPERTY AND THE STATE* 195 (Ernest Untermann trans., 1902) (1884). Engels defines a *gens* as a broadly extended family, or clan, all of whose members are related to a single ancestor. *Id.* at 102–03. The members of a *gens* would have been roughly as numerous as those of a *band*. See *infra* text accompanying notes 57–59.

2. See James E. Krier, *Evolutionary Theory and the Origin of Property Rights*, 95 CORNELL L. REV. 139 (2009) [hereinafter Krier, *Evolutionary Theory*].

animals. I present a narrative of the evolution of those rights that challenges the one that Friedrich Engels offers in the epigraph. Zoological archaeologists have discovered that, millennia prior to the domestication of hoofed animals, hunter-gatherers had domesticated the dog from the wolf. In many settings, ancient peoples likely used their extant system of property in dogs as a template for property in livestock. I contend that the best indirect evidence suggests, contrary to Engels, that Neolithic peoples customarily would have, from the outset, owned domesticated animals privately as individuals or families, not communally as members of bands or tribes.

I. KRIER'S SCHOLARLY ACHIEVEMENTS: THE FRUITS OF RESTLESSNESS

Jim has presence. I vividly recall our first encounter, in 1970, in a billiard parlor on Wilshire Boulevard in Los Angeles. The late Gary Schwartz, a treasured mutual friend who was then a colleague of Jim's at UCLA, had arranged our get-together. Jim's wit, irreverence, and intensity all made an immediate impression. I can't recall which of us prevailed in our billiard match—a lapse in memory that suggests that Jim, who had brought his own cue, had carried the day.

Three overarching features of Jim's scholarly accomplishments stand out. First, because Jim is uncommonly restless and nonconformist, he has resisted joining bandwagons. Instead, his instinct is to pioneer. In 1971, just after completing his second year of teaching, Jim published one of the first casebooks in the soon-to-burgeon field of environmental law.³ Although several veteran legal scholars also authored early environmental law casebooks at around the same time, Jim's was the most conceptually ambitious.⁴ Other notable environmental law scholars of Jim's generation, such as Bruce Ackerman and Dick Stewart, did not publish in the field until some years later.

3. JAMES E. KRIER, *ENVIRONMENTAL LAW AND POLICY* (1st ed. 1971). The phrase "environmental law" is reported to have been first formally coined at a September 1969 conference that Jim attended. RICHARD J. LAZARUS, *THE MAKING OF ENVIRONMENTAL LAW* 47–48 (2004).

4. See Jerry L. Mashaw, *Revealing the Secret Curriculum*, 59 VA. L. REV. 159 (1973) (reviewing KRIER, *supra* note 3). Mashaw praises Krier's efforts to reconceptualize environmental law by identifying basic policy issues and various institutional processes for addressing them.

Also pioneering, but far better known, was the Dukeminier and Krier casebook, *Property*.⁵ The first edition appeared in 1981, when competing works were largely atheoretic. In both *Property* and its famous teaching manual, Jim again sought to reconceptualize a complex field. In the first edition, he included a large dollop of 1970s law and economics, a momentous advance at the time. *Property* quickly came to dominate the U.S. casebook market and, over thirty years later, it still does.⁶ This landmark work has profoundly influenced scholarship in the field of property law. It has shaped the ideas of not only the hundreds of thousands of students who have been assigned to read it but also the many hundreds of professors who have taught from it.

Jim's restlessness soon impelled him to move beyond 1970s law and economics. In 1988, he inserted in the second edition of *Property* several pages on "The Perspective(s) from Critical Legal Studies," a provocative movement then on the upswing.⁷ And in 1990, he published two articles, one co-authored with Roger Noll, that drew on frontier developments in cognitive psychology to challenge the unalloyed rational-actor model long dominant in economics.⁸

The arc of Jim's scholarship demonstrates the depth of his skepticism, a second of his admirable scholarly traits. Some property scholars have an unbridled faith in markets, and others, in government regulation. In his various works, Jim has striven to deflate both these enthusiasms.⁹ In a world of true believers, dauntless doubters are invaluable.

5. JESSE DUKEMINIER & JAMES E. KRIER, *PROPERTY* (1st ed. 1981).

6. On February 8, 2013, the seventh edition of *Property* was the top-selling casebook on the Amazon list. List of top-selling casebooks, <http://www.amazon.com> (follow "Books" hyperlink; then follow "Law" hyperlink; then follow "Business" hyperlink; then follow "Property" hyperlink); see also Alan Watson, *Introduction to Law for Second-Year Law Students?*, 46 J. LEGAL EDUC. 430, 435 n.19 (1996) (referring to a publisher's flyer that asserted that *Property* had been adopted at over 150 law schools).

7. JESSE DUKEMINIER & JAMES E. KRIER, *PROPERTY* 139–41 (2d ed. 1988).

8. James E. Krier, *Risk and Design*, 19 J. LEGAL STUD. 781 (1990) [hereinafter Krier, *Risk and Design*]; Roger G. Noll & James E. Krier, *Some Implications of Cognitive Psychology for Risk Regulation*, 19 J. LEGAL STUD. 747 (1990).

9. See James E. Krier, *The Tragedy of the Commons, Part II*, 15 HARV. J.L. & PUB. POL'Y 325, 332–33 (1992) [hereinafter Krier, *Part II*] (critiquing free-market environmentalism, partly because market transactions are largely based on a foundation of governmentally provided rules); Krier, *Risk and Design*, *supra* note 8, at 782–85 (asserting that cognitive illusions may bedevil government regulators as much, and in some contexts more, than market participants).

Third, Jim has been an exceptionally collaborative scholar. Beneath his surface grumpiness is a solid core of warmth. Far more than any other prior awardee of the Brigham-Kanner Prize, Jim has published with co-authors. An early example was the Krier and Ursin book on the regulation of air pollution in California.¹⁰ The Dukeminier-Krier alliance, forged in the 1970s, endured for almost four decades. Following Jesse Dukeminier's death, Jim replenished his casebook team by adding Greg Alexander and Mike Schill.¹¹ Close to one-half of Jim's scholarly articles have been co-authored. Some of these collaborations, for example, those with Clay Gillette and Michael Heller, were repeated.¹² Those of us who have tried our hand at co-authorship can attest to its potential complications, among them the risk of free riding and the hassle of compromise. In many non-legal disciplines, co-authorship of course has become routine because it enables specialists to yoke their talents. Partly on account of the growing body of empirical work, co-authorship in law also has been on the rise.¹³ On this front as well, Jim Krier has consistently been ahead of the curve.

II. AN INTRODUCTION TO STONE-AGE PROPERTY RIGHTS: NARRATIVES AND INDIRECT SOURCES OF EVIDENCE

A lifelong immersion in property law may prompt an imaginative scholar to ponder the prehistoric origins of property institutions. In a 1992 article, Jim revealed his fascination with the topic, and in 2009, in *Evolutionary Theory*, made an important contribution to the small literature addressing it.¹⁴ In the remainder of this essay,

10. JAMES E. KRIER & EDMUND URSIN, POLLUTION AND POLICY: A CASE ESSAY ON CALIFORNIA AND FEDERAL EXPERIENCE WITH MOTOR VEHICLE AIR POLLUTION, 1940–1975 (1977).

11. The first fruit of this new alliance was JESSE DUKEMINIER, JAMES KRIER, GREGORY ALEXANDER & MICHAEL SCHILL, PROPERTY (6th ed. 2006).

