ARTICLES

ELLICKSON'S PARADOX: IT'S SUICIDE TO MAXIMIZE WELFARE

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INTRODUCTION

Not too long ago, twenty-nine reindeer were deposited on St. Matthew Island, one of the Pribilof Islands off the coast of Alaska. Over the course of several years, and in the absence of natural predators, this herd of reindeer flourished, and their population exploded. Living on an isle without predators, nary a sign of a grizzly bear or man, seemed the perfect environment for the reindeer. One day, however, the reindeer population exceeded the carrying capacity of the island. In less than a year, the population imploded from more than 6000 to a scant forty-two.[1] Left to their own devices, the reindeer destroyed themselves.

The story of St. Matthew Island is not simply an example of animal behavior, but it also epitomizes the relationship between humankind and Mother Earth. Humans are extraordinarily efficient within close-knit groups (our herds) at exhausting resources and bringing the group perilously close to extinction, at least until an external force imposes some restraint on the group's behavior. This is especially true when a group's identity is integrally related to resource extraction or exploitation. Fishermen, for example, are very good at wresting fish away from their habitat, and they can do so with staggering speed and in vast quantities.

The cost of such action is, at least in part, suicide. Just as with the reindeer of St. Matthew island, if the world population

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[1] *See* PAUL HAWKEN, THE ECOLOGY OF COMMERCE: A DECLARATION OF SUSTAINABILITY 24-25 (1993).

continues to rise,[2] so too will human demand for the same limited resources that sustain our existence, unless human behavior changes. Our resource extraction rate will exceed (if it has not already) the rate at which the earth can replenish these vital resources. If our behavior is rational, in the sense that the "law and economics" scholars employ, it will be tragic.

Today's marketplace encourages and rewards suicidal behavior. The more efficient one's method of extraction of common resources, such as fish, the better one is at one's job, the higher the profits, and the greater the rewards. The phenomenon of increasing efficiency to yield higher profits is what "law and economics" scholars call rational behavior, or the maximization of welfare. It is precisely this model of rational behavior that resulted in the reindeer's demise.

The rational actor model of rationality presumes that individuals pursue self-interested goals and rationally choose, by themselves rather than collectively, among various means for achieving these goals. Thus, when it comes to gathering water from a well from which others also draw their water, the tendency of the rational actor is to get as much for himself as possible out of fear that others will suck the well dry. To choose rationally among the various means of getting your share of water is to opt for the method that delivers the most of the goal sought in the least costly manner; it is to maximize one's welfare.

So presented, rational behavior is what drives Garret Hardin's now-famous article, *Tragedy of the Commons*.[3] If human

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[2] It has taken only 50 years to double the world's population to 5.5 billion. We are due to reach the 11 billion mark within the next 50 years. *See* Edward O. Wilson, *Is Humanity Suicidal?*, N.Y. TIMES, May 30, 1993, § 6 (Magazine), at 24. More recently, however, population prognosticators have estimated the global population in 2050 at approximately nine billion. *See* Ben J. Wattenberg, *The Population Explosion Is Over*, N.Y. TIMES, Nov. 23, 1997, § 6 (Magazine), at 62. Despite this downward estimation, Mr. Wattenberg notes that "the case for environmental realism remains powerful." *Id.* at 63.

[3] Garret Hardin, *Tragedy of the Commons*, 162 SCIENCE 1243 (1968). Chronologically, Hardin was not the first contemporary academic to recognize the tragedy of the commons. Economist Harold Demsetz illustrated that the problem of the commons, once distilled to its essence, is an issue of coordination. *See* Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV.: PAPERS & PROC. 347 (1967). Of course, the community would be better off in the aggregate if, at some point, its members could agree to conserve. However, negotiating and coordinating such an agreement is extraordinarily difficult because of the high transaction costs. For example, with common property, Demsetz explained that community members would constantly engage in negotiations about how to treat the commons, item-by-item and case-by-case,

behavior remains unchanged, there will come a time when the stock of any commonly-held resource, such as water, oil and gas, air, fisheries, wetlands, or the ozone layer, is threatened with depletion. In some cases, that time is now. The timber industry has destroyed millions of acres of America's silva. What was once a country where Christopher Columbus noted that a squirrel would never need set foot on the earth has become blotted with desolate fields of clear-cuts.[4] Many of North America's fisheries are too depleted to permit sport fishing, let alone fishing by large commercial vessels.[5] The same phenomenon is occurring with our water supply—we drink from the bottle, where once it was from the tap—and with air, as asthmatics die in numbers far greater than ever.[6] These suicidal tendencies are

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because each member is free to exploit the absence of an agreement to the contrary. *See id*. at 348-49.

[4] *See generally* Trilby C.E. Dorn, Comment, *Logging Without Laws: The 1995 Salvage Logging Rider Radically Changes Policy and the Rule of Law*, 9 TUL. ENVTL. L.J. 447, 449-60 (1996) (describing the history of the timber laws and management policies and the concern over growing clear-cutting and destruction as a precursor to further regulation).

[5] *See generally Oceans of Trouble*, TIMES-PICAYUNE (New Orleans), Mar. 24-31, 1996 (an eight-part 1996 Pulitzer Prize winning series documenting the current state of fisheries).

[6] *See* AMERICAN LUNG ASS'N, ANNUAL REPORT (1994) (indicating that the death rate from air pollution is growing faster than any one of the five leading causes of death). As a testament to the growing numbers, in April 1998 a group of doctors and asthmatic children erected a 16-foot high tombstone on the Mall in Washington, D.C. to commemorate the many Americans who have died from air pollution. Addressing itself to the growing studies and literature documenting the rising health risks the air poses to children and asthmatics, the EPA has proposed new National Ambient Air Quality Standards for ozone and particulate matter. *See* 61 Fed. Reg. 65,638 (1996) (to be codified at 40 C.F.R. pt. 50) (proposed Dec. 13, 1996). The new air standard, however, will protect only 95% of American children from getting cancer caused by particulate pollution. *See id.* Such a standard, knowingly exposing five percent of the country's children to a greater risk of cancer than others, is still controversial as overprotective. For a good discussion and running commentary on one community's response to the health risks posed by air pollution and the regulatory effects on the local industry, see Karen Dorn Steele's articles addressing the banning of crop burning in Eastern Washington despite the fact that a good portion of the community is supported by the wheat industry. *See, e.g.*, Karen Dorn Steele, *Carcinogens in Grass Smoke, EWU Researcher Details Harmful Chemicals*, SPOKESMAN REV., Nov. 9, 1996, at A1, *available in* 1996 WL 10794602 (reporting on a ground-breaking study, the first of its kind in the country, documenting the harmful effects attributable to crop and field burns by farmers; the emission is benzopyrene—a known human carcinogen); Karen Dorn Steele, *Lung Diseases Exceed Averages*, SPOKESMAN REV., May 8, 1996, at A1, *available in* 1996 WL 7972729 (describing the national asthma rates and their recent increases and noting that the rates in Spokane, Washington are 20 times higher than nor-

part of the cost of rational behavior and have not gone unnoticed.[7]

Despite the magnitude of these costs, and in seeming defiance of Hardin's theory, Professor Robert C. Ellickson has hypothesized that within close-knit groups, humans develop and maintain norms governing their workaday affairs that are welfare maximizing for the group.[8] Ellickson's hypothesis has been very influential as norms and human practices become the focus of legal theory. It has begun to take hold as a building block beside Coase's theorem in the "law and economics" movement of today.[9]

This "hypothesis" has become more than a hypothesis; scholars are now citing it for the actual fact that norms maximize welfare. Their articles, which recommend solutions to legal problems and give guidance to multitudes of lawyers, judges, and legislators, are based on the notion that what Ellickson concludes is true.[10] Despite the axiom of a hypothesis being conjecture un-

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mal; air pollution is the likely cause); Karen Dorn Steele, *Pullman Man's Death Ignites Policy Debate*, SPOKESMAN REV., Feb. 25, 1996, at B1, *available in* 1996 WL 7968645 (reporting on the death of a 21-year-old man who died from an asthma attack just hours after the heaviest field burning of the year).

[7] *See, e.g.*, Wilson, *supra* note 2, at 26 ("[T]he human species is an environmental abnormality. It is possible that intelligence in the wrong kind of species was pre-ordained to be a fatal combination for the biosphere. Perhaps a law of evolution is that intelligence usually extinguishes itself.").

[8] *See* ROBERT C. ELLICKSON, ORDER WITHOUT LAW 167 (1991) [hereinafter ORDER WITHOUT LAW].

[9] *See, e.g.*, Symposium, *Law, Economics, and Norms*, 144 U. PA. L. REV. 1643 (1996).

[10] *See, e.g.*, Eyal Benvenisti, *Collective Action in the Utilization of Shared Freshwater: The Challenge of International Water Resources Law*, 90 AM. J. INT'L L. 384, 387 (1996) (accepting Ellickson's hypothesis and using it to explain the actual norms in Israel); Lisa Bernstein, *The Silicon Valley Lawyer as Transaction Cost Engineer?*, 74 OR. L. REV. 239, 254 n.68 (1995) (accepting Ellickson's hypothesis as proof that norms maximize welfare in general); Julie E. Cohen, *A Right to Read Anonymously: A Closer Look at "Copyright Management" in Cyberspace*, 28 CONN. L. REV. 981, 995-96 (1996) (indicating that Ellickson's work is a "leading" study and accepting his hypothesis as true while analyzing how to regulate Cyberspace); Robert D. Cooter, *Decentralized Law for a Complex Economy: The Structural Approach to Adjudicating the New Law Merchant*, 144 U. PA. L. REV. 1643, 1662, 1677 (1996) (taking Ellickson's book as proof that efficiency is a required building block of norms); Richard L. Hasen, *Voting Without Law?*, 144 U. PA. L. REV. 2135, 2138 n.1 (1996) (labeling Ellickson's work as "pathbreaking" and citing *Order Without Law* as proving the proposition that close-knit groups maximize welfare); Milton Heumann & Jonathan M. Hyman, *Negotiation Methods and Litigation Settlement Methods in New Jersey: "You Can't Always Get What You Want"*, 12 OHIO ST. J. ON DISP.

til tested, these prominent legal writers are premising their theories, papers, and, to a large extent, legal policy on the idea that norms maximize welfare. Even Ellickson has seemingly forgotten his tenuous position in the realm of science.[11] Such scholars might be building castles made of sand. To borrow a phrase from the economist George Stigler, law professors possess their full share of the common ability to invent and commit errors. Per-

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RESOL. 253, 281-82 (1997) (using Ellickson's hypothesis as a theory to predict the behavior of New Jersey civil litigators); Jonathan R. Macey, *Public Land and Private Ordering and the Production of Legitimate and Illegitimate Legal Rules*, 82 CORNELL L. REV. 1123, 1125 (1997) (announcing that Ellickson proved that certain groups' norms maximize welfare and using this conclusion as the foundation for his article); Richard H. McAdams, *Cooperation and Conflict: The Economics of Group Status Production and Race Discrimination*, 108 HARV. L. REV. 1003, 1026-27 (1995) (citing Ellickson for the proposition that norms enhance group welfare and applying such a hypothesis to the racial discrimination context); Richard H. McAdams, *Group Norms, Gossip, and Blackmail*, 144 U. PA. L. REV. 2237, 2265 n.78 (1996) (referring to *Order Without Law* as a "seminal work of legal scholarship" proving the proposition that norms tend to be efficient); Richard H. McAdams, *The Origin, Development, and Regulation of Norms*, 96 MICH. L. REV. 338, 339-40 (1997) (holding out Ellickson's work as the exemplar of the new norm theorists); Robert P. Merges, *Contracting Into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 CAL. L. REV. 1293 (1996) (accepting Ellickson's findings and theory without comment and using it as structural support for his theory about intellectual property rights); Richard H. Pildes, *The Destruction of Social Capital Through Law*, 144 U. PA. L. REV. 2055 (1996) (accepting Ellickson's hypothesis as proved in his "pathbreaking" work); Edward B. Rock & Michael L. Wachter, *The Enforceability of Norms and the Employment Relationship*, 144 U. PA. L. REV. 1913, 1914-16 (1996) (citing Ellickson for the proposition that norms are welfare maximizing and developing a theory based, in part, on Ellickson's hypothesis about employment relationships); Cass R. Sunstein, *The Expressive Function of Law*, 144 U. PA. L. REV. 2021, 2053 n.33 (1996) (citing Ellickson for the proposition that the norms of close-knit groups are welfare maximizing); Ellen A. Waldman, *Identifying the Role of Social Norms in Mediation: A Multiple Model Approach*, 48 HASTINGS L.J. 703, 722 n.78 (1997) (concluding that Ellickson's *Order Without Law* empirically demonstrated that norms maximize welfare); Mark D. West, *Legal Rules and Social Norms in Japan's Secret World of Sumo*, 26 J. LEGAL STUD. 165, 198 (1997) (citing Ellickson for "show[ing] in his ground-breaking work *Order without Law*" how close-knit groups maximize welfare); Note, *The Right of Owners of Servient Estates to Relocate Easements Unilaterally*, 109 HARV. L. REV. 1693, 1702 n.59 (1996) (adopting Ellickson's language and theory in making recommendations about certain aspects of property law and emphasizing that many theorists accept Ellickson's hypothesis).