12. Clayton P. Gillette & James E. Krier, *Risk, Courts, and Agencies*, 138 U. PA. L. REV. 1027 (1990); Michael A. Heller & James E. Krier, *Deterrence and Distribution in the Law of Takings*, 112 HARV. L. REV. 997 (1999); Michael A. Heller & James E. Krier, *Making Something Out of Nothing: The Law of Takings and Phillips v. Washington Legal Foundation*, 7 SUP. CT. ECON. REV. 285 (1999); James E. Krier & Clayton P. Gillette, *The Un-Easy Case for Technological Optimism*, 84 MICH. L. REV. 405 (1985).

13. See Tom Ginsburg & Thomas J. Miles, *Empiricism and the Rising Incidence of Co-Authorship in Law*, 2011 U. ILL. L. REV. 1785.

14. See Krier, *Part II*, *supra* note 9; Krier, *Evolutionary Theory*, *supra* note 2.

I attempt to build on his efforts, focusing on the earliest forms of property rights in domesticated animals.

A. *The Neolithic Revolution*

Members of the species *homo sapiens* are thought to have become behaviorally modern in the period 80,000–55,000 BP.¹⁵ During the long prehistoric period, most humans were associated in a nomadic hunter-gatherer band consisting of no more than a few dozen members.¹⁶ A band would set up a temporary camp in a territory, hunt and gather nearby, and, when local game and fruit had become harder to find, relocate to establish a new camp where pickings promised to be more plentiful. Archaeological evidence indicates that the hunter-gatherer way of life was virtually universal prior to c. 11,000 BP, after the end of the most recent Ice Age.

During the subsequent Neolithic Period of the late Stone Age (c. 11,000–4,000 BP), human life underwent a great transformation. In some locales, most notably the Fertile Crescent of southwest Asia, groups of people began to reside in permanent settlements.¹⁷ As shortages of game animals became increasingly pronounced, many human groups shifted away from hunting and gathering and toward agriculture and the herding of domesticated animals (pastoralism).¹⁸ A group of herders might be nomadic for either all or part of the year or, alternatively, live year-round in permanent abodes from which they were able to manage their herds.¹⁹ By c. 5000 BP, archaeological evidence in Mesopotamia attests to the first appearance of organized states, mathematics, and writing. The rest, as they say, is history.

15. See Jared Diamond, *Evolution, Consequences and Future of Plant and Animal Domestication*, 418 NATURE 700, 704 (2002); see also STEVEN PINKER, THE BETTER ANGELS OF OUR NATURE 40 (2011) (setting the date at c. 75,000 BP).

16. Among the !Kung San of Botswana and Namibia, a group that continued to hunt and gather well into the twentieth century, individuals were able to change their band affiliations. According to a tally by Richard Lee, 13 percent switched bands over the course of a single year. James Woodburn, *Egalitarian Societies*, 17 MAN 431, 435 (1982).

17. JARED DIAMOND, GUNS, GERMS, AND STEEL: THE FATES OF HUMAN SOCIETIES 134–42 (1997).

18. Diamond, *supra* note 15, at 704.

19. On the various modes of Stone-Age pastoralism, see Kamyar Abdi, *The Early Development of Pastoralism in the Central Zagros Mountains*, 17 J. WORLD PREHISTORY 395 (2003).

The domestication of sheep, cattle, and other livestock was well underway in the Fertile Crescent by 10,000 BP.²⁰ To engage in herding, members of a Neolithic band had to develop norms governing property rights in livestock. What might these norms have been? The unearthing of sheep bones at an archaeological dig at a Neolithic site would prove that sheep were being herded but would be unlikely to reveal anything about the property norms that had governed human entitlements in those animals. In *Evolutionary Theory*, Krier concisely identifies the inherent limits on research into ancient practices: “Because property began in prehistoric times, no one can really prove what actually happened, as a matter of historical truth. The objective is a plausible explanation that is logically intact and consistent with what we know about human development.”²¹

Like Krier’s, my analysis assumes that the motivations and psychologies of ancient peoples were basically similar to those of people in contemporary times. Some commentators doubtless would reject this assumption. Those who imagine the possibility of a radically better future commonly also assume the reality of a radically superior remote past. Utopian views of the human condition in prehistoric times include the depiction in *Genesis* of man before “the fall,” the notion in Greek mythology of a prehistoric Golden Age, and Rousseau’s view that the advent of civil society corrupted “natural man.”²² What we know about human development casts doubt on all of these visions.

B. Narratives on the Origin and Evolution of Property Rights

A century or more before Friedrich Engels speculated about ancient patterns of livestock ownership, other notables had offered narratives describing human experience in the “state of nature”—a stage of human development that I equate with the Stone Age.²³ In this section I briefly review the imaginings of William Blackstone, John Locke,

20. See *infra* notes 52–53 and accompanying text.

21. See Krier, *Evolutionary Theory*, *supra* note 2, at 146.

22. See *infra* text accompanying notes 34–38.

23. On these turns to narrative, see Carol Rose, *Property as Storytelling: Perspectives from Game Theory, Narrative Theory, Feminist Theory*, 2 YALE J.L. & HUMAN. 37, 38–39, 51–53 (1990).

and Jean-Jacques Rousseau about how property rights evolved and also summarize those of Krier and other contemporary scholars.

In his *Commentaries on the Laws of England*, Blackstone provides one of the most detailed and prescient of the narratives on how property institutions arose. Writing almost a century before the Darwinian Revolution,²⁴ Blackstone quaintly treats the Book of Genesis as an authoritative source on life in prehistoric times.²⁵ Blackstone generally envisions private property as having emerged in four stages.²⁶ The first stage was the conferral of private ownership of a movable object, such as a garment or hunted animal, on the person who had personally labored to make it available.²⁷ The second stage, according to Blackstone, was the recognition of private rights in domestic animals. To this topic Blackstone devotes a single sentence:

But the frequent disappointments, incident to that method of provision [hunting], induced them to gather together such animals as were of a more tame and sequacious nature; and to establish a permanent property in their flocks and herds, in order to sustain themselves in a less precarious manner, partly by the milk of the dams, and partly by the flesh of the young.²⁸

Blackstone then immediately turns to the evolution of private rights in water, and finally to his fourth envisioned stage—private property in land—a complex topic that he understandably discusses at length.²⁹

24. CHARLES DARWIN, *ON THE ORIGIN OF THE SPECIES* (1859).

25. 2 WILLIAM BLACKSTONE, *COMMENTARIES* *2–3, *5–6 (1766).

26. *Id.* at *2–9. Krier lauds the perspicacity of Blackstone’s narrative. See Krier, *Evolutionary Theory*, *supra* note 2, at 158–59 n.93.

27. 2 BLACKSTONE, *supra* note 25, at *4–5. Members of a preliterate group in fact typically do entitle someone who has made an item to own it, often subject to a duty to share it under certain circumstances. See WILLIAM CRONON, *CHANGES IN THE LAND: INDIANS, COLONISTS, AND THE ECOLOGY OF NEW ENGLAND* 61 (1983); Alan Barnard & James Woodburn, *Property, Power and Ideology in Hunting and Gathering Societies: An Introduction*, in HUNTERS AND GATHERERS 2: PROPERTY, POWER, AND IDEOLOGY 4, 16 (Tim Ingold, David Riches & James Woodburn eds., 1988). This regularity suggests that there never was an era of “primitive communism,” that is, “a period of human history before the rise of the state during which private property was unknown . . .” Richard B. Lee, *Primitive Communism and the Origin of Social Inequality*, in *THE EVOLUTION OF POLITICAL SYSTEMS: SOCIOPOLITICS IN SMALL-SCALE SEDENTARY SOCIETIES* 225, 225 (Steadman Upham ed., 1990).

28. 2 BLACKSTONE, *supra* note 25, at *5. Elsewhere in the *Commentaries*, Blackstone includes a lengthy section on the law of domesticated animals. *Id.* at *389–94.