[11] *See* Robert C. Ellickson, *Property in Land*, 102 YALE L.J. 1315, 1320 (1993).

haps their most common error is to believe other law professors.[12]

This Article will "test" Ellickson's hypothesis against the tragedy of the commons scenario. Although it is fair to wonder whether Ellickson's hypothesis may be tested at all,[13] this Article critiques his hypothesis in the manner Ellickson himself recommends—against the backdrop of the whaling fishery—using the same close-knit group he used to support it. Part I explains Ellickson's findings in Shasta County, lays out his hypothesis and canvasses its underpinnings, and points out several inherent problems to testing this hypothesis. Part II outlines the whaling norms that Ellickson highlights in order to prove his hypothesis. In Part III, this Article tests his hypothesis against the tragedy of the commons. In particular, it uses the same close-knit group, whalers, and shows that their norms have produced something less than welfare maximization. Part III also presents the fisheries, timber, and grazing industries as additional counter-examples in which Ellickson's hypothesis fails to make accurate predictions. Part IV formulates rejoinders available to Ellickson and responds to these concerns. Part V analyzes some of the limits to Ellickson's hypothesis even if one accepts it as true. This Article concludes by suggesting that Ellickson's hypothesis ought to be rejected because it does not explain all of the norms within the close-knit group that Ellickson claims prove his hypothesis. At the very least, one ought to be chary before relying on his hypothesis as a positive theory about human norms; it is not the only explanation.

I
ELLICKSON'S HYPOTHESIS

A. *The Shasta County Experiments*

Professor Ellickson recently put Ronald Coase's theorem, the most discussed proposition in the law today,[14] to the test and

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[12] *See* Steven N.S. Cheung, *The Fable of the Bees: An Economic Investigation*, 16 J.L. & ECON. 11, 11 (1973) (quoting George J. Stigler's remarks about economists rather than law professors).

[13] *See* Mark Cooney, *Why Is Economic Analysis So Appealing to Law Professors?*, 45 STAN. L. REV. 2211, 2222-27 (1993) (arguing that Ellickson's hypothesis is not falsifiable).

[14] *See* Fred R. Shapiro, *The Most-Cited Law Review Articles Revisited*, 71 CHI.-KENT L. REV. 751, 759 (1996) (anointing Ronald H. Coase's *The Problem of Social Cost* as the number-one-cited article).

Coase lost. In his seminal article, Coase developed much of his theorem through a hypothetical dispute between a rancher and a farmer.[15] He compared the effects that two different legal regimes would have on the parties. Under one legal system, the farmer must bear the costs of trespassing cattle, while under the other, it is the rancher—the owner of the trespassing cattle—who must pay for the damage caused by his animals.[16] Coase concluded that people would bargain around the law to reach the most efficient outcome no matter which clearly-defined entitlements regime was operative.[17] Seemingly taking a cue from Coase, Ellickson sought to analyze and examine more closely the hypothetical farmer/rancher relationship. Ellickson, however, studied it for real rather than theorizing from the armchair of a professor's office.[18] Thus, like many an Easterner before him, Ellickson loaded up and moved West to explore the frontier and the great unknowns. He settled in Shasta County, California.

Shasta County is a picturesque rural community in Northern California just east of Lake Shasta and closer to rural Oregon than any major metropolis. It is also one county in California which the County Commissioners have designated as part "open range" and part "closed range."[19] Ask any rural Westerner and you will discover that, in general, "open range" means that the landowner bears the cost of damages done by trespassing cattle, while "closed range" means that it is the rancher who must pay for the damage caused by his wayward cattle.[20] It is, for all practical purposes, Coase's famous hypothetical.

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15 *See* Ronald H. Coase, *The Problem of Social Cost*, 3. J.L. & ECON. 1, 2-8 (1960).

16 *See id.*

17 *See id.*

18 Ironically, Coase chastised earlier economists and philosophers for their armchair theorizing about hypothetical lighthouses. *See* Ronald Coase, *The Lighthouse in Economics*, 17 J.L. & ECON. 357, 357-60 (1974) (criticizing John Stuart Mill, Arthur C. Pigou, Paul Samuelson, and Henry Sidgwick for failing to investigate who might supply lighthouses, other than the government, which was commonly thought of as the only possible supplier of such public goods).

19 *See* Order Without Law, *supra* note 8, at 3, 42-45 (defining open and closed ranges). Ellickson does not note how many other California counties also have both open and closed ranges. *See generally id.* pt. I.

20 *See id.* However, as far back as 1885, the California Supreme Court in *Meade v. Watson*, 8 P. 311 (Cal. 1885), explained that "[a]t the common law no man is bound to fence his lands against the cattle of another, but each owner is bound to restrain them, and is answerable for any trespass they may commit upon the lands of another." *Id.* at 312.

Ellickson's experiment looked at three potential legal disputes: first, who bears the cost of damage caused by trespassing cattle?;[21] second, how are costs allocated for fencing property boundaries?;[22] and third, who pays for the damage in auto accidents caused by cattle on the highway?[23] According to California law, the County's designation of a range as either "open" or "closed" is controlling only in the first scenario, the cattle trespass. There is a California statute that governs the allocation of costs for boundary fences.[24] Car accidents are dealt with primarily by the garden variety rules of negligence, regardless of the kind of range in which the accident occurred.[25]

After numerous years of research, seventy-eight interviews, and poring over mounds of government documents, Ellickson concluded that Coase was right, at least in part. Ellickson found that the ranchers did use the same liability rule in both the open and the closed range, namely, that the cattle owners are strictly liable for any damage caused by their wayward cattle.[26] However, contrary to Coase's theory, Ellickson found that the neighbors neither bargained for this solution nor did they look to their positions of legal entitlement.[27]

It would seem that Ellickson's title, *Order Without Law*, indeed delivered. What he found was that the neighbors of Shasta County resolved these disputes without reference to the law, frequently in ignorance of the law, and sometimes in spite of it.[28] For example, in the typical cattle trespass case, the trespassee telephoned the offending rancher and informed him that his cattle

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[21] *See* ORDER WITHOUT LAW, *supra* note 8, at 40-64.

[22] *See id.* at 65-81.

[23] *See id.* at 82-103.

[24] *See* CAL. CIV. CODE § 841 (West 1997), *cited in* ORDER WITHOUT LAW, *supra* note 8, at 67. Section 841 provides, in pertinent part: "Coterminous owners are mutually bound equally to maintain: . . . (2) The fences between them, unless one of them chooses to let his land lie without fencing; in which case, if he afterwards incloses [sic] it, he must refund to the other a just proportion of the value, at that time, of any division fence made by the latter." CAL. CIV. CODE § 841. As explained by Ellickson, "[r]estitution is thus due only when the later enclosure has actually included a previously built fence as part of his own enclosure." ORDER WITHOUT LAW, *supra* note 8, at 67.

[25] *See* ORDER WITHOUT LAW, *supra* note 8, at 88. Of course, because not one accident case that Ellickson studied went before a jury, it is impossible to say what a jury might have thought of one's duty of reasonable care in an open versus a closed range.

[26] *See id.* at 53.

[27] *See id.* at 48-53.

[28] *See id.* at 48-50, 70-71.

were loose, much in the same way you might tell your neighbor that his dog is out again. The rancher then thanked the caller, apologized for the harm, and collected his cattle.[29] Similarly, in the fencing disputes (which were also costly events),[30] Ellickson discovered that not one cattle rancher paid a farmer to build a fence around his crops.[31] Instead, when a rancher and a farmer shared a common boundary, the rancher built the fence.[32] Only when a rancher shared a boundary with another rancher did the neighbors split the costs of fence maintenance, divvying up the responsibilities through in-kind exchanges rather than cold, hard cash.[33] The portion that each rancher owed for the communal fence was based upon the number of cattle he owned.[34] Again, the individual accounts were settled without reference to the law.[35] Thus, Ellickson found that, to the residents of Shasta County, the law was, in may ways, irrelevant.[36]

Based upon his study of how the members of Shasta County decided these ranching issues, Ellickson concluded that community norms control human interaction more directly than law.[37] Ellickson opined that people capitalized on informal guidelines and procedures, the norms of the society, for settling potential legal disputes rather than resorting to lawyers or the threat of

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[29] *See id.* at 53.

[30] According to Ellickson, the cost of a new barb-wire fence was one dollar per linear foot. *See id.* at 65. The labor is roughly equal. Thus, the total cost of fencing one mile is roughly $5000. Of course, maintenance costs are different but they, too, are very costly, especially on a rancher's budget.

[31] *See id.* at 65-81 (documenting the fencing practices of the community).

[32] *See id.* at 72-73. The rancher also shouldered the entire burden when the adjoining landowner was the government. *See id.* at 73. The farmer did, however, build fences when abutting rangeland, but only when he abutted summer range and the cattle rancher did not own the land.

[33] *See id.* at 78 ("[C]ash compensation seems to be permitted for out-of-pocket costs, but not for personal labor performed.").

[34] *See id.* at 69.

[35] *See id.* at 72-79.

[36] *See id.* at 71-72 (discussing the "norm of proportionality").

[37] *See id.* at 53, 71-73. *But see id.* at 95-103 (indicating that the law may bear more directly on the car/cattle disputes because insurance companies, agents, and adjusters settle claims readily; however, it may be that the norm is the purchase of insurance and deference to the insurance company on how to handle the matter—that is the purpose of insurance); *see also* Paul J. Heald & James E. Heald, *Mindlessness and Law*, 77 VA. L. REV. 1127 (1991) (arguing that ignorance of the law does not refute the theory of "law and economics" because people are either unconsciously influenced by legal rules or persuaded by others who are so influenced).

formal legal action.[38] Moreover, he proclaimed that there was an overarching norm of neighborliness, or "cooperation among neighbors," that guided human interaction in Shasta County.[39] Ellickson suggested that the community maintained this norm of cooperation because of the indefinite and on-going relationships between neighbors.[40] In fact, he suggested that the indefinite period of time and potentially infinite number of inter-neighbor interactions enabled the residents of Shasta County to maintain a mental balance sheet, posting debits for losses imposed and credits for benefits received.[41]

B. *The Hypothesis*

In explaining the behavior he observed in Shasta County, Ellickson found several major theories inadequate. He immediately rejected the "law and economics" approach because, as a theory, it was too tied to legal centrism and its accompanying idea that order flows from the state.[42] Ellickson also rejected "law and society" theorists because their theory was too incomplete.[43] Although recognizing the law's limited role in everyday life, "law and society" failed to explain why and how people develop norms.[44]

With his book and theory, Ellickson has staked out new territory. He has boldly asserted that his study and hypothesis mark the beginnings of a new movement, a hybrid of law, economics, and sociology that will be "the envy of other social scientists."[45] Based upon his experiment and observations of the norms that governed the interactions of the Shasta County residents, using game-theory and a rational choice model of human decision-making, Ellickson concluded that "members of a close-knit group develop and maintain norms whose content serves to maximize the aggregate welfare that members [of the close-knit

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[38] *See* ORDER WITHOUT LAW, *supra* note 8, at 81 ("Fence-cost disputants in Shasta County rarely turn to third parties for help.").

[39] *See id.* at 52-56.

[40] *See id.* at 55-56.

[41] *See id.*

[42] *See id.* at 137-47.

[43] *See id*. at 158.

[44] *See id.* at 147-55.

[45] *Id.* at 147.

group] obtain in their workaday affairs with one another."[46] He labeled this his "hypothesis."[47]

Typically, when conducting a scientific study, one presents a hypothesis, constructs an experiment that will test the hypothesis (implementing the necessary sampling precautions and controlling the appropriate variables), runs the experiment, and then collects the data. Ultimately, one analyzes the data, checking them against the hypothesis to determine whether the data support the hypothesis.[48] Ellickson did not conduct his Shasta County experiments with social norms in mind. Instead, he was concerned primarily with testing the validity of the Coase Theorem.[49] Although a post hoc rationalization like Ellickson's hypothesis is not bad science per se, it is overly opportunistic and significantly increases the possibility of false positives (Type II errors).[50] This possibility is further magnified by the relatively small size of his sample pool. Readers of Ellickson must be made aware that his hypothesis is still just that—a hypothesis that requires testing.[51]

C. *Testing the Hypothesis*

According to Ellickson, there are three threshold criteria for his hypothesis for group norms to hold true: (1) the group must be closely-knit, (2) the only welfare sought to be maximized is that of the group, and (3) the application of the hypothesis is

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[46] *Id.* at 167 (emphasis omitted).

[47] Although labeled a hypothesis, Ellickson and others have mistakenly accepted it as something more, sometimes as fact. *See supra* notes 10-11.

[48] *See* GEOFFREY KEPPEL & WILLIAM H. SANTLEY, JR., INTRODUCTION TO DESIGN AND ANALYSIS: A STUDENT'S HANDBOOK (1980). Although such a Popperesque, falsification-based approach is not necessary for scientific inquiry, it is the approach that Ellickson adopts in his study of Shasta County. *See* ORDER WITHOUT LAW, *supra* note 8, at 182-83. Other possible explanations or scientific approaches might have included chaos theory, paradigm revolutions, or progressive research programs.

[49] *See* ORDER WITHOUT LAW, *supra* note 8, at vii.

[50] *See* KEPPEL & SANTLEY, *supra* note 48, at 138-41.

[51] Scientific exploration and experimentation requires more than Ellickson has given because humans are notoriously poor at detecting correlation accurately and thus cannot, without design aids and experiments, test hypotheses. *See* JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES (Daniel Kahneman et al. eds., 1982); Karl Popper, *The Myth of Inductive Hypothesis Generation*, *in* ON SCIENTIFIC THINKING 72 (Ryan D. Tweeney et al. eds., 1981).

restricted to workaday affairs among the group members.[52] Thus, unless one's study respects all three criteria, it cannot be said to test Ellickson's hypothesis. Of course, because this Article uses the same close-knit group that Ellickson uses, the analysis here cannot be criticized for a failure to meet these thresholds. More precisely, it cannot be criticized on such grounds by Ellickson.