29. *Id.* at *6–9. Blackstone envisages that ancient societies recognized private property in houses, huts and movable cabins prior to recognizing it in agricultural lands. *Id.* at *4.

The sequence of events in John Locke's influential discussion of the normative foundations of private property, written close to a century prior to Blackstone's, is vaguer. According to Locke, at the outset God gave "the World in common to all Mankind."³⁰ Locke reasons that, because a person owns his own labor, movables acquired through the dint of effort, for example, acorns gathered or wild deer slain, also become private property.³¹ Locke thinks that private property in land also could be obtained through cultivation and other forms of work³² and vaguely implies that private property in land was recognized at a later date than private property in movables.³³ Locke makes a few passing references to the domestication of animals. In his eyes, the taming of beasts and the breaking of oxen plainly can give rise to legitimate claims of animal ownership,³⁴ but he does not attempt to fit these events into any timeline.

Jean-Jacques Rousseau, in his *Discourse on Inequality*, imagined that "peoples in the primitive condition . . . [lacked] any kind of property."³⁵ In this state of nature, "natural men" were equal and peaceable.³⁶ But, as nature's bounty became scarcer, people came to honor private property in livestock, and, ultimately, in land.³⁷ The advent of private property deprived man of his naturalness, fostered inequality, and led to status-seeking and other varieties of "misery and horror."³⁸ For Rousseau, the recognition of private property in land was the key baneful development.³⁹ In his eyes, property in livestock was at most a sideshow, as it had been for Blackstone and Locke.

Contemporary scholars who have discussed the prehistoric evolution of property rights have had the advantage of post-Darwin scientific understandings. Surprisingly, however, many of them neglect the

30. JOHN LOCKE, TWO TREATISES OF GOVERNMENT 291 (Peter Laslett ed., 1960) (3d ed. 1698).

31. *Id.* at 287–90. To obtain ownership of a resource that had been up for grabs in the state of nature, however, a person must leave resources "as good" for acquisition by others—the famous Lockean proviso. *Id.* at 290–91.

32. *Id.* at 290–302.

33. *See id.* at 294, 299.

34. *Id.* at 294, 298.

35. JEAN-JACQUES ROUSSEAU, DISCOURSE ON THE ORIGINS AND FOUNDATIONS OF INEQUALITY AMONG MEN 92 (Maurice Cranston trans. & ed., 1984) (1755).

36. *Id.* at 70, 115.

37. *Id.* at 90–91, 109, 119.

38. *Id.* at 109. *But see id.* at 180 n.2 (editor's comment that in contemporaneous writings Rousseau had assessed private property more favorably).

39. *Id.* at 109.

evolution of property rights in domesticated animals. In *Evolutionary Theory*, for example, Krier offers a vision of prehistory that is far more sophisticated than Blackstone's, Locke's, and Rousseau's. Taking advantage of recent scholarly advances, Krier invokes evolutionary game theory and cites the results of anthropological investigations. His chronological narrative, however, addresses the emergence of entitlements only in personally crafted objects and land, not in animals.

Krier's article repeatedly refers to Harold Demsetz's seminal essay on the evolution of property rights.⁴⁰ Demsetz uses as his central example a transition in property rights in land, namely a Labradorean tribe's shift from communal to exclusive hunting territories.⁴¹ Like Krier's, Demsetz's article includes no references to property in domestic beasts. Other leading articles on the property systems of preliterate peoples similarly slight the topic. Richard Posner's *A Theory of Primitive Society* makes only scattered mention of domesticated animals, and Martin Bailey's valuable review of property rights among aboriginal peoples makes none.⁴² These various depictions overlook a major form of prehistoric wealth.

C. *The Importance of Livestock in Prehistory*

The people of the late Stone Age prized livestock for many reasons. In his narrative, Blackstone observes that a domestic animal could serve as a dependable source of milk and meat.⁴³ But members of some species also were capable of serving as beasts of burden and as sources of wool and leather. And the capacity of domestic animals to reproduce greatly enhanced their value as capital assets.

40. Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. PAPERS & PROC. 347 (1967).

41. Demsetz's example suggests that the increasing scarcity of resources is conducive to the emergence of private property rights. Krier, by contrast, speculates that increasing scarcity might undermine property conventions by inducing some individuals to more aggressively pursue resources in the possession of others. Krier, *Evolutionary Theory*, *supra* note 2, at 152–56. If c —the costs of acting as a Hawk in Krier's Hawk-Dove game—remained constant as scarcity increased, this indeed would be likely. But scarcity might also provoke possessors to defend their holdings more fiercely, increasing c and deterring Hawklike behavior.

42. Richard A. Posner, *A Theory of Primitive Society*, 23 J.L. & ECON. 1, 15 (1980) (discussing the lending of cattle in some African tribal societies); *id.* at 21 (discussing the custom of bride price, often calculated in cattle); Martin J. Bailey, *Approximate Optimality of Aboriginal Property Rights*, 35 J.L. ECON. 183 (1992).

43. See *supra* text accompanying note 28.

In Neolithic, Bronze-Age, and Iron-Age societies, livestock commonly came to constitute a significant fraction of human wealth, especially in environments where grazing land was plentiful. In ancient Mesopotamia, tablets dating from the late third millennium BCE attest to robust sales of livestock,⁴⁴ and small farmers there are thought to have routinely owned flocks of sheep and goats, and sometimes a few cattle as well.⁴⁵ The Code of Hammurabi, proclaimed in Babylon c. 1750 BCE, includes thirty-one paragraphs that refer to livestock.⁴⁶ Because most Israelites were pastoralists, references to livestock pepper the *Book of Genesis*. It is said that “Abel kept flocks,” that Abraham became “very wealthy in livestock,” and that Jacob and Rachel, Jacob’s favorite wife, both were experienced shepherds, as were their son Joseph and his many brothers.⁴⁷

Across the long sweep of property history, livestock continued to be central in most societies. In the twentieth century, in many areas of sub-Saharan Africa a new husband traditionally was obligated to pay a “bride price,” measured in livestock, to the father of the bride.⁴⁸ In the early nineteenth century, most American households were still engaged in agriculture and routinely owned farm animals. At that time, domesticated pigs famously roamed the streets of Manhattan.⁴⁹ Through the first decade or two of the twentieth century, horses continued to be routine sights in cities.

By the twenty-first century, however, for most city dwellers in developed nations, sheep, goats, pigs, cattle, and horses are out of sight and also largely out of mind. Livestock now constitute less than 0.4% of wealth in the United States.⁵⁰ Contemporary scholars

44. See Benjamin R. Foster, *Commercial Activity in Sargonic Mesopotamia*, 39 IRAQ 31, 36–37 (1977).

45. J.N. POSTGATE, EARLY MESOPOTAMIA: SOCIETY AND ECONOMY AT THE DAWN OF HISTORY 159, 164 (1994).

46. *Laws of Hammurabi* ¶¶ 7, 8, 35, 57–58, 224–25, 241–52, 254–56, 258, 261–65, 267–71, in MARTHA T. ROTH, LAW COLLECTIONS FROM MESOPOTAMIA AND ASIA MINOR 71–142 (1995).

47. *Genesis* 4:2, 13:2, 29:9, 31:4, 30:29–43, 37:2; 45:10, 47:17.

48. See, e.g., Alan H. Jacobs, *African Pastoralists: Some General Remarks*, 38(3) ANTHROPOLOGICAL Q. 144, 149 (1965) (indicating the amount of bride price, measured in numbers of livestock, that various groups require); Christine Mary Venter, *The New South African Constitution*, 21 J. LEGIS. 1, 8–9 (1995).