1. *Welfare Measurements*

Central to Ellickson's hypothesis is an objective conception and definition of welfare maximization. He defines welfare maximization as cooperative behavior among group members that actually obtains "the largest total objective payoff available, regardless of how individual players happen to share in that total."[53] In other words, group nirvana is achieved when group members' expressions of value (as manifested by the aggregation of the members' behavior) is more valuable than any other expression of value plus the "deadweight losses," i.e., those losses that result from a failure to take alternative action that would have yielded greater potential gains.[54] Another way of conceptualizing deadweight losses is as the amount by which one failed to obtain a surplus had the resource been allocated differently.[55]

As conceived, Ellickson's hypothesis requires measuring human welfare from actual behavior. Ellickson believes that third-party enforcers, such as "norm-makers," cannot measure

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[52] Ellickson does not define workaday norms. Instead he explains that such norms are the norms that regulate everyday matters and are indicated only by comparison to "foundational rules," i.e., those rules that permit exchanges (like the laws of property or any of the distributive norms, such as charity). *See* ORDER WITHOUT LAW, *supra* note 8, at 174. Consequently, Ellickson has a fourth prerequisite that must be satisfied before one can test his hypothesis: a society must have foundational rules. Indeed, it is this fourth criterion that may permit Ellickson to argue that the numerous anthropological studies about feuding do not provide a contrary example to his hypothesis. *See* Cooney, *supra* note 13, at 2219-20 (listing studies). This is, however, no retort against examples of dueling in England or gang norms here in America. *See id.* at 2220 (noting Ellickson's failure to meet this challenge); *see also* Jon Elster, *Norms of Revenge*, 100 ETHICS 862 (1990) (arguing that the existence of norms like revenge within close-knit groups proves that norms are not rational; hence, not all norms are welfare maximizing).

[53] ORDER WITHOUT LAW, *supra* note 8, at 159.

[54] *See id.* at 171-72.

[55] *See* Robert D. Cooter, *Against Legal Centrism*, 81 CAL. L. REV. 417, 423-24 (1993).

utility or subjective cardinal valuations interpersonally.[56] They can, however, measure welfare as the objective manifestation of satisfaction or preference between two options.[57] Indeed, according to Ellickson, as long as the close-knit society permits members to enter into transactions, these transactions are sufficiently data rich to supply the norm maker(s) with enough information to assess the group's welfare objectively.[58]

The absence of market price indices of individual valuation or other independent measures, however, renders impossible the task of making objective interpersonal comparisons of preferences. What does it mean to suggest that a group's norm of *X* (e.g., playing softball on Saturday) is welfare maximizing if welfare maximization is measured by the fact that a softball game was played on Saturday, i.e., the presence of *X*? Facially, it is tautological: *X*'s welfare maximization is evidenced by the exist-

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[56] *See* ORDER WITHOUT LAW, *supra* note 8, at 171-72.

[57] *See id.* at 172. This is a controversial position to take. It is not at all certain that one's action validly reflects one's "preference" or true self-interest without a consideration of the context in which the decision was made. For example, a "Hobson's choice" does not reveal anything about the preferences of the decision-maker, since there are no real options. What it does reflect, to be certain, is an individual *choice*. But even a choice made in the context of many options reflects nothing about what motivates or informs it, nor does the fact that the choice was made enable an observer to predict future behavior, absent an understanding of the exact circumstances underlying the decision. *See* ELLIOT ARONSON, THE SOCIAL ANIMAL 187-89 (6th ed. 1992); Amos Tversky & Itamar Simonson, *Context-Dependent Preferences*, 39 MGMT. SCI. 1179, 1187-88 (1993); *see also* Cass R. Sunstein, *Social Norms and Social Roles*, 96 COLUM. L. REV. 903, 931-47 (1996) (noting the complexities and difficulties in separating out choices, preferences, norms, and contexts to identify the positive data points that would allow for such welfare measurements to be taken). In noting the inherent risk and serious potential for confounding the variables (and perhaps the impossibility of performing the calculus at all), Sunstein writes:

> An implicit . . . state of nature theory seems to lie at the heart of many distinctions between social norms and rationality, or between social norms and self-interest. That is, the distinction seems to make sense only on the basis of some supposition about what people would do in the some natural state lacking social norms. But we are not likely to be able to make much progress in that way. As I have suggested, a positive theory of human rationality will likely do best if it sees norms as taxes on or subsidies to choice, and hence part of the array of considerations that people face in making decisions.

Id. at 946-47.

[58] *See* ORDER WITHOUT LAW, *supra* note 8, at 172 ("[T]he objective burden Dennis Osborne bore in taking on additional boundary-fence maintenance is a rough measure of how much he valued his neighbor's service . . . ."). The data include prices, if available; otherwise, human action.

ence of *X*. It does not mean that *X* is preferred to *Y* (say, playing soccer on Saturday) and, more importantly, it does not provide proof that *X* is more welfare maximizing than *Y (*unless group choices are defined to be welfare maximizing) absent some welfare criteria, *A*, that can be measured by observing *X* and observing *Y* and then comparing the results. Only then can one determine whether *X* has more *A* than *Y* does.

Even assuming that an observer knows the welfare maximizing ranking as between *X* and *Y (*e.g., *X* is preferred to *Y*, or *Y* is preferred to *X*) for every member of the close-knit group, the addition of any third variable, *Z (*e.g., reading a book on Saturday), renders the comparison between any two variable preferences woefully indeterminate.[59] Consider the following figure:

Members of a Close-Knit Group	Ordinal Preferences		
	1	2	3
Al	X	Y	Z
Blythe	Y	Z	X
Charlie	Z	X	Y

As one can see, collectively the group has no preference. Al prefers *X* to *Y*, and Blythe prefers *Y* to *Z*, while Charlie prefers *Z* to *X*.[60] To take the next step, as Ellickson does, and aggregate these preferences so as to represent the close-knit group's ordering of preferences, is to fall captive to Arrow's impossibility theorem,[61] which "tells us that we cannot in general expect to construct a social ranking on the basis of individual rankings. . . . [W]e cannot hope to piece together the interpersonal compari-

[59] *See, e.g.*, Jon Elster, Solomonic Judgments 90-92 (1989) (discussing the impossibility theorem and cyclical preferences).

[60] *See id.*

[61] Kenneth Arrow's famous theorem shows the impossibility of a social welfare function (i.e., a ranking of all of society's preferences) that aggregates over individual preferences, provided that five basic assumptions are met. The first assumption is that all of the individual preference rankings are complete and transitive. The second assumption is that the domain for the social welfare function is unrestricted, such that every individual preference ranking is allowable. The third assumption is that if everyone prefers *X* to *Y*, then the social welfare function will rank *X* above *Y*. The fourth assumption is that the social welfare function ranks *X* and *Y* only on the basis of the individual preferences over *X* and *Y* (i.e., without regard to irrelevant alternatives). The final assumption is that no single individual's preference ranking determines the social welfare ranking. Arrow showed that no such social welfare function exists. *See generally* Peter C. Ordeshook, Game Theory & Political Theory 53-65 (1986).

sons made by different persons into one consistent ranking with a claim to be the social comparison."[62] As between any alternative norms that might enhance welfare above the status quo, the absence of an independent measurement leaves it indeterminate as to which one would be the best for the group. For Ellickson to derive meaning from a cyclical voting structure, in which the group's preference is indeterminate, is completely inapposite. Furthermore, such a cycle (as exhibited by Al, Blythe, and Charlie) is not rare. Instead, Arrow's theorem shows such cycles to be endemic to any complex system.

Ellickson clearly does not share this view on preference aggregation, although he duly notes the difficulties.[63] Ellickson concludes that the only possible measurement, although "crude," is not utility or group efficiency (as one might expect), but it is instead *welfare* or the "value of satisfaction of group members" as reflected in their actions or behavior.[64]

Assuming for the moment that Ellickson has a way around Arrow's theoretical conundrum, he attempts to capitalize on the tools of game-theorists and the presumption of rational behavior

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[62] *Elster, supra* note 57 at 109; *see also* JOHN RAWLS, A THEORY OF JUSTICE 175 (1971) ("[T]he worth to a person of the circumstances of others simply cannot be assessed."). *See generally* Russell Hardin, *Difficulties in the Notion of Economic Rationality*, 23 SOC. SCI. INFO. 453-67 (1984) (examining the multiple problems of strategic interaction and value theories); Sunstein, *supra* note 57, at 942-44 (citing scholarship and noting the impossibility of measuring preferences by behavior).

[63] *See* ORDER WITHOUT LAW, *supra* note 8, at 170-74; Robert C. Ellickson, *The Case for Coase and Against "Coaseanism"*, 99 YALE L.J. 611, 613-14 (1989).

[64] ORDER WITHOUT LAW, *supra* note 8, at 172. The advantage for Ellickson here is that welfare, unlike utility, can be ordinal rather than cardinal. It is not something of which we want more; we just want to obtain the highest-ranked preference as possible. For example, to suggest that one prefers coffee to hot chocolate is an ordinal ranking, but to suggest that one prefers it twice as much is cardinal because it measures the difference—it is the cardinal ordering as between persons that is rejected by most economists. For a good discussion of this problem, norms, and law, see Russell Hardin, *Magic on the Frontier: The Norm of Efficiency*, 144 U. PA. L. REV. 1987 (1996). The problem, however, is that indeterminacy is inescapable without cardinal aggregation or weighted ordering. But again, by measuring welfare by what is present (which is a reflection of existent norms), Ellickson seriously risks reducing his hypothesis to a tautology, or worse, simply begging the question. The idea that behavioral norms are welfare maximizing simply because they are the existent norms fails to provide empirical support for the proposition that the exhibited behavior is preferred to another unexhibited behavior. Instead, it is a conclusion without support and is as meaningful as the equation $a = a$.

to create an independent yardstick capable of welfare measurements, namely, group homogeneity. Ellickson hypothesizes such a yardstick:

> Suppose that the members of a [close-knit] group were each to have full information about all prior explicit and implicit dyadic exchanges among members and were willing to use that information to measure welfare. In terms of game theory, this agreed-upon objective valuation system would enable observers of, and participants in, a game to assess the aggregate welfare associated with various foreseeable outcomes, to identify the cooperative outcome . . . and to measure the objective aggregate losses that would result if the players were to reach another outcome.[65]

Thus, it is this presumption of an "agreed-upon" and shared value system, call it the "homogeneity requirement," that enables Ellickson to rank order preferences and to measure the group's welfare through the individual's actions. Based on such a definition of welfare, Ellickson's hypothesis predicts that should such a group and perfect conditions ever exist: (1) deviant behavior will be regularly punished; (2) the form of punishment used will be the least costly; and (3) most group members will actually cooperate when faced with a "prisoner's dilemma."[66] Thus, if one finds a close-knit group satisfying the homogeneity requirement, Ellickson believes he has shown that the norm in question is welfare-maximizing.

2. *Prisoner's Dilemmas*

Ellickson assumes that individuals are rational in the sense that they unwaveringly and intelligently pursue their self-interest.[67] According to Ellickson, a member of a close-knit group adheres to a norm because it is in her self-interest to do so.[68] Instinctively, one might suggest that such a vision of rationality is potentially at odds with his conception of welfare, which cares nothing for particular distributions while any self-interested individual cares deeply. Unless Ellickson can square self-interested behavior with behavior that seeks group welfare, his hypothesis is dead in the water.

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[65] ORDER WITHOUT LAW, *supra* note 8, at 172.

[66] *See id.* at 172-74. For further elaboration on prisoner's dilemmas, see *infra* Part I.C.2.

[67] *See id.* at 156-58.

[68] *See id.*

Ellickson's way to shore is game theory. Game theory can be used to model the existence of a mechanism within any group of players (in this case, a close-knit group) that ensures, or at least highly suggests, that non-welfare-maximizing norms will fall away to be replaced by welfare maximizing ones.[69] One tool of game theory is the "prisoner's dilemma." Such a dilemma occurs whenever defection, as opposed to cooperation, is the dominant strategy of each individual player, even though cooperation would achieve more welfare for all players.[70] Research and studies have shown that one-time games between rational actors result in defections; repeat play rewards the cooperative player.[71] However, even in repeat play circumstances, there might be only a limited window of opportunity where rewards befall the cooperative players.[72] Perhaps, given the risk of falling outside the window of opportunity, the perfectly rational conclusion would be not to play. But assuming that cooperation would be rational for a game of indefinite duration, Ellickson seems to have his tool to measure welfare: a self-interested choice would not solve a prisoner's dilemma, but a welfare enhancing one would. Moreover, social norms do resemble repeat games among group members.[73]

In a prisoner's dilemma there is the tacit temptation to "free-ride" on the efforts of others, understanding fully that one's comparatively small deviation will not have a significant effect on the community's common resource.[74] Additionally, there is also the fear of being a "sucker"—the legitimate concern that one's own efforts, unaccompanied by similar contributions from other group members, will not be enough to sustain or provide the resource and hence would be wasted.[75] If a close-knit group can

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[69] *See* ROBERT AXELROD, THE EVOLUTION OF COOPERATION 11-19 (1984) (discussing exactly how cooperation emerges from an iterated prisoner's dilemma); DAVID M. KREPS, GAME THEORY AND ECONOMIC MODELING 65-89 (1990) (discussing the same).

[70] *See* Jack Hirshleifer, *Evolutionary Models in Economics and Law: Cooperation Versus Conflict Strategies*, 4 RES. L. & ECON. 1, 17 (1982).

[71] *See* Cristina Biccieri, *Norms of Cooperation*, 100 ETHICS 838 (1990); David M. Kreps et al., *Rational Cooperation in the Repeated Prisoner's Dilemma*, 27 J. ECON. THEORY 245, 245-52 (1982); Carol M. Rose, *Trust in the Mirror of Betrayal*, 75 B.U. L. REV. 531, 531-33 (1995) (listing studies).

[72] *See* Frederick Schick, *Cooperation and Contracts*, 8 ECON. & PHIL. 209 (1992).

[73] *See* ORDER WITHOUT LAW, *supra* note 8, at 164-66.

[74] *See id.* at 220-24.

[75] *See id.*

sustain cooperative efforts to enforce and maintain norms in the face of a prisoner's dilemma, Ellickson believes that the group's welfare is maximized.[76]

Even if one accepts Ellickson's position, it is still uncertain that he has the welfare indicator he seeks in group norms and behavior. In order for the existence of cooperative norms or cooperative behavior to indicate that group welfare is maximized, and thereby to support Ellickson's hypothesis, all opportunities to cooperate within close-knit groups must be prisoner's dilemmas. Otherwise, the simple fact that members of a close-knit group cooperate in a specific instance, or over time and various iterations, does nothing to indicate whether the cooperative practice is welfare maximizing. As both game theorists and economists would agree, it is only when the situation is a prisoner's dilemma that cooperation, by itself, suggests that the welfare of the group is improved, for only then does self-interested and rational behavior necessarily converge with the maximization of group welfare.[77] Thus, in order to genuinely prove his point, Ellickson must show that all instances in which he identifies cooperative behavior as supporting his hypothesis are in fact prisoner's dilemmas.

True prisoner's dilemmas are rare.[78] Certainly, people cooperate all of the time, and rarely would one say that such everyday interactions are prisoner's dilemmas. Examples range from forming a business partnership to obeying the rules of etiquette to queuing up at the grocery store. Cooperation by close-knit groups is not, per se, empirical proof in support of Ellickson's hypothesis. Cooperation may, in fact, be indicative of some other mechanism or may signify something besides welfare maximization. Consequently, for Ellickson truly to have found his way to shore by use of game theory and the prisoner's dilemma requires that the ratio of opportunities for members of close-knit groups to cooperate to true prisoner's dilemmas be one to one. Anything higher ratio leaves a lot still unexplained by Ellickson and suggests that his theory is therefore indeterminate.[79]

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[76] *See id.* at 159.

[77] *See* AXELROD, *supra* note 69, at 11-19; KREPS, *supra* note 69, at 65-89.

[78] *See* CAROL ROSE, *Women and Property: Gaining and Losing Ground*, *in* PROPERTY & PERSUASION 236 (1994) (suggesting, quite rationally, that all opportunities to cooperate are not prisoner's dilemmas).

[79] *See infra* notes 226-237 and accompanying text for a discussion of indeterminacy.

3. *Moral Psychology*

Ellickson's hypothesis, at its best, tells only half the story. Even if one accepts Ellickson's use of game theory and the truth of his corresponding observations, his theory still fails to account for the internalization of norms. People have consistently observed that they feel a compulsion to obey the norm, as though norms have moral gravitational pull.[80] Consequently, it is not enough to say that the drive towards welfare maximization generates obligations in people to do things, because they may already feel obliged by the existence of the norm itself.[81]

Many workaday norms are judged not so much by their utility as they are by their moral character.[82] Consider a recent debate over organ donation and the onset of death. The protocol of some hospitals is to start organ preservation when the body has been brain dead for only a couple of minutes despite the fact that administering the preservation drug guarantees the patient will not survive, even on life support.[83] Not surprisingly, many people feel that such a practice is wrong. In fact, one Ohio county prosecutor is considering bringing charges of murder against a hospital and its executives for such practices.[84] Further, consider the huge uproar about the possibility of cloning humans.[85] The resistance to such developments is great. As one commentator has noted, "[a] norm can be desired, respected, and valued by virtually all members of a community even if it fails to maximize either monetary value or emotions of utility satisfaction."[86] The example need not be so futuristic as human cloning or related to bioethics at all. Consider the parents of a family, a close-knit group, reforming their abusive conduct toward their

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[80] *See* DAVID HUME, ENQUIRIES CONCERNING HUMAN UNDERSTANDING AND CONCERNING THE PRINCIPLES OF MORALS 285-94 (L.A. Shelby-Bigge & P.H. Nidditch eds., 3rd ed. Oxford Univ. Press 1975).

[81] *See* H.L.A. HART, THE CONCEPT OF LAW 79-91 (2nd ed. 1994).

[82] *See* Mark Sagoff, *Economic Theory and Environmental Law*, 79 MICH. L. REV. 1393, 1394 (1981) ("[W]e are not simply a group of consumers, nor are we bent on satisfying on self-regarding preferences. Many of us advocate ideals and have a vision of what we should do or be like as a nation. And we would sacrifice some of our private interests for those public ends.").

[83] *See 60 Minutes* (CBS television broadcast, Apr. 13, 1997).

[84] *See id.*

[85] *See, e.g.*, Kenneth L. Woodward & Anne Underwood, *Today the Sheep . . .*, NEWSWEEK, Mar. 10, 1997, at 60 (discussing the difficult ethical issues about cloning humans).

[86] Wendy J. Gordon, *Norms of Communication and Commodification*, 144 U. PA. L. REV. 2321, 2328 (1996).

child because the change reflects the kind of people they want to become. The internalized norm of abuse prior to this change in behavior was not welfare maximizing.[87] Alternatively, recall the history leading up to the Reformation. The Catholic Church was auctioning off indulgences, selling future shares in heaven at the margin. The congregation grew disillusioned when it saw that the curry of the Lord was paid for in gold. It did so in spite of the obvious monetary benefits to the Catholic Church and the individual guarantee of eternal salvation, and despite such a practice being more welfare maximizing for the Church and congregation.

As the aforementioned considerations show, emotions play a critical role in formulating or developing norms.[88] Therefore, unless emotions can also be shown to be welfare maximizing, Ellickson's hypothesis seems to fail. This Article does not mean to limit itself to emotional considerations. Indeed, Ellickson's hypothesis must account for whatever else helps inform and assists in the development of norms. These factors must also be welfare maximizing, which means that there must be a method for measuring their welfare and comparing alternatives in order to determine the best one.[89] Of course, such mental states do not lend themselves to easy observation and will require much more than Ellickson has offered.[90]

To explain norms fully and to test whether a norm is welfare maximizing, Ellickson must include the other half of the story: a

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[87] *See also* Sunstein, *supra* note 10, at 2029-33 (illustrating that the close-knit group may embrace norms that encourage a desired change in behavior); Sunstein, *supra* note 57, at 964-65 (offering as an example the ban on the sale of children); *cf.* Elisabeth M. Landes & Richard A. Posner, *The Economics of the Baby Shortage*, 7 J. LEGAL STUD. 323 (1978) (stressing the need for and the efficiency of a baby market).

[88] *See* ROBERT H. FRANK, PASSION WITHIN REASON (1988); Don L. Coursey et al., *Fear and Loathing in the Coase Theorem: Experimental Evidence Involving Physical Discomfort*, 16 J. LEGAL STUD. 217 (1987).

[89] Ellickson implicitly, if not expressly, admits this point when he breaks apart the system of social control into a taxonomy of five rules which include: (1) substantive; (2) remedial; (3) procedural; (4) constitutive; and (5) controller-selecting. *See* ORDER WITHOUT LAW, *supra* note 8, at 132-35.

[90] *See* CAROL ROSE, *Property as Storytelling: Perspectives from Game Theory, Narrative Theory, Feminist Theory*, *in* PROPERTY & PERSUASION, *supra* note 78, at 25, 27-39 (noting the difficulties—perhaps the paradox—rational actor models based on game-theory have in explaining the development and ingredients of the system in which they operate); *see also* Sunstein, *supra* note 57, at 935-37 (describing the complexities and considerations that a positive account, like Ellickson's, might want to consider to explain development of norms).

theory of human psychology. Game-theorists readily admit the need for this other half.[91] Many law professors also acknowledge the same.[92] It therefore seems that Ellickson should include such a psychological account if his hypothesis is to withstand *all* challengers and if his branch of study is to become the "envy of other social scientists." Ellickson, however, has seemingly ignored the psychology scholarship which suggests that people, in general, do not maximize their welfare when faced with choices of uncertain outcomes (such as a prisoner's dilemma).[93] In fact, the evidence suggests that fairness, rather than welfare maximization, is the overarching result achieved by members of a society.[94] No study, however, has yet tested the norms of close-knit groups. Nevertheless, one commentator, very sympathetic to Ellickson's position and arguments, has suggested, in the face of such studies and research, that *efficiency* and *fairness* are the two necessary ingredients for a norm to emerge.[95] Whether Ellickson will also move in the same direction is yet to be seen.

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[91] *See, e.g.*, ROBERT SUGDEN, THE ECONOMICS OF RIGHTS, CO-OPERATION AND WELFARE 145-47 (1988) (speculating on the psychology of norms); EDNA ULLMANN-MARGALIT, THE EMERGENCE OF NORMS (1977) (failing to explain the morally binding force of norms). *See generally* AXELROD, *supra* note 69, at 88-105 (suggesting that tit-for-tat has an evolutionary aspect).

[92] *See, e.g.*, Cooter, *supra* note 10, at 1662 (suggesting a psychological basis for norms' moral gravitational pull); Eric A. Posner, *Law, Economics, and Inefficient Norms*, 144 U. PA. L. REV. 1697, 1709-10 (1996) (noting the need for a psychological account); *see also* JON ELSTER, THE CEMENT OF SOCIETY: A STUDY OF SOCIAL ORDER 8-11 (1989) (explaining that no such psychological theory has yet been developed).

[93] *See generally* JUDGMENT UNDER UNCERTAINTY, *supra* note 51 (compiling a good anthology of recent work).

[94] *See, e.g.*, ELINOR OSTROM ET AL., RULES, GAMES AND COMMON-POOL RESOURCES (1994) (noting that game theory failed to predict the results of various prisoner's dilemma iterations played by college students and that cooperation and fair play was the operative norm throughout the multitude of different games of varying duration); Robert B. Cialdini et al., *A Focus Theory of Normative Conduct: A Theoretical Refinement and Reevaluation of the Role of Norms in Human Behavior*, *in* 24 ADVANCES IN EXPERIMENTAL SOCIAL PSYCHOLOGY 201 (Mark P. Hanna ed., 1991) (documenting and suggesting that fairness, not welfare maximization, is the normal result); Peter H. Huang & Ho-Mou Wu, *More Order Without More Law: A Theory of Social Norms and Organizational Cultures*, 10 J.L. ECON. & ORG. 390 (1994) (showing that decentralized order is accomplished by internalizing norms perceived as fair).

[95] *See* Cooter, *supra* note 10, at 1677.

II
Whaling Norms and Ellickson's Hypothesis

Despite the problems just shown with Ellickson's hypothesis, the purpose of this Article is to challenge Ellickson at his own game. As indicated, in order to determine the truthfulness of Ellickson's hypothesis, one must look to reality and the actual norms of close-knit groups. If such norms maximize welfare, in the sense that Ellickson uses the phrase to mean the minimization of costs and deadweight losses and cooperation in prisoner's dilemmas, then his hypothesis is true. Ellickson offers the fishery norms of whaling to support his hypothesis.[96]

Ellickson's defense of his hypothesis begins with a description of the whaling industry's practices from 1750 to 1870, when whales were as valuable as gold.[97] Whalers needed a mechanism for deciding who owned a whale once it was captured. As Ellickson notes, many vessels sometimes chased a single whale.[98] One vessel would fatally lance the whale and, for whatever reason, the whale would escape, only to be captured by another vessel. As one might imagine, such events triggered potentially violent disputes.

Although these disputes between vessels and their crews certainly occurred, the number of occurrences were undoubtedly minimized by the norms[99] of the sea. Ellickson notes the differ-

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[96] *See* Order Without Law, *supra* note 8, at 191-206.

[97] *See id.* at 191 n.22 (comparing the value of a single whale to the mean family income). The bowhead whale's baleen, or whalebone, once brought £2250 per ton, where a ton and a half was the generous bounty from a large whale. *See* Kenneth S. Norris, *Marine Mammals and Man*, *in* Wildlife and America 320, 321 (Howard Brokaw ed., 1987). Additionally, the blubber from such a whale yielded as much as 30 tons of oil. In fact, "[a] single adult whale covered the costs of a cruise of a small whaling vessel." *Id.* Indeed, one ship, *Lagoda*, made $652,000 in 12 years, paying dividends up to 363.5%. It cost her owners less than $500 to build her. *See* F.D. Ommanney, Lost Leviathan 84 (1971).

[98] *See* Order Without Law, *supra* note 8, at 192.

[99] Ellickson seems to equate norms with rules. However, norms are not necessarily rules. Norms may embody a standard of behavior (e.g., the ubiquitous "reasonable person" test) rather than a rule that is applied once certain prerequisites are met. However, to Ellickson, standards are inherently "more likely to provoke disputes about proper application," and therefore, any norm that develops with an "eye on minimizing *total* costs" will almost always be a rule rather than a standard. *Id.* at 203. Consequently, an additional way to weaken Ellickson's hypothesis is to prove that rules cannot become norms or show that indeed some workaday norms of close-knit groups are standards rather than rules. For an example of the former, see Ronald Dworkin, Taking Rights

ent group norms such as the "fast-fish, loose fish rule,"[100] the "iron-holds-the-whale rule,"[101] and split ownership rules.[102] According to Ellickson, each one of these rules maximized the welfare of the close-knit group of whalers and minimized deadweight losses in its own way.[103] For example, the fast-fish, loose fish rule rewarded the crew that fastened the whale to its vessel by line.[104] This rule only applied to "right whales," such as the bowhead, because right whales are slow, leisurely swimmers whose carcasses float. As a result, right whales can be readily handled upon capture. A different rule was needed for the faster, sinking whales—the rorquals or "wrong whales"—because a sinking whale, if connected to the vessel, might also take down the ship.[105] Thus, the rule for the rorquals was that the first to affix a harpoon or lance to the whale would have the exclusive right of capture as long as the vessel remained in pursuit.[106] The rules were also fishery sensitive, changing over time and evolving with the technology of the whaling weapons and speed of the vessels such that either rule could have applied to a sperm whale capture depending on when and where it occurred.[107]

Ellickson contends that such norms were welfare maximizing because they were "consistently sensitive to both production incentives and transaction costs and were adapted in utilitarian fashion to conditions prevailing in different fisheries."[108] This Article does not contest such a characterization. However, it is important to observe that the captains of the vessels, rather than the crews, are the members of Ellickson's close-knit group of whalers whose welfare is maximized. Thus, if the whalers' norms place their vessels in dry dock permanently, such behavior could not be welfare maximizing because no vessel in port could snare a whale. Indeed, such behavior is suicide for the whalers.