49. See Hendrik Hartog, *Pigs and Positivism*, 1985 WIS. L. REV. 899.

50. In 2010, the total combined value of cattle, pigs, and sheep in the United States was \$85.8 billion. U.S. CENSUS BUREAU, 2012 STATISTICAL ABSTRACT 556, tbl. 870. In that year, the total value of household and nonprofit organization assets was \$24.2 trillion. *Id.* at 470, tbl. 722.

and teachers of property law thus have reason to pass over the rules of ownership of domestic animals. But those with a long historical perspective do not.

D. Sources of Indirect Evidence on Prehistoric Property Rights in Domestic Animals

The balance of this essay is devoted to the identification of the core issues of animal ownership and the presentation of educated guesses about how Neolithic people would have addressed those issues. These educated guesses are based on evidence marshaled from three social settings somewhat analogous to those of prehistoric peoples. The most probative sources of evidence are anthropological studies, mostly conducted in the twentieth century, of the practices of largely preliterate bands, tribes, and chiefdoms engaging in either pastoralism or hunting and gathering. These surviving groups are socially and developmentally somewhat similar to Neolithic societies but also hardly perfectly representative of Stone-Age bands and tribes.⁵¹ A second group of sources of indirect evidence are early historical materials. The peoples of ancient Mesopotamia, Egypt, and Israel, for example, all left written and pictorial records that provide clues of their rules governing the ownership of animals. The property norms of the Hutterites, a vibrant Anabaptist sect with some 40,000 contemporary members, provide a third source of indirect evidence. Most Hutterites currently reside in the northern Great Plains of North America in separate rural colonies that have 60 to 250 members each. The Hutterites are pertinent because their members are religiously committed to “having all things in common,” an inclination that many of the early domesticators of animals may have shared. Part III taps these three disparate sources of evidence to frame hypotheses about likely Neolithic norms governing property in livestock. Part IV makes use of the same three sources to suggest likely Stone-Age regimes for property in dogs. Dogs warrant separate discussion because they were the first animals to be domesticated and have special attributes, such as an inclination to bond with humans.

51. See PINKER, *supra* note 15, at 41.

III. STONE-AGE NORMS GOVERNING PROPERTY IN LIVESTOCK

Zoological archaeologists, by examining buried bones and associated DNA, have recently amassed much evidence about when and where Neolithic people first tamed formerly wild species of animals. The first domestications of livestock appear to have been accomplished in the Fertile Crescent about 11,000 BP, when the bezoar was bred into the goat, and the mouflon into the sheep.⁵² Over the course of the ensuing millennium or two, residents of the same region followed up by domesticating the wild boar into the pig and the aurochs into cattle.⁵³

States didn't appear until many millennia later. Therefore, as Krier recognizes in *Evolutionary Theory*, bands and tribes initially would have had to rely entirely on informal norms to create and enforce property rights in livestock.⁵⁴ Members of a closely knit group, such as a band of hunter-gatherers, have good information about one another's conduct and also can expect that their continuing relationships will offer them ample opportunities to both informally reward

52. See Melinda A. Zeder, *Domestication and Early Agriculture in the Mediterranean Basin: Origins, Diffusion, and Impact*, 105 PROC. NAT'L ACAD. SCI. U.S.A. 11,597, 11,598 (No. 33, Aug. 19, 2008); see also DIAMOND, *supra* note 17, at 141–42 (noting the exceptional diversity of the species of mammals then present in the Fertile Crescent).

53. See Zeder, *supra* note 52, at 11598; see also T. Douglas Price & Ofer Bar-Yosef, *Introduction to Symposium on the Origins of Agriculture*, 52 CURRENT ANTHROPOLOGY S163 (Supp. 4, Oct. 2011); Melinda A. Zeder, *The Origins of Agriculture in the Near East*, 52 CURRENT ANTHROPOLOGY S221 (Supp. 4, Oct. 2011). Neolithic peoples undoubtedly had the intellectual capacity to engage in selective breeding. Cf. *Genesis* 30:29–43 (providing an extended account of Jacob's selective breeding of sheep and goats). Some animals, however, may have contributed to their own taming. On the process of self-domestication, see *infra* text accompanying notes 85–86.

54. Krier points out that, contrary to the state-centered perspective of Jeremy Bentham, these property entitlements would not have been created or enforced by formally authorized lawmakers, but rather by decentralized norm-makers. Krier, *Evolutionary Theory*, *supra* note 2, at 143–46. He discusses game-theoretic accounts that support the spontaneous emergence of property conventions, which, once established, become largely self-enforcing. *Id.* at 151–57. In many contexts, it is likely that specific individuals would have driven the process of norm formation. In my parlance, these would have been norm entrepreneurs who proposed new property rules, and opinion leaders who promoted within the pertinent social group the most promising of the rules that the norms entrepreneurs had put forward. Both these types of innovators then would have been rewarded with enhanced social status for having helped create the valuable new norm. See Robert C. Ellickson, *The Market for Social Norms*, 3 AM. L. & ECON. REV. 1 (2001); cf. Krier, *Evolutionary Theory*, *supra* note 2, at 156 n.84 (citing sources on the dynamics of norm formation).

prosocial behavior and punish antisocial behavior.⁵⁵ A band member who violated a property norm would risk becoming the target of measured self-help actions by a property owner, negative gossip within the group, and perhaps formal condemnation by the group's elders.

A full-fledged system of informal private property in livestock entails an interlocking set of substantive norms, three of which warrant emphasis.⁵⁶

A. Customary Entities for the Ownership of Livestock

In the epigraph, Engels highlights the fundamental issue of who a Stone-Age owner of livestock conventionally would have been. To simplify, I consider only five possible candidates. The smallest and simplest ownership entity for livestock would have been a single *individual*. The next smallest would have been a *family*, that is, an intimate kinship group whose membership perhaps would extend somewhat beyond an adult couple and their children. Individual and family ownership both are forms of private ownership. The next larger candidate would have been a *band*, defined by Jared Diamond as “a few dozen individuals, many of them belonging to one or several extended families.”⁵⁷ During the early Neolithic period, bands of hunter-gatherers are thought to have begun to increasingly ally into *tribes*, that is, local groups with hundreds of members.⁵⁸ Band ownership and tribal ownership are forms of communal ownership, the sort that Engels imagined was conventional for livestock in early prehistory.⁵⁹ In the latest stages of the Neolithic age, there began to

55. ROBERT C. ELLICKSON, *ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES* 177–82 (1991).

56. There are additional issues, such as the “fullness” of an owner’s entitlements in an animal. See Frank I. Michelman, *Ethics, Economics, and the Law of Property*, in *ETHICS, ECONOMICS AND LAW, NOMOS XXIV* 3, 5 (J. Roland Pennock & John W. Chapman eds., 1982). If prehistoric norm-makers were to have conferred full entitlements, the owner of a hooped animal would have been entitled to control its use (and eventual slaughter), freely transfer the animal (for example, by sale or inheritance), and order others not to touch the animal. Neolithic norm-makers might have carved out exceptions to this full set of entitlements. A band’s norms, for example, might have forbidden an owner from torturing an animal, banned a gift of livestock to a member of an enemy tribe, and entitled any member to pet a tame animal belonging to another band member.

57. JARED DIAMOND, *THE WORLD UNTIL YESTERDAY* 14 (2012).

58. *Id.* at 14–15.

59. See *supra* note 1 and accompanying text.

appear *hierarchical institutions*, such as the palaces and temples of early Mesopotamia. An institution of this sort would have become a fifth candidate to serve as the conventional owner of a domestic animal.