SERIOUSLY 46-58 (1978) (criticizing H.L.A. Hart's account of social rules and their formation).

100 ORDER WITHOUT LAW, *supra* note 8, at 197-98.

101 *Id.* at 198-201.

102 *See id.* at 201-03.

103 *See id.* at 196-206.

104 *See id.* at 197-98.

105 *See id.* at 198-201.

106 *See id.* at 198-99.

107 *Compare id.* at 198-205 (discussing whale norms based on type of prey), *with* OMMANNEY, *supra* note 97, at 69-99 (discussing developments in technology as well as methodological differences among whaling groups).

108 ORDER WITHOUT LAW, *supra* note 8, at 205.

III
Falsifying Ellickson's Hypothesis

According to Ellickson, welfare maximization not only incorporates the aggregate welfare of the close-knit group, but it also includes the minimization of "deadweight losses" and "transaction costs" that are "objectively incurred when [the group members] interact[ ] with one another."[109] Ellickson thus implies that norms, as informal social controls, reflect not only the history, price, and attendant difficulties that give rise to the development of the norm, but also the costs of enforcement. Presumably, this includes all of the costs, of a first-, second-, or third-order variety.[110] Therefore, according to Ellickson, if the costs of any particular norm are inordinately high or the welfare derived is minute yet the norm is developed or sustained, that norm should not be present in a close-knit society. If it is present, it illustrates that not all norms are welfare maximizing.

The following sections explain the "tragedy of the commons" phenomenon[111] and examine the status of the whale fishery, Ellickson's exemplary close-knit group, to determine whether its norms were ever welfare maximizing. This Part concludes that at least some of their workaday norms were not welfare-maximizing. It also discusses additional examples besides the whale fishery that further weaken Ellickson's hypothesis.

A. *The Tragedy of the Commons*

Long ago Aristotle observed, "what is common to the greatest number has the least care bestowed upon it. Everyone thinks chiefly of his own, hardly at all of the common interest."[112] Aristotle's reflection on human nature remains true today. Garrett Hardin's seminal 1968 article, *The Tragedy of the Commons*,[113]

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[109] *Id.* at 172-73.

[110] Consider when the military draft was a norm. A first-order cost would be the cost of choosing to implement the draft and all of its attendant political fallout. A second-order cost would be the actual cost of administering the program, while a third-order cost would be the draft's effect on human behavior and such consequences as moving to Canada, enrolling in school, serving in the war, etc.

[111] For a historical review of the commons, public goods, and property, see Carol Rose, *The Comedy of the Commons: Custom, Commerce, and Inherently Public Property*, 53 U. Chi. L. Rev. 711 (1986).

[112] Aristotle, Politics, *quoted in* Elinor Ostrom, Governing the Commons 2 (1990).

[113] Hardin, *supra* note 3.

reintroduced Aristotle's vision of man and applied it at a time when America perceived its environment as on the verge of ruin.[114]

1. *Rationality and Commons*

Recall the St. Matthew Island reindeer.[115] Now imagine that St. Matthew Island is Earth and the reindeer are the human race. If our population continues to grow as it has, there will come a time when we risk surpassing the carrying capacity of the earth.[116] Overconsumption becomes a pressing problem for any "rational being" who has part ownership in the commons because there is no incentive to conserve.[117] As a rational actor, each member of the community is inclined to act in a self-interested way, taking as many units of the common pool in order to maximize her welfare.[118] The costs of depletion are extinction, but because these costs are diffused among all members of the community, they appear minor, at least until its too late.[119] The benefits of such behavior, however, accrue only to the rational-acting individual. Hence the "tragedy": self-interest inevitably leads to destruction of the community of individuals. "Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all."[120]

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114 The Environmental Protection Agency was created during the Nixon Administration in response to various environmental catastrophes, like Love Canal. In creating the National Environmental Policy Act, Congress declared: "These problems must be faced while they are still of manageable proportions and while alternative solutions are still available." S. REP. NO. 91-296, at 5 (1969).

115 *See supra* text accompanying note 1.

116 Our population will surpass the 6.25 billion mark by the year 2000 and more than double its current level by the middle of the next century. *See* WILLIAM H. RODGERS, JR., ENVIRONMENTAL LAW 3 (2d ed. 1994). One study has shown that at this rate of population expansion we are in the same position as the whale fishery was in the 1800s. *See infra* text accompanying note 191 (statement of an anonymous Captain). We are consuming far more than the earth can produce even with human help. *See* LESTER R. BROWN & HAL KANE, FULL HOUSE: REASSESSING THE EARTH'S POPULATION CARRYING CAPACITY 21-33 (1995).

117 *See* Hardin, *supra* note 3, at 1244.

118 *See id.*

119 *See* Carol Rose, *Rethinking Environmental Controls: Management Strategies for Common Resources*, 1991 DUKE L.J. 1, 5-7 (noting that the tragedy occurs only when the carrying capacity of the commons has been exceeded).

120 Hardin, *supra* note 3, at 1244.

According to Hardin, the problem posed by the tragedy of the commons cannot be solved by anything other than a "change in human values or ideas of morality."[121] This kind of change, Hardin postulates, happens when a community transplants the unfettered freedom implicit in common ownership with a coordinated enforcement mechanism of "mutual coercion, mutually agreed upon by the majority of the people affected,"[122] or a norm of cooperative conservation to resolve the underlying prisoner's dilemma. Within Ellickson's theoretical framework, the tragedy is either an event that reflexively yields a change in norms once recognized or a mere hypothetical scenario that does not exist at all.[123] Thus, if one can prove that the tragedy is real, Ellickson is required to hypothesize that a new cooperative norm would develop to prevent the tragedy from coming to fruition. If, in turn, the new cooperative norm fails to develop within the particular close-knit group, then this failure is evidence against Ellickson's hypothesis.

B. *Overwhelming the Whales and Other Fisheries*

1. *The Whales Fishery*

Economists have long believed that fisheries are an example of the tragedy of the commons.[124] The close-knit group of whalers is a particularly acute example of Hardin's hypothesis. In 1981, the International Whaling Commission (IWC) declared a complete ban on whaling because of a dwindling whale population with many species bordering on extinction.[125] Despite this ban and the certainty of resource depletion, some close-knit groups of whalers in Japan and Norway, along with Iceland, still hunt the mammals today, while other countries, including the United States, no longer have whalers.[126]

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[121] *Id.* at 1243.

[122] *Id.* at 1247.

[123] *See, e.g.*, Ellickson, *supra* note 11, at 1320-21 (asserting that a "traditional village's grazing commons is unlikely to be tragic").

[124] *See* H. Scott Gordon, *The Economic Theory of a Common-Property Resource: The Fishery*, 62 J. POL. ECON. 124 (1954).

[125] *See* INTERNATIONAL WHALING COMM'N, THIRTY-THIRD REPORT OF THE INTERNATIONAL WHALING COMMISSION 20-21 (1981).

[126] For a discussion of whaling regulations and management practices in force today, see Howard Scott Schiffman, *The Protection of Whales in International Law: A Perspective for the Next Century*, 22 BROOK. J. INT'L L. 303 (1996).

In *Order Without Law*, Ellickson provided a splendid account of *some* whaling norms. He neglected to mention others, however. By the mid-1800s, the whaling community had nearly exterminated the Atlantic populations of the northern right and bowhead whale, and the third whale hunted in the Atlantic—the Atlantic gray—was extinct.[127] Although whalers recognized the change in stock, they continued hunting, next pursuing humpbacks and sperms. These stocks were also quickly depleted. The advent of steam engines and harpoon guns enhanced the slaughter. The whale kills in the last forty years of the nineteenth century alone totaled more than the number of kills during the prior 400 years combined.[128] Each time whalers overexploited one whale species, they moved to the next smaller and quicker whale until it, too, was depleted.[129] Today, the only whales hunted are the smallest and quickest because no other whales exist in numbers sufficient to support the whaling commerce that now exists.[130]

Certainly, the norms of whalers prior to 1981 and the global ban indicate that Ellickson did not include the full story when he described whaling norms. Had he included data on the current state of the whaling fishery, where some stocks are extinct while others are incapable of replenishment,[131] readers might have seriously questioned whether whalers' practices were welfare maximizing. The fact that some close-knit groups of whalers continue their activities unaltered and undaunted in the face of near certain demise is unfathomable from the perspective of welfare maximization. Although each whaling vessel receives tremendous profits for a short period of time, the few whaling groups left will soon compete for an even more limited supply of whales. Eventually, either one group will hold a monopoly on whaling or there will be no more whales to exploit. In either case, by the time such a state of affairs develops, the welfare of whalers will

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127 *See* GLOBAL MARINE BIOLOGICAL DIVERSITY 98-99 (Elliot A. Norse ed., 1993).

128 *See id.*

129 *See id.*

130 *See id.*

131 *See* Pat A. Birnie, *International Legal Issues in the Management and Protection of the Whale: A Review of Four Decades of Experience*, 29 NAT. RESOURCES J. 903 (1989); Melinda K. Blatt, Case Note, *Woe for the Whales:* Japan Whaling Association v. American Cetacean Society, 55 U. CIN. L. REV. 1285, 1287-88 (1986) (discussing the state of the whale fishery).

have been seriously diminished from the whaling heyday.[132] This diminishment in welfare alone is enough to indicate that the whalers' close-knit norms are not welfare maximizing.

2. *Other Fisheries*

Of course, the whalers are not alone. Other fisheries have also experienced the tragedy of the commons.[133] Unlike the whalers' tragedy, however, that of the fisheries is a very recent development. "Cod, haddock, halibut, salmon, shark, swordfish, red snapper, orange roughie, summer flounder, yellow tail flounder, blue-fin tuna—fishery after fishery has collapsed in the past decade."[134] Like the whalers' tragedy, this one was also not unforeseen.[135]

The workaday norms of the fishing industry have brought about the fisheries' demise.[136] A dramatic expansion in the size and efficiency of fishing fleets, the creation of private property rights along the coasts in 1970, changes in human consumption habits, and population increases have raised fears that fish are being harvested at unsustainable levels.[137] The fears have been substantiated by sharp declines in the global catch.[138] In fact, in 1994, the National Marine Fisheries Service indicated that forty-

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[132] *See also* GLOBAL MARINE BIOLOGICAL DIVERSITY, *supra* note 127, at 164 (noting that the historic dividends of Antarctic whaling were the product of liquidating the cetacean capital rather than earning a sustainable living off the interest).

[133] *See generally* NATURAL RESOURCE DEFENSE COUNCIL, HOOK, LINE, AND SINKING: THE CRISIS IN MARINE FISHERIES 1 (1997) (giving a comprehensive look at U.S. fisheries today and indicating that 80% of America's fisheries are either depleted or overexploited).

[134] *Don't Eat the Seahorses*, ECONOMIST, Sept. 30, 1995, at 98.

[135] *See, e.g.*, Mark Schleifstein, *Early Warning Went Unheeded*, TIMES-PICAYUNE (New Orleans), Mar. 26, 1996, at A6 (explaining that people knew as early as 1969 that the wetlands of Louisiana's coast, the critical habitat and "nursery for 40% of the nation's seafood harvest," were not regenerating and were in fact disappearing at an alarming rate).

[136] *See* Oliver A. Houck, *On the Law of Biodiversity and Ecosystem Management*, 81 MINN. L. REV. 869, 946-53 (1997) (reporting on the decrepitude of contemporary fisheries and highlighting the fishing industry's own contributory role).

[137] *See* John McQuaid, *Overfished Waters Running on Empty*, TIMES-PICAYUNE (New Orleans), Mar. 24, 1996, at A39 ("The effect was akin to the buffalo hunts of the American West, where the once huge herds were wiped out by hunting rifles and the rush of settlers."). Moreover, this effect is commonplace throughout the world. *See id.*

[138] *See* PETER WEBER, NET LOSS: FISH, JOBS, AND THE MARINE ENVIRONMENT 13 (1994) (indicating that the catch peaked in 1989 and has declined at a

five percent of the total U.S. fish stocks were overfished.[139] Less than one year later, the U.N. Food and Agriculture Organization reported that nine of the world's seventeen major fisheries species were depleted, with four others teetering on the brink of depletion.[140] Currently, U.S. stocks are at the eighty-percent depletion mark and declining precipitously under current fishery norms and management practices.[141]

The rapid depletion is due, in part, to the norms of the fishery. Consider, for example, the norm of by-catch disposal. By-catch refers to the fish accidentally caught by fishermen trying to catch something else. Shrimp trawlers, for instance, unintentionally catch tons of red snapper and waste it because it is not their sought after catch.[142] Fishing fleets regularly discard by-catch in staggering amounts: twenty-five billion metric tons of fish yearly as a matter of regular practice.[143] Thus, nearly one-third of the world's total fish catch yearly is considered trash by those who catch it.[144] The consequences of such behavior are severe. In fact, the by-catch from shrimp trawlers in the Gulf of Mexico has devastated the Gulf's population of red snapper.[145] Such workaday norms, although the product of close-knit groups, cannot possibly be welfare maximizing. They substantially reduce the group's welfare, threatening the group's very existence,[146] and cannibalizing the resource on which the group's economy is built. This is a tragic practice preventable only by external restraints.[147]

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rate of two percent yearly ever since, with a different composition of less valuable species keeping the catch as high as it is).

139 *See* Bob Holmes, *Biologists Sort the Lessons of Fisheries Collapse*, 264 SCIENCE 1252 (1994).

140 *See* Polly Ghaz et al., *Focus: The Rape of the Oceans*, OBSERVER, Apr. 2, 1995, at 23.

141 For a good discussion of the state of various fisheries and how they have fared under the management of the old management of the Magnuson Act, see Symposium, *The Magnuson Fishery Conservation and Management Act: Retrospect and Prospect*, 9 TUL. ENVTL. L.J. 211 (1996).