The merits and demerits of individual ownership, as opposed to communal ownership, have been much discussed.⁶⁰ The key advantage of individual ownership is that it is a cheap method of creating sharp incentives for diligent management. The owner of a pregnant cow, for example, has a strong incentive to stay up during the wee hours of the night to help it calve. When an ownership group has multiple members, by contrast, each of them might be tempted to free-ride on such an occasion. In a family infused with kinship altruism, this free rider risk commonly could be largely overcome.⁶¹ Ownership of an animal by a band or tribe, by contrast, poses more challenging collective action problems. Communal owners may succeed in using norms, contracts, or other governance devices to overcome these challenges, but those measures are likely to entail transaction costs greater than those entailed under a simpler system of private ownership.

But private ownership of a grazing animal has downsides as well. It concentrates risks, while group ownership helps to spread risks.⁶² In some contexts, group ownership also might promote interactions that would enhance generalized trust among group members. Members of a Neolithic band, when choosing a customary form for the

60. See, e.g., Demsetz, *supra* note 40; Robert C. Ellickson, *Property in Land*, 102 YALE L.J. 1315 (1993). Garrett Hardin has famously illustrated the potentially negative interplay that can arise when resources used in combination are held in different ownership forms. See Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243 (1968). Hardin's basic scenario features herdsmen who individually own cows but bring them into a pasture that they own communally. Hardin imagines that each herdsman would seek to maximize his cows' consumption but free-ride on performing collective duties to conserve the pasture. In Hardin's scenario, if the cows and pastures had both been owned communally, the tragedy might have been not overgrazing, but undergrazing arising from shirking on shepherding duties.

61. Kin-based altruism tends to reduce, but not entirely eliminate, collective action problems that arise between two or more owners. As a result, individual ownership tends to be more efficient than ownership by a family, particularly an extended family. See Krier, *Evolutionary Theory*, *supra* note 2, at 142 n.11, 144–45. Anthropologists who study preliterate groups seldom distinguish sharply between individual and family ownership of a domesticated animal, perhaps because the members of a closely knit family are themselves commonly willing to leave the matter unresolved. For example, when a contemporary family household brings in a dog as a pet, the family members may not formally specify which of them owns the dog, but instead decide the dog's care and fate by consensus.

62. See Ellickson, *supra* note 60, at 1341–44.

ownership of livestock, would have had the brainpower to balance these countervailing considerations.

An archaeological dig is unlikely to turn up direct evidence about conventional livestock-owning entities in early Neolithic times. The best alternative, then, is to consult the three sources of indirect, but suggestive, evidence. Investigations by anthropologists, historians, and others have produced a mountain of information on the customary ownership entities of current-day livestock-owning groups that have become literate only during the past century or two. As a shortcut, I report ownership practices in a geographically scattered handful of some of the better known of these societies. Among the Maasai, who herd cattle on communal lands in the Great Rift Valley of Kenya and Tanzania, cattle customarily are owned either by individuals or intimate family units.⁶³ Individual or family ownership of livestock similarly is customary among the Saami, who herd reindeer in Lapland,⁶⁴ and among the Bedouin of the desert Near East.⁶⁵ As early as 1700, the Navajo of the American Southwest were heavily engaged in the herding of sheep, horses, and cattle, species that had been introduced by Spanish explorers.⁶⁶ In general, Navajo customs have supported either individual or family ownership of livestock.⁶⁷ The customs of Mongolian herders have been

63. Robert A. Blewett, *Property Rights as a Cause of the Tragedy of the Commons: Institutional Change and the Pastoral Maasai of Kenya*, 21 E. ECON. J. 477, 478 (1995); Joseph Kieyah, *Indigenous Peoples; Land Rights in Kenya: A Case Study of the Maasai and Ogiek People*, 15 PENN. ST. L. REV. 397, 400 (2007). Like many pastoralists, a Maasai family commonly pools its animals in a common herd to facilitate corralling and the supervision of grazing, but retains ownership rights over them. Allen H. Jacobs, *Maasai Pastoralism in Historical Perspective*, in PASTORALISM IN TROPICAL AFRICA 406, 416 (Théodore Monod ed., 1975).

64. Mattais Ahrén, *Indigenous Peoples' Culture, Customs, and Traditions and Customary Law—The Saami People's Perspective*, 21 ARIZ. J. INT'L & COMP. L. 63, 69 (2004); Robert P. Wheelersburg, *New Transportation Technology Among Swedish Sami Reindeer Herders*, 24(2) ARCTIC ANTHROPOLOGY 99, 103 (1987).

65. EMRYS L. PETERS, JACK GOODY & EMANUEL MARX, *THE BEDOUIN OF CYRENAICA: STUDIES IN PERSONAL AND CORPORATE POWER* 52, 175, 238 (1991).

66. JAMES F. DOWNS, *ANIMAL HUSBANDRY IN NAVAJO SOCIETY AND CULTURE* 5 (1964).

67. There is little published work on Navajo livestock ownership practices prior to the late nineteenth century. For evidence of Navajo practices thereafter, see DOWNS, *supra* note 66, at 62–66, 91 (describing mid-twentieth-century customs); PETER IVERSON, *THE NAVAJO NATION* 24 (1981) (reporting an assertion, in 1928, by an elderly male Navajo that his wife, children, and grandchildren all had an ownership interest in his large herd of sheep); Eric Henderson, *Navajo Livestock Wealth and the Effects of the Stock Reduction Program of the 1930s*, 45 J. ANTHROPOLOGICAL RES. 379, 380 (1989) (describing family ownership of sheep, horse, goats, and cattle in the late nineteenth century).

similar, except during the decades when Soviet rulers ordered them to collectivize their herds.⁶⁸ The consistency of these ownership patterns supports the inference that Neolithic pastoralists would have been far more likely to have owned livestock privately at the level of the individual or family, than communally at the level of the band or tribe.

In the earliest civilizations whose written and pictorial records survive, livestock appear to have been customarily owned either by individuals, families, or hierarchical organizations. In Bronze Age Mesopotamia, which several millennia previously had been the site of the first domestications of livestock, most small farmers owned flocks of sheep and goats, and some urban families also invested in herds.⁶⁹ A section of the Code of Hammurabi sets out different rules for the compensation of an individual owner of livestock, as opposed to an institutional owner, such as a temple or palace.⁷⁰ In ancient Egypt, cattle, sheep, and other herd animals are commonly portrayed in tomb paintings. Shepherds typically are depicted as field hands working for a hierarchical owner, for example, a pharaoh, noble, or temple. In ancient Israel, by contrast, passages in *Genesis* imply that flocks generally were individually owned.⁷¹ In none of these three ancient societies were livestock customarily owned in communal fashion by members of a band or tribe.

In a Hutterite settlement, by contrast, cattle, pigs, and other farm animals are collectively owned. Adult male colony members periodically elect a particular member to serve as the dairy-boss, hog-boss, and so on.⁷² By focusing managerial responsibilities in this fashion, the Hutterites have reduced the risks of free riding that communal ownership typically poses. Hutterites follow rituals that help insulate their members from outside influences. They speak a German

68. Maria E. Fernandez-Gimenez, *The Role of Mongolian Nomadic Pastoralists' Ecological Knowledge in Rangeland Management*, 10 *ECOLOGICAL APPLICATIONS* 1318, 1319–20 (2000).

69. See POSTGATE, *supra* note 45, at 159.

70. *Laws of Hammurabi*, *supra* note 46, at ¶ 8 (“If a man steals an ox, a sheep, a donkey, a pig, or a boat [goat?]-if it belongs either to the god or to the palace, he shall give thirtyfold; if it belongs to a commoner, he shall replace it tenfold. . .”). On temple and palace ownership of livestock in Mesopotamia, see POSTGATE, *supra* note 45, at 160, 164.

71. See *supra* text accompanying note 47.

72. See Hanna Kienzler, *Communal Longevity: The Hutterite Case*, 100(1) *ANTHROPOS* 193, 203 (2005) (describing how a colony assigns responsibilities for the raising of its communal cattle, sheep, hogs, chickens, ducks, and turkeys).

dialect and gather daily as a group for prayers and meals. As a result of the thickness of the social ties in the sect, a cattle-boss, for example, who failed to act as a conscientious agent for the group would likely suffer the sting of negative social sanctions.

The three sources of indirect evidence support several grounded suppositions about Neolithic patterns of livestock ownership. Pre-historic groups lived in highly diverse physical and social environments. The anthropological and historical sources suggest that most early pastoral groups customarily would have favored either individual or family ownership of livestock. But some groups probably proceeded otherwise. The emergence of hierarchical institutions during the late Neolithic period suggests that in some early herding groups, a “big man” and his allies might have wrested ownership of the group’s herds. Finally, the Hutterites’ success in owning livestock communally suggests that some Neolithic bands and tribes likely would have pursued that option, particularly in high-risk settings. To implement communal ownership these groups would have had to devise, as the Hutterites have, institutional mechanisms for deterring members from the shirking of chores essential for the maintenance of the herd.

B. Norms Permitting the Capture of a Wandering Animal Whose Owner Had Failed to Signal Was Owned

Prior to the initial domestications of livestock during the early Neolithic period, a hunter who saw a boar in a field knew that the beast had to be wild and hence up for grabs. Domestication made hunting more complicated. Thereafter, a hunter about to slay an apparent wild boar had to be concerned that a putative owner would show up and demand restitution for the loss of a domestic pig.

Members of a prehistoric band needed to invent norms to resolve a dispute of this sort arising between two of their members. It is implausible that they would have protected an owner’s rights only as long the owner retained the domestic animal in custody, for example, on a leash or behind a fence. After being set loose, many domestic animals are inclined to return to their owners on their own initiative, and many others can readily be rounded up. In an era when fencing costs typically were prohibitively high, a band’s norms thus would not have specified that loss of custody of a domestic

animal automatically resulted in the relinquishment of an ownership claim to it. But a blanket rule favoring owners in these disputes would have placed hunters in a quandary. How could a hunter know whether an animal in a field was a huntable boar, as opposed to another's domestic pig that was to be left alone?

Neolithic bands likely devised rules that would have incentivized *both* owners and hunters to take cost-justified actions to reduce the probability that a hunter would kill or capture a roaming animal that an owner had temporarily released. A plausible general norm would sustain an owner's claim to an unloosed animal only if, under the circumstances, the hunter knew or should have known that the animal likely had an owner who had temporarily set it loose. This norm would have incentivized an animal owner to provide visual cues of ownership that a conscientious hunter could recognize. At least four different types of cues—what Krier has referred to as “unambiguous signs of possession”⁷³—were available to Stone-Age animal owners. First, after domestication, the appearance of a species of animals typically changes. Domestic pigs, for example, are physically distinguishable from wild boars. Suppose that a member of a pastoral band, while hunting, were to have killed an animal that looked like a specimen of a domestic species traditionally herded by the band's members. If so, the band's norms likely would have required the hunter to bear the risk of having to indemnify the band member who owned the slain animal. This approach would have encouraged owners of livestock to engage in selective breeding to change how their animals looked.⁷⁴ Second, the suggested norm would have induced an owner to place an artificial marking, such as a brand, on an ungulate.⁷⁵ Stone-Age paintings in southwest Europe

73. Krier, *Evolutionary Theory*, *supra* note 2, at 158; *see also* CAROL M. ROSE, PROPERTY AND PERSUASION: ESSAYS ON THE HISTORY, THEORY, AND RHETORIC OF OWNERSHIP 267–304 (1994); Robert C. Ellickson, *The Inevitable Trend Toward Universally Recognizable Signals of Property Claims*, 19 WM. & MARY BILL RTS. J. 1015 (2011).

74. Partly because owners of American bison have not succeeded in breeding them to look different from wild bison, they risk bearing the loss of an owned bison when it is on the loose. *See State v. Crenshaw*, 22 Mo. 457 (1856) (holding criminal statute forbidding the killing of another's cattle did not extend to the killing of another's buffalo). *But cf. Ulery v. Jones*, 81 Ill. 403 (1876) (remanding for new trial a tort claim for the killing of a trespassing buffalo that the killer knew belonged to his neighbor). *See generally* Dean Lueck, *The Extermination and Conservation of the American Bison*, 31 J. LEGAL STUD. S609 (2002).

75. The Saami cut a distinctive ear-notch to brand a reindeer. *See Wheelersburg*, *supra* note 64, at 103. A collar is another unmistakable signal of animal ownership. *Cf. Morewood*

indeed depict brands on bison,⁷⁶ and wall paintings in Bronze Age Egypt portray field hands branding cattle.⁷⁷ Third, the hypothetical norm would have encouraged an owner to tame an animal so that its behavior would signal comfort in the presence of humans.⁷⁸ Fourth, the presence of an animal in a habitat where it would not normally have been found could have been regarded as a cue to a hunter that an owner had brought it there.

C. Norms Governing the Ownership of Offspring

Because hunter-gatherers typically acquired wild animals by slaying them, they had no need to devise norms to resolve the ownership of animal offspring. Much of the value of a domesticated animal, by contrast, lies in its potential to bear or father young. In virtually every legal system, the owner of a domesticated female animal is deemed also to own that animal's offspring.⁷⁹ Although direct evidence of how Stone-Age groups resolved this issue is unlikely ever to be uncovered, the evident merits of this "rule of increase" make it highly likely that members of a Stone-Age band also would have adopted it.⁸⁰ Awarding offspring to the owner of the mother animal sharply incentivizes the owner to care for both the mother and her

v. Wakefield, 133 Mass. 240 (1882) (holding that statutory provision compelled rejection of tort claim for killing of plaintiff's uncollared dog).

76. Gerald Ruston, *On the Origin of Trademarks*, 45 TRADEMARK REP. 127, 129 (1955).

77. Ancient Egyptian tomb paintings portray the branding of cattle, and archaeologists have unearthed a branding iron thought to be from Thebes c. 1550 BCE. *Bronze Branding Iron*, BRITISH MUSEUM, http://www.britishmuseum.org/explore/highlights/highlight_objects/aes/b/bronze_branding_iron.aspx (last visited July 16, 2013); see also Sidney A. Diamond, *The Historical Development of Trademarks*, 65 TRADEMARK REP. 265, 267 (1975).

78. At least as far back as the Institutes of Justinian, legal systems have tended to protect the entitlements of an animal's owner as long as the animal retains the inclination of voluntarily returning to the owner (*animus revertendi*), as opposed to escaping into the wild. J. INST. 2.1.15; see also *Mullett v. Bradley*, 53 N.Y.S. 781 (1898) (holding that sea lion that had escaped captor and swum 70 miles lacked *animus revertendi*); 2 BLACKSTONE, *supra* note 25, at *392.

79. See JESSE DUKEMINIER & JAMES E. KRIER, PROPERTY 127–28 (2d ed. 1988); Felix Cohen, *Dialogue on Private Property*, 9 RUTGERS L. REV. 357, 366 (1954) (asserting universality of the rule of increase); Thomas W. Merrill, *Accession and Original Ownership*, 1 J. LEGAL ANALYSIS 459, 464–65 (2009). English decisions, however, awarded baby swans in equal shares to the owner of the cock and the owner of the hen, apparently on account of swans' strict monogamy. *Id.* at 465 n.6.