142 *See* McQuaid, *supra* note 137, at A39.

143 *See id.*

144 *See id.*

145 *See* John McQuaid, *Shrimpers Snap over Fish Saver*, TIMES-PICAYUNE (New Orleans), Mar. 27, 1996, at A7.

146 *See* McQuaid, *supra* note 137, at A39 ("[A]n orgy of overfishing and coastal destruction . . . threatens the livelihood of fishers from the Gulf of Thailand to the Gulf of Mexico, and most places in between.").

147 *See, e.g.*, Conservation Law Found. of New Eng., Inc. v. Mosbacher, No. CIV.A.91-11759-MA, 1991 WL 501640 (D. Mass. Aug. 28, 1991) (restraining the fishing practices and norms in New England).

C. *Additional Tragedies of Today*

1. *Timber*

Clear-cutting is a norm of the close-knit group of logging companies in the United States that governs industry's workaday affairs.[148] It is the most efficient, cost-effective way of "managing" a forest.[149] Its product, however, is not effective management; it is instead, quite literally, deforestation. Moreover, because of the forests' integral connection to human survival, clear-cutting also contributes to our own extinction. As forest ecologist Herb Hammond notes, "[a]s a result of clearcutting in the forest, this basis for life is now disappearing at a rate several thousand times average rates of natural extinction. When we clear-cut the forest, we are like the frog drinking up the pond in which he lives."[150] Indeed, deforestation destroys the trees that produce oxygen necessary to human survival, damages the ecology of streams by increasing the amount of silt and sediment, and wreaks havoc on spawning grounds for fish that are a healthy part of the human diet.

Clear-cutting began in earnest in Maine in the 1800s.[151] As a norm it cascaded,[152] spreading like wildfire across the Northeastern United States toward the Great Lakes, razing every forest in its path. As one commentator recently wrote, "[t]he consequences were dire: erosion silt-choked streams; and waste wood that fueled dozens of wildfires, including the Peshtigo, Wisconsin, blaze of 1871 which burned 1.3 million acres, killed 1,500 people, and galvanized public opinion on the need for federal forest management."[153] By 1900, the forests of the Eastern

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148 *See* Felice Pace, *Cultural Clearcuts: The Sociology of Timber Communities in the Pacific Northwest*, *in* CLEARCUT: THE TRAGEDY OF INDUSTRIAL FORESTRY 41 (Bill Devall ed., 1993) (noting that clearcutting continues despite its ugliness, legislation to the contrary, environmental organizations, and bad press because of the "mind-set" of loggers).

149 *See* Herb Hammond, *Clearcutting: Ecological and Economic Flaws*, *in* CLEARCUT, *supra* note 148, at 25.

150 *Id.*

151 *See* Paul Roberts, *The Federal Chain-Saw Massacre*, HARPER'S MAG., June 1997, at 37, 40 n.1.

152 *See* Sunstein, *supra* note 57, at 909 (explaining that a norm cascade is a rapid shift in norms).

153 Roberts, *supra* note 151, at 40 n.1. It was the events in Wisconsin, including the fires and near total destruction of its original forests, that prompted the seminal work of Aldo Leopold, *see* ALDO LEOPOLD, A SAND COUNTY ALMANAC (1949), perhaps the first voice for ecosystem management and wildlife conservation in this country.

United States had been decimated; they could no longer sustain the forest industry, so the industry kept moving west.[154] In 1905, Congress created the United States Forest Service (USFS) to manage the "reserves."[155] By placing the USFS under the Department of Agriculture, Congress destined trees to be managed as a cash crop grown on the commons.

To date, such management has been nothing other than a nursery for industry harvest, all on the taxpayer's dime. Timber companies have taxpayer-subsidized, cheap access to millions of board feet of timber. Congress, our elected representatives (and hence, the commons management), receive hefty campaign contributions from the industry, which help sustain and create timber jobs generating treasury revenue.[156] The USFS, as a department, has grown with the increase in timber production. Each member of this trinity benefits greatly from resource extraction.

However, what is missing all too frequently from the laudatory aspects of forest management (e.g., the jobs, building materials, and sales) is the costs to the taxpayer and owner of the land tracts. Throughout its history, the timber program has been in the black *only three years*.[157] This results because, as part of timber "management," the taxpayers are required to build roads for industry to access the tracts,[158] pay for agency overhead, pay for the costs in preparing for a tract sale,[159] and pay the states' counties. Additionally, taxpayers bear the burden for reclamation costs when reforestation has failed or logging has depleted

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154 *See* Roberts, *supra* note 151, at 40.

155 Concerned about wildcat logging, the United States reserved as federal lands (with but a few exceptions) forests located on high elevation tracts or steep mountainsides, which were not easily accessible and covered by spindly pines and other soft woods. *See id.* These tracts had been rejected by the timber companies. *See id.* The lands were reserved by President Roosevelt pursuant to the Creative Act of 1891, ch. 561, 26 Stat. 1095, 1103, *repealed by* Federal Land Policy and Management Act of 1976, 90 Stat. 2743, 2792 (1976); *see also* Dorn, *supra* note 4, at 450-51.

156 *See* Roberts, *supra* note 151, at 39-40.

157 *See id.* at 47.

158 *See* Curt Anderson, *Forest Service Loses Big on Timber Sales*, SEATTLE TIMES, at A1, A1 (June 11, 1998) (noting that, when the USFS finally included road-building as a cost in its accounting for the first time ever, the agency's annual losses jumped from $15 million to $88 million).

159 *See, e.g.*, Dorn, *supra* note 4, at 479 (reporting the cost of preparing a tract sale to be $200,000 and that since the highest bid was only $29,000, the government suffered a $171,000 loss).

salmon and other wildlife,[160] not to mention the indirect effects on community employment, crime, and emotional well-being. In 1995, the typical timber sale of one million dollars resulted in a taxpayer loss of $633,000.[161] From 1980 to 1994, the total net loss to the taxpayer, even absent some of the cost considerations mentioned, was seven billion dollars.[162]

In the regulation of its reserves, the USFS has invited disaster by allowing clear-cutting rather than sustaining the resources through thoughtful management. "Paradoxically, the more timber sold the more the Treasury loses on the timber program, the more the Forest Service budget grows," and the more board feet that are needed to be cut.[163] It would be more cost effective to pay the loggers directly out of the Treasury than to continue to subsidize the destruction of our forest reserves. Indeed, from a Coasian perspective, the Treasury should be paying the loggers not to log. However, the industry boondoggle continues.

The common economic rationale given by the U.S. timber industry and management officials for maintaining such practices is money and employment. The "money" argument, however, has been shown to fail as a rational response.[164] Furthermore, jobs do not and cannot last with a sustained management strategy of clear-cutting.[165] Indeed, the timber industry consistently replaces the high-cost worker with low-cost technology,[166] yet the loggers consistently capitulate to the industry, even parroting industry rhetoric when asked to examine their practices or consider changes.[167] Just like the fisheries, in order to sustain employ-

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160 *See generally id.* (describing the various management plans and responsibilities under each).

161 *See* Roberts, *supra* note 151, at 47.

162 *See id.*

163 *Id.*

164 *See* Richard Stroup & John Baden, *Externality, Property Rights, and the Management of Our National Forests*, 16 J.L. & ECON. 303, 306-09 (1973) (canvassing the market failure rationales for forest management).

165 *See, e.g.*, Dorn, *supra* note 4, at 455 (describing an award-winning story in the *Missoulian* newspaper that documented and detailed the problems associated with clearcutting).

166 *See* Roberts, *supra* note 151, at 43.

167 The Rainforest Action Network has noted that, although approximately one-sixth of all timber harvested in the Pacific Northwest is exported to Japan for processing, numerous U.S. lumber and paper mills are closing and cutting shifts because of what the industry claims are "log shortages." *See* ACTION ALERT NO. 105 (Rainforest Action Network, San Francisco, Cal.), Feb. 1995, at 2, 2.

ment, loggers must log more logs more quickly. With each new cost-saving, efficiency-enhancing, and labor-replacing technological advancement in logging, more board feet are required to maintain the same labor force. The inevitable result, if human behavior is not changed, is no jobs, no forest, and thus no silviculture industry.[168]

2. *Grazing*

In the West there is a serious problem of overgrazing. One proposed solution to the problem, the closure of public lands to grazing by the Bureau of Land Management (BLM), has prompted violent replies by some ranchers, including the bombing of federal offices.[169] Before the West was settled, the grasses of the Western plains were as tall as the trees. Descriptions by Lewis and Clark told of the difficulty in spying buffalo on the grasslands until they were nearly upon them because the yellow and green grass grew taller than the beasts.[170] Today, however, one is lucky to find a field of grass that is barely high enough to blot and sully a pristine canvass of dirt.[171] Such "fields" are the legacy of grazing.

Overgrazing was in large part caused by the structure of the ranchers' agreement with the federal government, which permitted grazing on public lands.[172] In order to encourage settlement of the West, the federal government heavily subsidized ranchers, permitting grazing on public lands and keeping the costs of these grazing leases below market value.[173] Because the ranchers had more money than they otherwise would have and enjoyed vast lands to graze on, they purchased more cattle. The increase in

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168 *See* Hammond, *supra* note 149, at 29-30.

169 *See Bomb Rips Building in Nevada*, TIMES-PICAYUNE (New Orleans), Nov. 1, 1995, at A5 ("[A] bomb exploded on the roof of a Bureau of Land Management office Sunday. . . . The Bureau is involved in controversies over grazing fees on federal land and mining law enforcement."); Jon Christensen, *Nevada's Ugly Tug-of-War*, HIGH COUNTRY NEWS, Oct. 30, 1995, at 1, 10; *see also* Houck, *supra* note 136, at 882 n.40 (listing other episodes of violence).

170 *See* 7 THE JOURNALS OF THE LEWIS & CLARK EXEPEDITION: MARCH 23-JUNE 9, 1806, at 335-36 (Gary E. Moulton ed., 1991).

171 *See* DENZEL FERGUSON & NANCY FERGUSON, SACRED COWS AT THE PUBLIC TROUGH 32 (1983) (noting the total devastation of grasslands west of the Mississippi River by cattle).

172 *See* JOHN W. BENNETT, HUMAN ECOLOGY AS HUMAN BEHAVIOR 132-37 (1993).

173 *See id.*

cattle, in turn, depleted the grass more rapidly.[174] For example, in 1870, the Arizona Territory had 5000 head of cattle, but by 1891, the population had exploded to 1.5 million.[175] In 1934, Congress acted "[t]o stop injury to the public grazing lands by preventing overgrazing" by passing the Taylor Grazing Act (TGA).[176] The Act failed to stop the razing. By 1975, the public lands had been cattle-ravaged.[177]

In 1976, Congress took action. Because the close-knit group of ranchers were the managers of BLM lands under the TGA, and their norms continued to deplete the resource of the range, an outsider, Congress, was forced to step in to halt the stampede over public lands. In 1976, it altered the management of public lands by replacing the TGA with the Federal Land and Policy Management Act (FLPMA).[178] Despite Congress's efforts to change ranchers' behavior, public grazing lands are still being depleted and are now nearly exhausted.[179] The close-knit group of Western ranchers who rely on the public range are perilously close to grazing their last blade of grass because of their mismanagement.

3. *Biodiversity: A Truly Common Resource*

Pick any close-knit group of humans and one will, in all probability, find one norm that is not welfare maximizing: population growth or net species growth, which is the by-product of the norm of longer life[180] and the norm of procreation. The human population is growing rapidly.[181] Each new person is an-

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174 *See* Dale A. Oesterle, *Public Land: How Much is Enough?*, 23 ECOLOGY L.Q. 521, 526-27 (1996).

175 *See* Houck, *supra* note 136, at 939.

176 Taylor Grazing Act of 1934, ch. 865, 48 Stat. 1269, 1269 (1934).

177 *See* Natural Resources Defense Council, Inc. v. Hodel, 618 F. Supp. 848, 857 (E.D. Cal. 1985); *see also* Houck, *supra* note 136, at 940 (noting that 84% of the total public lands were in fair to bad condition).

178 *See* Federal Land and Policy Management Act of 1976, 43 U.S.C. §§ 1701-1785 (1994 & Supp. II 1996); *see also Hodel*, 618 F. Supp. at 857 ("Congress finds that a substantial amount of the Federal range lands is deteriorating in quality . . . .").

179 *See* Timothy Egan, *Sweeping Reversal of U.S. Land Policy Sought by Clinton*, N.Y. TIMES, Feb. 24, 1993, at A17; Andrea Hungerford, *"Custom and Culture" Ordinances: Not a Wise Move for the Wise Use Movement*, 8 TUL. ENVTL. L.J. 457 (1995).

180 This norm may be created by better medicine, nutrition, or exercise. For my purposes, all that is important is that longer life is somehow a norm, whatever the cause.

181 *See supra* note 116 and accompanying text.

other tax on Earth's ability to sustain *all* life, not just that of humans. It is well-documented that species of plants and animals are rapidly going extinct.[182] What is sometimes left out of the documentation is that human population growth alone invariably diminishes the number of species.[183] This, in turn, diminishes the options and possibilities humans have for their food supply, medicinal products, or any number of things that we require to live. Simultaneously, it marks a reduction in the survival options available to other life forms, which humans require. Following this logic to its conclusion, human population growth, a current norm of almost every close-knit group, will cause many, if not most, species on the planet to die out. Although the exact mathematical ratio of species decline to population growth is uncertain, species decline is an inevitable by-product. In fact, today, humans use two-fifths of Earth's total energy available to sustain the life of all species.[184] This figure will rise to eighty percent of Earth's entire supply within a century, if demographers' estimates that the human population will double hold.[185] Clearly, a massive reduction in biodiversity would not maximize our welfare in the long-term. Slowly but surely, we are transforming the planet into St. Matthew Island.