80. See Cohen, *supra* note 79, at 366–68 (brilliantly employing dialogue to demonstrate the efficiency and fairness of the rule).

offspring during and after birth. An alternative rule that would have entitled the owner of the sire to a half share of the offspring commonly would have sparked disputes over paternity, complicated animal husbandry, and, in some applications, separated young animals from their mother and her milk.

D. The Form and Domain of Ownership Norms

A utilitarian bundle of norms of animal ownership would have served to maximize the aggregate value, for the members of a Stone-Age band, of the potentially conflicting activities of hunting and livestock-raising. In devising their norms, prehistoric people would have been wise to focus not only on the incentives of owners and hunters, but also on the ease of rule application. In some contexts, this might have led to the emergence of relatively mechanical norms, such as the rule of increase.⁸¹

If the members of a closely knit band were to have created any of the ownership norms discussed, they would have been readily able to enforce them against one other.⁸² Some herd animals graze widely. Band members, by allying themselves with other bands to form a tribe, would have been able to extend the sway of a set of ownership norms over a broader territory and thereby reduced the need to actively shepherd to prevent rustling. In some instances, a band or tribe's livestock ownership norms might even have had some binding effect on its enemies. Members of an enemy group might have anticipated that the killing or capture of a recognizably domesticated animal would have enhanced the risk that the animal owner's group would retaliate in some fashion.

When devising norms to govern the ownership of livestock, members of a prehistoric band would not have needed to start from scratch, but instead applied a template of property rules they had developed to handle an analogous challenge. The taming of a physically smaller animal, in fact, had previously put many prehistoric bands to a similar test.

81. Cf. Robert C. Ellickson, *The Entitlements of Unallied Hunters After a Sequential Capture*, 63 U. TORONTO L.J. 126, 132–33 (2013) (providing examples of mechanical norms of animal capture honored by nineteenth-century whalers).

82. See *supra* text accompanying notes 54–55.

IV. STONE-AGE PROPERTY IN DOGS

Zoological archaeologists have recently come to a consensus that the first domesticated species of animal was the dog. Gray wolves, the source species, are asserted to have first evolved into dogs in East Asia c. 15,000 BP, during the latter stages of the most recent Ice Age.⁸³ The peoples of the Fertile Crescent were keeping dogs soon thereafter, long before their transition to herding and agriculture.⁸⁴

Dogs evolved as a result of both self-domestication and selective breeding. Wild members of any species vary in skittishness when near humans. Scientists hypothesize that relatively docile grey wolves began to follow hunter-gatherer bands in order to scavenge killed prey, and thereby became ever more accustomed to human contact.⁸⁵ Humans then could have adopted some of the pups of the tamest of their hangers-on.⁸⁶ A wolf pup acquires its strongest social bonds when it is between three and eight weeks old and during that period would have been relatively easy to socialize.⁸⁷ Complementing this self-selection, Ice-Age people could have engaged in selective breeding, for example, by culling out for survival the wolf-dog pups that promised to be relatively trainable.⁸⁸

A. *Why Dogs Were Valued*

Hunter-gatherers had numerous uses for dogs.⁸⁹ A dog could serve as a sentry that barked when hostile people or animals were approaching, and members of many breeds were able to assist in hunting. Dogs also could have served as bed-warmers, companions, and, in

83. Peter Savolainen et al., *Genetic Evidence for an East Asian Origin of Domestic Dogs*, 298 *SCIENCE* 1610 (2002).

84. *Id.*

85. Carlos A. Driscoll & David W. Macdonald, *Top Dogs: Wolf Domestication and Wealth*, 9 *J. BIOLOGY* 10, 10 (2010); Nicholas Wade, *From Wolf to Dog, Yes, but When?* *N.Y. TIMES*, Nov. 22, 2002.

86. See DOUGLAS BREWER, TERENCE CLARK & ADRIAN PHILLIPS, *DOGS IN ANTIQUITY. ANUBIS TO CERBERUS: THE ORIGINS OF THE DOMESTIC DOG* 22 (2001).

87. *Id.*

88. Over the course of over forty years, Russian biologists in a renowned experiment selectively bred a tame variety of silver fox. See Lyudmila N. Trut, *Early Canid Domestication: The Farm Fox Experiment*, 87 *AM. SCIENTIST* 160 (Mar./Apr. 1999); see also Wade, *supra* note 85.

89. See Wade, *supra* note 85.

emergencies, sources of meat.⁹⁰ The earliest settlers of North America who crossed the Bering Strait land-bridge brought dogs with them, evidence of how highly they valued their canines.⁹¹ And Neolithic-era people were far more likely to bury a dog, than any other animal, in ritualistic fashion, not uncommonly in the same grave as humans.⁹² After agricultural and pastoral activities took root, prehistoric people also could have used members of most breeds to assist in the policing of land boundaries, and, of a few breeds, in the herding of livestock.

B. Norms of Property in Dogs

A system of property in dogs requires the resolution of issues similar to those that must be resolved for a system of property in livestock.⁹³ What entity or entities would Stone-Age people have customarily used for ownership of a dog? The sources of indirect evidence all suggest that, in a prehistoric setting, a dog would have been even more likely than a hoofed animal to have been owned privately by an individual or family, and not communally by a band or tribe.⁹⁴ A dog is more disposed than other animals to bond with a single human master.⁹⁵ Among the famously egalitarian Hadza and !Kung San,

90. See PINKER, *supra* note 15, at 458 (“[H]alf of the traditional cultures that keep dogs as pets kill them, usually for food.”).

91. See Wade, *supra* note 85.

92. On dog burials, see DARCY F. MOREY, DOGS: DOMESTICATION AND THE DEVELOPMENT OF A SOCIAL BOND 150–87 (2010) [hereinafter MOREY, DOGS]; Robert Losey et al., *Canids as Persons: Early Neolithic Dog and Wolf Burials, Cis-Baikal, Siberia*, 30 J. ANTHROPOLOGICAL ARCHAEOLOGY 174 (2011); Darcy F. Morey, *Burying Key Evidence: The Social Bond Between Dogs and People*, 33 J. ARCHAEOLOGICAL SCI. 158 (2006) (including, at 164, three references to the “owner” of a prehistoric dog).

93. See *supra* text accompanying notes 52–79. For example, Stone-Age norms probably would have included the rule of increase, which would have conferred ownership of newborn puppies on the owner of the mother dog.

94. Texts suggest that Ancient Egyptian villagers despised feral dogs, and it is asserted that they still do today. BREWER, CLARK & PHILLIPS, *supra* note 86, at 44. In some contemporary contexts, however, residents of a village may spontaneously contribute to the sustenance of a stray or feral dog. See Adam R. Boyko et al., *Complex Population Structure in African Village Dogs and Its Implications for Inferring Dog Domestication History*, 106 PROC. NAT'L ACAD. SCI. U.S.A., no. 33, at 13903 (Aug. 18, 2009). Absent an affirmative act of adoption by an individual or family, however, these acts of charity do not give rise to a claim of ownership, for example, rights to manage or sell the dog. Cf. Shawn Gorman & Julie Levy, Note, *A Public Policy Toward the Management of Feral Cats*, 2 PIERCE L. REV. 157, 157 (2004) (asserting that 9–12 percent of U.S. households feed free-roaming neighborhood cats).