V
ELLICKSON'S RESPONSE

Ellickson readily admits that myopic norms of resource depletion, such as overwhaling, overfishing, and the like, are not welfare maximizing.[186] He nevertheless defends his hypothesis against such a rejoinder in two ways. First, he suggests that the norm of overwhaling illustrates a shortcoming of informal controls rather than of his hypothesis.[187] Indeed, in what sounds like an admission of weakness, Ellickson seems to believe that effec-

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[182] *See, e.g.*, EDWARD O. WILSON, THE DIVERSITY OF LIFE 280 (1992) (estimating the losses just in the rainforests alone at 27,000 per year, which translates to 74 per day or three every hour); *see also* REED F. NOSS & ROBERT L. PETERS, ENDANGERED ECOSYSTEMS: A STATUS REPORT ON AMERICA'S VANISHING HABITAT AND WILDLIFE at vi-vii, 1, 53 (1995).

[183] *See generally* Paul R. Ehrlich, *The Loss of Diversity: Causes and Consequences*, *in* BIODIVERSITY 21 (Edward O. Wilson & Frances M. Peter eds., 1988).

[184] *See id.* at 23.

[185] *See id.* at 21-23.

[186] *See* ORDER WITHOUT LAW, *supra* note 8, at 205.

[187] *See id.* at 205-06.

tive fishery management is too complex for norms to be welfare maximizing.[188] Second, he suggests that from a more localized perspective, such a norm might in fact still be welfare maximizing.[189] However, even though narrowing the focus of one's viewpoint might make overwhaling appear rational (it may even be rational from the perspective of the individual), such a maneuver does not save Ellickson's hypothesis. Instead, as this Article will explain, it simply triggers the tragedy of the commons, the non-welfare maximizing state of affairs that Ellickson's hypothesis should avoid if true.

A. *The Complexity of the Whaling Tragedy*

Early on, whalers recognized that their current practices were not in the best interest of the group. This conclusion did not require scientific measurements, as Ellickson seems to suggest,[190] but rather could be based upon simple observation. Lamenting the current status of his trade and the hunting of the black right whale, an anonymous Yankee whaling captain wrote in 1852:

> In the commencement of [black] right whaling the Brazil Banks was the only place of note . . . then came Tristan da Cunha, East Cape, Falkland Islands and Patagonia. These encompassed the entire South Atlantic. Full cargos were sometimes obtained in an incredibly short space of time. Whales were seen in great numbers—large pods [which had] gambolled unmolested for hundreds of years. The harpoon and lance soon made awful havoc of them and scattered the remainder . . . a few remain, as wild as the hunted deer. Can anyone believe they will ever again exist in such numbers? Or that they multiply as fast as they are destroyed?[191]

Lest anyone still doubt the staying power of such an irrational norm as overwhaling, as late as the 1980s and long after the IWC placed the black right whales on the protected list, the slaughter of these whales continued despite the *substantial risk* of annihilation.[192] This was due to the fact that among the whaling community, maximizing the profit from a whale was still the norm. Because of the scarcity of the resource, the value of an average

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188 *See id.* at 205.
189 *See id.* at 206.
190 *See id.* at 205.
191 FARLEY MOWAT, SEA OF SLAUGHTER 220 (1984) (alteration in original).
192 *See generally* ROBERT MCNALLY, SO REMORSELESS A HAVOC (1981).

60-ton black right whale had increased to $50,000.[193] Thus, not only did greed prompt the depletion of the resource, it also sustained a way of life and the customs practiced by the remaining vessels. Resource depletion was not caused by uncertainty or lack of knowledge, as Ellickson would lead one to believe. To use a more modern example, the Antarctic fishery could have easily provided "indefinitely" 12,000 fin whales a year had the whalers of the 1960s shown a little restraint or any interest in sustainability.[194] The vessels, however, died out when overwhaling caused the population of the fin whale to plummet in a few short years from 27,000 to below 3000.[195] Today, the norms that caused the decimation of the fishery continue despite intense efforts to curb the fishery's downfall, including the IWC's prohibition on whaling.

B. *Informal Controls and the Husbandry of Fisheries*

Ellickson's assertion that informal controls are incapable of managing such a resource more effectively than formal controls[196] is not only unexpected given the purpose of *Order Without Law,* but is also simply mistaken. Numerous cultures and communities have long thrived on fishing. Indeed, the basic tenets of fisheries management are an evolutionary product, developed over thousands of years. Although not all of these coastal villages cultivated and produced norms that maintained and sustained their culture and the fishery, several of them did.[197] As one scholar noted in reference to the successful cultures, "typically, a master fisher would regulate fishing with closed seasons, restricted areas, size limits, species restrictions, quotas, and equipment regulations—all of which prevented overfishing and allowed reef species to repopulate. Breaking the taboo against overfishing could lead to expulsion from the community or death."[198] Thus, it is peculiar that Ellickson would imply that it is

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193 *See* MOWAT, *supra* note 191, at 221.

194 *See* Scott McVay, *Reflections on the Management of Whaling*, *in* THE WHALE PROBLEM: A STATUS REPORT 376 (W. Schevill ed., 1974).

195 *See id.*

196 *See* ORDER WITHOUT LAW, *supra* note 8, at 205.

197 *See* WEBER, *supra* note 138, at 54; *see also* OSTROM, *supra* note 112, at 18-20 (noting that the fishermen of Alanya, Turkey have devised a nonlegal, bottom-up system of management that has successfully preserved the fishery).

198 WEBER, *supra* note 138, at 54.

impossible for informal controls to manage fisheries in a way that maximizes welfare.

It is all the more ironic because managing the open range for grazing is not so different from managing a fishery; yet, if one were to believe Ellickson, only the rancher is capable of informal management. Furthermore, traditional norms of customary fisheries resemble Shasta County and Ellickson's findings in many ways. First, the regulations were informal and imposed by the members of the group rather than the state or some other regulatory body.[199] Second, there were penalties, ranging from gossip to group expulsion, for failure to abide by the group's norms.[200] In fact, some close-knit coastal communities understood the interconnectedness of the group's very existence and the fish so well that exile or death might result as a punishment for deviant behavior.[201]

Such examples are not foreign to the United States. For instance, the lobster industry in Maine developed a similar informal system without government aid or draconian punishments.[202] In Maine, each local harbor has its own territory, which is then further subdivided among the local fishermen. As Ellickson's hypothesis predicts, the success of the informal system depends upon the tight-knit community for enforcement. Interlopers are at first warned. Second-time violators may have their traps tampered with or booby trapped. The penalties escalate from there, occasionally culminating in violence.[203] But at no time does the system ever involve the law.[204]

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[199] *See* ORDER WITHOUT LAW, *supra* note 8, at 191-206.

[200] *See id.*

[201] *See id.*

[202] *See* James M. Acheson, *The Lobster Fiefs Revisited: Economic and Ecological Effects of Territoriality in Maine Lobster Fishing*, *in* THE QUESTION OF THE COMMONS 37, 37-65 (Bonnie J. McCay & James M. Acheson eds., 1987). Other examples include the practice of Shoal Harbor in New Jersey and porgies. *See* Bonnie J. McCay, *The Culture of the Commoners: Historical Observations on Old and New World Fisheries*, *in* THE QUESTION OF THE COMMONS, *supra*, at 195, 211-14. Subsistence principles were developed and maintained by many Native Americans who found excess fish wasteful and condemned tribal members for engaging in such practices. *See, e.g.*, Fikret Berkes, *Common-Property Resource Management and Cree Indian Fisheries in Subarctic Canada*, *in* THE QUESTION OF THE COMMONS, *supra*, at 66, 66-90. For further examples and discussion, see THE QUESTION OF THE COMMONS, *supra*.

[203] *See* Acheson, *supra* note 202, at 40-41.

[204] *See id.* at 40.

The very normalcy of such husbandry within traditional fisheries makes it all the more surprising that Ellickson attempts to defend his hypothesis against the overfishing objection on the grounds that informal controls of whaling practices are incapable of administering something so complex as a fishery in a manner that would protect against resource depletion.[205] The history of fisheries and coastal communities is replete with examples of norms and conservation norms.[206] In fact, the historical balance indicates that depletion is typically a product of centralized management by the state rather than reliance on local practices. Consequently, if anything, the practices and norms of the older, more established close-knit communities lend support to Ellickson's hypothesis.

However, the norms of many traditional fisheries have changed with technological advancements and market growth.[207] Outsiders have invaded the local fisheries, infiltrating the community with a new breed of better-equipped fishermen with different standards: short-term profits.[208] New techniques have been introduced, making the fishermen more efficient at getting a larger catch in a shorter period of time. New England groundfish fishermen, for example, could haul in more than 160,000 pounds of fish on a single trip.[209] "It was," as one native, old-time fisherman stated, "a great time to be a fisherman . . . . You could tell your wife you would be gone for ten days, then get your catch early and be back in five."[210] However, the new fishermen would not return to their wives in five days; instead, they would fish for ten, returning home with more money.[211]

Although advancements in fishing efficiency permitted many to cash in, it also led to the fisheries' demise that is currently

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[205] *See* ORDER WITHOUT LAW, *supra* note 8, at 205.

[206] *See, e.g.*, OSTROM, *supra* note 112, at 143-46; Gordon, *supra* note 124, at 124-42.

[207] *See generally* NATURAL RESOURCE DEFENSE COUNCIL, *supra* note 133, at 1-29 (describing the reasons behind the decline of the fisheries and indicating the seriousness of the problem).

[208] Ellickson might say they came equipped with a different set of *rules*. *See supra* note 99.

[209] *See* Stuart Leavenworth, *Fishing for Trouble: Can North Carolina Save a Dying Resource*, NEWS & OBSERVER (visited Apr. 7, 1999) <http://www.nando.net/sproject/fishing/codsquad.html>.

[210] *Id.* (statement of Joe Brancaleone, Chairman of New England Fishery Management Council).

[211] *See id.*

affecting much of the world.[212] Older fishermen were forced to adopt the new practices and forego traditional fishing practices just to compete. The fisheries' stocks were quickly depleted. Despite the fishermen being acutely aware of the depletion warning signs,[213] the new norms continued. Anxious to preserve fishery employment and mitigate the depletion of resources, governments around the world subsidize fisheries at a rate of $124 billion per year. This is done despite the fact that fisheries only generate approximately seventy billion dollars—a fifty-four billion dollar yearly tax burden.[214] Instead of mitigating the harm, such governmental intervention programs only exacerbate the effects of overfishing by sustaining the practice. Consequently, it is the norms of today which maintain and magnify the problem. Today, Cape Cod is jokingly referred to as "Cape Codless."[215]

C. *Narrowing the Group's Welfare Considerations and Triggering the Tragedy of the Commons*

Narrowing the scope of consideration in order to assess a group's welfare cannot save Ellickson's hypothesis. This very maneuver will result in the tragedy of the commons which, by Ellickson's own admission, is not welfare maximizing.

Closely consider Ellickson's defense on this point. By positing an either-us-or-them scenario, Ellickson suggests that it might be rational to risk overwhaling in order to survive.[216] This is one way to obtain a competitive advantage over other whaling communities. However, the costs of such a sustained strategy are enormous: death of the fishery. The other groups will, assuming

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[212] *See The Tragedy of the Fisheries: Nationwide Fish Declines Threaten Species and Economy*, LAND LETTER, Apr. 20, 1994, at 4 [hereinafter *Tragedy of the Fisheries*].

[213] Such signs might include longer trips to catch the same quantity, twice as many boats catching the same yearly quantity, or a change in fish concentrations. *See, e.g.*, Leavenworth, *supra* note 209 (regarding New England fishermen's awareness of depletion of fishing); McQuaid, *supra* note 137, at A39 (describing how Thai fishers report lower catches).

[214] *See* McQuaid, *supra* note 137, at A39 (citing UNITED NATIONS FOOD AND AGRICULTURE ORGANIZATION, THE STATE OF WORLD FISHERIES AND AQUACULTURE (1996)). For example, on March 21, 1994, the late Commerce Secretary Ron Brown announced $30 million in "emergency assistance" for the Northeast fishermen because of the "virtual collapse of the New England groundfish stocks." *Tragedy of the Fisheries*, *supra* note 212, at 1.

[215] Leavenworth, *supra* note 209.

[216] *See* ORDER WITHOUT LAW, *supra* note 8, at 206.

that they, too, are rational actors and that this is a prisoner's dilemma, employ a tit-for-tat strategy.[217] Alternatively, if the group does not give any thought to "outsider" strategies or if it is not a prisoner's dilemma, the group will simply try to maximize its own welfare because it is aware that there are others trying to capture the same resource. Either way the result is the same. The group will try to get as much of the resource as it can before another does. Consequently, this is not simply a problem that impacts outside groups and might cause their impoverishment; it is a real, local event. Unless one seeks to manage cooperatively between all whaling communities, no matter the costs, the fishery will die, bringing about a state of affairs devoid of welfare.

Inherent in the tragedy of the commons is Ellickson's rational-actor model; in fact, the model gives rise to the tragedy. As explained, the tragedy is driven by self-interested individuals maximizing their welfare; it just so happens that it is also at the expense of others (and unwittingly, themselves). Overconsumption is a problem whenever rational beings have access or ownership in a common resource, because there is no incentive to conserve. As a rational actor, each individual seeks to maximize his or her gain. Each member is inclined to act in a self-interested way, taking as many units of the common pool in order to maximize her welfare in the least costly manner possible. Consequently, it would not be wise for Ellickson to claim that this argument misconstrues rationality because it employs his definition. Indeed, the discussion of the tragedy assumed that "each individual pursues self-interested goals" and that "each individual chooses among various means for achieving those goals" only to pick the one which best serves his or her interests.[218] Ellickson presumably would seek to maintain the very conception of rationality upon which his hypothesis is premised. Of course, if he does suggest that rationality is somehow different from these presumptions and this model, his hypothesis crumbles. Such a suicidal effort by Ellickson might be evidence that the analysis is

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[217] *See* AXELROD, *supra* note 69 (noting that the champion strategy in repeat play prisoner's dilemmas is tit-for-tat—a strategy that succeeds because of its tough responses to violations, its compassion when forgiveness is sought, and its willingness to cooperate with all newcomers).

[218] ORDER WITHOUT LAW, *supra* note 8, at 156.

correct—he is, after all, a member of the close-knit group of law professors.[219]

D. *Are These Groups Still Closely Knit?*

Ellickson does not suggest that his close-knit group of whalers changed over time to become something other than close-knit; however, doing so is certainly one option available to him to refute this Article's claims.[220] For example, Ellickson might suggest that what happened in Cape Cod is a by-product of what happens when a close-knit group loses its "close-knit" character. Arguably, capital infusion and technological advancements within the fishery stripped away its close-knit character. Alternatively, the fishery's nature changed because outsiders began to fish due to the riches offered. As in a gold rush, immediate prosperity tempted additional investment, which brought more prospectors into the fishery, distorting the numbers until the fishery became unrecognizable. What was once a stable, harmonized collective of fishermen became cutthroat, with each individual looking out for his or her own self-interest. This at least might be the rational response to such infiltration.

According to Ellickson, a group is close-knit when "informal power is broadly distributed among group members and the information pertinent to informal control circulates easily."[221] Thus, the ability of any member to aid in checking the behavior of other members over time through whatever means, be it tit-for-tat or gossip, is sufficiently strong in such groups.[222] The prior examples of the fisheries do not seem to meet Ellickson's definition. First, if there are many newcomers to a group at any one time (i.e., the assimilation is not slow and steady), there is a dearth of information available on the individual and his or her behavior within the group. Over time, data can be gathered and an equilibrium reached whereby the group once again has a close-knit character. However, upon the initial surge and introduction into the group, no data is available. Depending on the size of the infiltration as compared to the size of the existing

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[219] *See id.* at 258-64 (discussing the close-knit group of law professors and their scofflaw behavior toward copyright law).

[220] Indeed, he uses such an approach to refute the study of the Ik. *See id.* at 268.

[221] *Id.* at 177-78.

[222] *See id.* at 178-81.

group, the existing group's constitutive norms and mechanisms of control may not be sufficient to assimilate the newcomers. Second, it is difficult to see how informal controls can be maintained over any large group of people. Thus, if the newcomers are few in number, like a new family in the neighborhood, it is easy to imagine how informal measures might be taken to educate the newcomers in the way things are done. However, if the infusion is sufficiently large, one can easily imagine that only formal controls are capable of assimilating the new newcomers.

Nevertheless, this Article's analysis of whaling norms and practices is true for Ellickson's close-knit whalers of 1750-1870.[223] The bowhead, right, and gray whale populations were devastated by the whaling practices of the very same close-knit group that Ellickson used to defend his hypothesis.[224] Thus, because his close-knit group engaged in norms that were suicidal for the group, Ellickson's hypothesis must explain how that behavior was welfare maximizing. If he does so by suggesting that such a group was not close-knit, then his hypothesis lacks support. He may try to explain away this counter-example on the theory that the whalers had lost their "close-knittedness"[225] when their counter-productive behavior started because of technological advancements, such as the harpoon gun, speedier ships, or other products of the whaling community. But if this is the case, then his theory must explain why the group's workaday norms of research and development caused its own demise. If such norms do contribute to the demise of a close-knit group, it seems that Ellickson's hypothesis would predict that losing one's close-knit character is welfare maximizing.

Additionally, defending the hypothesis by suggesting that the counter-example group is not close-knit because of a surge in numbers or a temporary change in practices (e.g., an infusion of capital or revolutionary development of technology) is on one level inadequate and on another unsatisfactory. It is inadequate because Ellickson's hypothesis should explain why the group did not have a norm preventing infiltration that might destroy the group or at least preserving its character rather than supplanting workaday norms altogether. The defense is unsatisfactory be-

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223 *See id.* at 191.

224 *See* McVay, *supra* note 194, at 375.

225 *See, e.g.*, ORDER WITHOUT LAW, *supra* note 8, at 203-04 (using this tactic to explain the increase in litigation within the whaling community ca. 1850).

cause the elasticity of the concept of close-knittedness would permit it always to be used in support of Ellickson and never against him. However, the more frequent that defense becomes, the more one wonders whether any group is close-knit—and if so, for how long. If groups attain and lose their close-knit character with regularity, or if members feel no compunction to remain, the weaker Ellickson's hypothesis becomes—there is no control, informal or otherwise, over a group that is infinitely pliable. Of course, it may yet be that close-knittedness itself is not the welfare maximizing state and that it is time for the group to move on.

VI
The Limits of Ellickson's Hypothesis

It is important to emphasize that the ramifications of accepting Ellickson's hypothesis are not that radical because the hypothesis suffers from being indeterminate and, if one is fully persuaded by this Article, it is also inadequate.[226] I use "indeterminate" to mean that his hypothesis "fails to yield unique predictions."[227] By inadequate I mean that it fails to yield correct ones.

In his book illustrating the limits of rationality, *Solomonic Judgments*, Jon Elster notes that there are at least three levels at which indeterminacy and inadequacy might enter into the picture for any positive account of human cognition, action, and effect.[228] It is worthwhile to examine Ellickson's work and his hypothesis at each of the three levels, if for no other reason that to deter-

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[226] Ellickson offers counter-examples to his hypothesis and then rebuts them. His examples are the Ik and Italian peasants. *See id.* at 267-70. To Ellickson such examples only support his claim rather than detract from it. The Ik example lends support to his hypothesis because cooperation among this violent group only emerged once it lost its close-knittedness. *See id.* at 268. And as for the Italians, he dismisses the claim as unscholarly in part and supportive of his hypothesis otherwise. *See id.* at 268-69. Interestingly, Ellickson also discusses tribal rites and societal puberty rites as potential counter-examples but dismisses them as "preliterate" societies and predicts that such rites will be abandoned "after members obtain better medical information." *Id.* at 269. However, it does not seem to this author that either Egypt or South Africa are "preliterate" societies, yet these practices continue.

Although beyond the scope of this article, it is also worth considering the norms of smoking, revenge, child abuse, littering, or needle sharing. According to Ellickson's hypothesis, not one of these should emerge in a close-knit group. But don't all exist as norms in some close-knit group in America?

[227] Elster, *supra* note 59, at 1.

[228] *See id.* at 4-5.

mine whether his hypothesis is indeterminate or inadequate. The first level is whether the norm indicates which particular action of a group member is welfare maximizing given any particular set of facts. The second, is whether his hypothesis is right given the data. The third level is whether Ellickson used an adequate amount of evidence to formulate his hypothesis.[229] This Article has already dealt with some forms of indeterminacy inherent in Ellickson's hypothesis;[230] thus, to adequately illustrate Ellickson's indeterminacy, only a few more examples are necessary.

Consider again Ellickson's approach to measuring group welfare. He ranks the group's preferences ordinally. This is fine if there are preferences, but quite plausibly there might be ties. It might be that the group is indifferent as between *X* and *Y*. For example, generally it does not matter to the Shasta County ranchers how they split the costs of fencing as long as they do it equally. Thus, one might contribute the labor while the other provide the materials, they may work on the project together, or they may choose some other method of dividing the costs and labor.[231] However, the failure of the group norm to determine which one approach to building the fence is preferred to another is to render the ranking incomplete, as well as to make Ellickson's norm resemble a standard rather than a rule.[232] The consequence of incompleteness is the possibility that no particular action is welfare maximizing. Any decision on how to divvy up the fencing costs and labor, and for whatever reason, is as likely to maximize the welfare as any norm which is said to exist. The underlying problem here is one endemic to game theory: there is no welfare maximizing choice, just a maximizing strategy. Thus, as long as the welfare quotient is dependent on other actors and their actions depend on you, it is impossible to find *one* best action.[233]

Ellickson's hypothesis is also indeterminate because it is neither the best nor a unique description of the whaling facts he presents. There are at least two equally plausible theories one might draw from the same set of data. One possibility is that the

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229 *See id.*

230 *See supra* notes 59-62, 77-79 and accompanying text.

231 *See* ORDER WITHOUT LAW, *supra* note 8, at 78-79.

232 *See id.* at 234 (discussing the selection of a flag or group symbol: "In such a context the hypothesis predicts the emergence of some symbol, but cannot forecast its exact content.").

233 *See* ELSTER, *supra* note 59, at 8-10.

whalers' norms minimize the worst case scenario, namely, the outbreak of violence at sea between vessels over the capture of a whale. Certainly the "fast-fish, loose fish rule,"[234] the "iron-holds-the-whale rule,"[235] and the split ownership rules,[236] each protected against such violence because they provided for certainty of ownership. It might be merely coincidental that the norm is also welfare maximizing (if, in fact, it is at all). Another possibility is fairness. It might be that it is fairest, at least to all the participants, that the one who fastens the slow, easily manageable whale to the vessel should keep it, and that the first one who impedes the quick, indefatigable sperm whale sufficiently to mark it with their lance also deserves to keep it as their trophy. It is fair because it was their energies and hard work that enabled the prey to be taken. Either one of these explanations (i.e., damage control or basic fairness) comports with the data Ellickson presents. Thus, his own hypothesis lacks determinacy. Moreover, given the number of additional norms or data presented, the idea that norms are welfare maximizing is not likely to be the most reasonable conclusion.[237]

One of the principal problems for Ellickson may be his notion of rationality.[238] His model of rationality, as well as Hardin's, is severely limited in its usefulness as a model from which group behavior can be predicted. Thus, it is a severe handicap for positive theorists such as Ellickson. The reality of life is not captured by selfish individualists forming selfish collectives that act as though they are of a single, selfish mind. There are countless examples of how humans cooperate every day and of how humans escape from the tragedy of the commons, a tragedy destined to befall the rational society composed of selfish, rational actors—the lobster fishermen in Maine;[239] cattle grazing in the Alps,[240] or the Alanya fishing community in Turkey,[241] to name

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234 ORDER WITHOUT LAW, *supra* note 8, at 197-98.

235 *Id.* at 198-201.

236 *See id.* at 201-03.

237 *See also* Cooter, *supra* note 10, at 1677 (noting that, in the face of additional data, norms require efficiency and fairness).

238 *See generally* ELSTER, *supra* note 59 (discussing the indeterminacy and inadequacy of rational choice theory).

239 *See supra* text accompanying notes 202-204.

240 *See* Elinor Ostrom, *Institutional Arrangements for Resolving the Commons Dilemma*, *in* THE QUESTION OF THE COMMONS, *supra* note 202, at 250, 255 (citing a regulation from as early as 1517: "No one is permitted to send more cows to the alps than he can winter.").

but a few. What is unmistakably prevalent in each one of these solutions is a mixture of custom, communication, and convention, perhaps externally imposed on the close-knit groups, but undeniably internally accepted by the members of the group. At bottom, the cooperative equilibrium[242] is the thread of their society; alter it and you risk fraying the fabric of their fold.

CONCLUSION: WE ARE NOT FATED TO THE DESTINY OF THE REINDEER

If Ellickson's hypothesis was right, humans would share the destiny of the St. Matthew Island reindeer. However, this fate illustrates Ellickson's paradox: suicide is not welfare maximizing. Fortunately, we are not as "rational" as the reindeer. Indeed, humans are motivated by many things besides welfare maximization, rationality, utility, or efficiency. Several economists already understand this aspect of human nature and have begun to study the underlying characteristics and nature of our motivation, intention, and purpose behind our actions as an alternative to rationality.[243] Perhaps Ellickson, the "law and economics" scholars, and other rationality theorists should consider doing the same.

One of Ellickson's major problems is that he fails to take seriously his own hypothesis and test it against the hard cases like the tragedy of the commons. John Locke once explained that because of the complexity and interconnectedness of nature, science and the testing of hypotheses concerning human nature should be done very carefully:

> Not that we may not, to explain any phenomena of nature, make use of any probable hypothesis whatsoever: hypotheses, if they are well made, are at least great helps to the memory and often direct us to new discoveries. But my meaning is that we should not take up any one too hastily . . . till we have very well examined particulars and [have] made several

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241 *See* OSTROM, *supra* note 112, at 144, 157-73.

242 Looking at the recent psychological scholarship, this equilibrium is only achieved where group members believe their lot to be a fair one. *See supra* note 94 and accompanying text; *see also* ELSTER, *supra* note 59, at 202-16 (reaching the same result but from a philosophical starting point and calling it "justice").

243 *See, e.g.*, ERNEST DICHTER, GETTING MOTIVATED (1979).

> experiments in that thing which we would explain by our hypothesis and see whether it will agree with them all . . . .[244]

As the fisheries, timber, and biodiversity examples demonstrate, Ellickson's hypothesis fails when tested against the backdrop of norms for resource extraction. On Locke's cautionary standard, one should think twice before embracing a theory that so poorly comports with the empirical facts.

At best, even if one finds this Article's explanations of the existing tragedies unpersuasive, either in fact or at their foundation, Ellickson has provided insufficient data to test his hypothesis fully. This Article has shown the indeterminacy of his hypothesis by arriving at different conclusions using the same set of data and the same community and norm makers as Ellickson used to defend and justify this hypothesis. Indeed, the very norms of the whaling industry, which Ellickson so prominently discusses, are effective illustrations of counter-examples to his hypothesis. Such indeterminacy invariably weakens any positive theory. On the other hand, if one believes that this Article and the examples discussed herein are persuasive, then Ellickson has failed because the value of any positive theory is in its usefulness in making predictions. Ellickson's hypothesis simply does not yield the correct results. Rather than being welfare maximizing, group norms frequently result in behavior that is suicidal to that group. Either way, the "law and economics" school might be wise to build slowly on Ellickson's theory; theories built on such a shaky foundation might crumble quickly.

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[244] John Locke, *On the Use and Misuse of Hypotheses*, *in* ON SCIENTIFIC THINKING, *supra* note 51, at 70, 71.