95. “A faithful dog . . . loves its master much more that it loves itself and certainly more than its master ever can be able to love it back.” Konrad Lorenz, *Forward*, in THE WILD

two tribes that historically have engaged in hunting and gathering, dogs are owned by either an individual or a family.⁹⁶ The same pattern is customary among the Maasai,⁹⁷ the Saami,⁹⁸ the Bedouin,⁹⁹ the Navajo,¹⁰⁰ and Mongolian pastoralists.¹⁰¹ Fragments of historical evidence suggest that ancient Mesopotamians typically owned dogs individually.¹⁰² Some ancient Egyptian paintings portray a dog sitting beneath the chair of a seated person, a clue that ownership likely was individual.¹⁰³ Perhaps the most telling evidence comes from Hutterite communities, whose present-day residents are unwaveringly committed to communal ownership of livestock.¹⁰⁴ Among the Hutterites, dogs typically are owned individually.¹⁰⁵

To incentivize the domestication of a *Lupus* into a Rover, prehistoric people had to provide Rover's owner with methods of authoritatively signaling to others in the band that Rover, while roaming,

CANIDS vii, x (Michael W. Fox ed., 1975); see also MOREY, *DOGS*, *supra* note 92, at 188–207 (discussing the bonding inclinations of dogs).

96. See Nicholas Blurton Jones, Kristen Hawkes & James O'Connell, *Hadza Grandmothers as Helpers*, in GRANDMOTHERHOOD 160, 162 (Eckart Voland ed., 2005) (mentioning that a Hadza boy “had two dogs for several years”); RICHARD B. LEE, *THE !KUNG SAN: MEN, WOMEN, AND WORK IN A FORAGING SOCIETY* 143–44 (1979) (stating that “usually a man owns one or two dogs” and describing an owner's rejection of an offer to buy the owner's hunting dogs).

97. See AGGREY AYUEN MAJOK & CALVIN W. SCHWABE, *DEVELOPMENT AMONG AFRICA'S MIGRATORY PASTORALISTS* 71 (1996) (referring to Maasai women's pet dogs).

98. See Myrdene Anderson, *The Saami Reindeer-Breeders of Norwegian Lapland*, 73 *AM. SCIENTIST* 524, 530 (1985).

99. See Joseph John Hobbs & Fujiyo Tsunemi, *Soft Sedentarization: Bedouin Tourist Stations as a Response to Drought in Egypt's Eastern Desert*, 35 *HUM. ECOLOGY* 209, 211, 219 (2007).

100. See Hal L. Black & Jeffrey S. Green, *Navajo Use of Mixed-Breed Dogs for Management of Predators*, 38(1) *J. RANGE MGMT.* 11 (1985) (indicating that contemporary Navaho own dogs at the family or individual level).

101. See NATASHA FIN, *LIVING WITH HERDS: HUMAN-ANIMAL COEXISTENCE IN MONGOLIA* 213–14 (2011) (stressing ties between a dog and a particular family).

102. See Edmund I. Gordon, *Sumerian Animal Proverbs and Fables: “Collection Five” (Conclusion)*, 12(2) *J. CUNEIFORM STUD.* 43, 56–57 (1958) (citing proverbs that refer to the “master” of a dog). See generally BREWER, CLARK & PHILLIPS, *supra* note 86, at 49–80.

103. See Henry S. Fischer, *Ancient Egyptian Names of Dogs and Other Animals*, 12 *METROPOLITAN MUSEUM J.* 173 (1977) (reproducing two paintings of this ilk). See generally BREWER, CLARK & PHILLIPS, *supra* note 86, at 28–48.

104. See *supra* note 72 and accompanying text.

105. See ROD A. JANZEN & MAX STANTON, *THE HUTTERITES OF NORTH AMERICA* 165 (2010) (mentioning a man's pet Pekingese dog); see also PETER TSCHETTER, *GROWING UP IN A HUTTERITE COLONY* 49–50 (2012) (describing how a man who owned a dog complied with colony financial manager's order that all dogs be killed because they had been harassing sheep).

was not to be captured or killed.¹⁰⁶ This required a revolutionary innovation in property norms. Before the first wolves had been domesticated into dogs, a Stone-Age hunter who saw any animal on the loose typically could have been confident that it was up for grabs.¹⁰⁷ By conspicuously feeding and training a particular wolf-dog, a would-be owner could have signaled to other band members that they should regard that animal to be private property. In addition, an aspiring owner might have provided visual cues to other band members, such as an ear-notch, primitive collar, or trained pattern of tame behavior. Moreover, the earliest owners of wolf-dogs might have engaged in selective breeding, which eventually would have changed the physical appearances of their animals. Thereafter, a hunter considering seizing or slaying a roaming animal with a doglike appearance would anticipate that band mates, in the event of an ownership dispute, would apply norms tailored to the ownership of a domestic animal, not a wild one.

CONCLUSION

In the passage quoted in the epigraph, Friedrich Engels imagined that the members of an ancient tribe or band would have initially owned their herds and flocks communally but later uniformly vested ownership of livestock in “heads of families.”¹⁰⁸ Engels’s narrative is fanciful in several respects. In light of the wide variations among human settings, it is inconceivable that patterns of livestock ownership would have evolved everywhere in the same sequence. Second, Engels’s notion that band or tribal ownership of livestock would have been customary during the earliest period of domestication is implausible. Members of some Neolithic bands likely would have endeavored to own their hooved animals communally. But it is telling that the members of contemporary nomadic herding groups have, for as far back as historical sources disclose, overwhelmingly rejected that option and instead owned livestock as individuals or families.¹⁰⁹

106. *See supra* text accompanying notes 73–78 (analyzing this challenge when livestock were at issue).

107. Stone-Age norms, however, might have prohibited a hunter from capturing or killing a wild animal that a fellow band member had either been chasing or caught in a trap. *Cf. Pierson v. Post*, 3 Cai. 175 (N.Y. Sup. Ct. 1805).

108. *See supra* text accompanying note 1.

109. *See supra* notes 63–68 and accompanying text.

And how might have Engels imagined that members of a Stone-Age band would have owned their dogs, a small element of their means of production? All sources of indirect evidence suggest that dogs during that period would virtually never have been owned communally by an entire band, but instead privately by a family or individual.¹¹⁰ As it happens, when Engels was a boy, his family owned a beloved dog, Mira, and at age 21 he acquired one of his own, Namenloser.¹¹¹ And Jean-Jacques Rousseau, despite his abstract concerns that private property regimes tend to foster inequality and status-seeking, was himself particularly devoted to the dogs that he owned in succession. The authors of the biography, *Rousseau's Dog*, feature two, Turc and Sultan.¹¹² Like Engels and Rousseau, staunchly egalitarian groups such as the !Kung San and the Hutterites have ended up opting for private ownership of dogs.¹¹³ Might not the people of the Neolithic era have done the same? And, after they had first domesticated livestock, adopted a similar ownership regime for their hoofed animals as well?

110. See *supra* notes 96–105 and accompanying text.

111. “I now have a dog whom I got from August Bredt of Barmen when he left here. It’s a handsome young spaniel, much bigger than our dear Mira and quite crazy.” Letter from Friedrich Engels to his sister Marie Engels (Aug. 8, 1842), available at http://www.marxists.org/archive/marx/works/1842/letters/42_08_08.htm.

112. DAVID EDMONDS & JOHN EIDINOW, *ROUSSEAU’S DOG: TWO GREAT THINKERS AT WAR IN THE AGE OF ENLIGHTENMENT* 33 (2007) (describing Rousseau’s devotion to Turc); *id.* at 2–3 (recounting Rousseau’s travel with his “beloved dog” Sultan when he exiled himself in England in 1766 under the sponsorship of David Hume); see also William Kessen, *Rousseau’s Children*, 107 *DAEDALUS* 155, 156 (Summer 1978). Rousseau was far more interested in dogs than children. He ordered his longtime companion, Thérèse Le Vasseur, to abandon each of their five newborns at a founding hospital. EDMONDS & EIDINOW, *supra*, at 11–12.

113. See *supra* notes 96 & 105 and accompanying text.