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CONTRACTING WITH ELECTRONIC AGENTS

*Anthony J. Bellia Jr.**

INTRODUCTION

The use of computer technology to “make contracts” for humans is no longer mere prospect but reality. Technology has developed that enables individuals to use electronic agents to arrange exchanges without direct human intervention. A consumer releases an electronic agent into cyberspace with instructions to purchase a good within a range of specified prices and other terms. The seller, for its part, uses a software agent instructed to sell certain goods within a specified range of prices and other terms to the highest bidder. The agents, after interacting with other agents to find the best deal, arrange the sale of the good. It is predicted that technological advances will enable software agents to operate without direct instructions from the person using the agent—even regarding the task to be performed. For example, a software agent will arrange flights and hotels based merely upon reviewing a user’s appointment calendar, which the agent is tasked to manage. Or, a software agent will order a user’s groceries based on the user’s observed eating habits.

The use of electronic agents creates a puzzle for contract law. As a matter of doctrine, common law contract principles provide no clear answer to the question whether exchanges arranged by electronic agents are enforceable.¹ If

* Assistant Professor of Law, Notre Dame Law School. The author is grateful to Randy Barnett, Tricia Bellia, John Finnis, Rick Garnett, Cathy Kaveny, John Nagle, and Steven D. Smith for helpful comments on a previous draft of this Article, and to the Notre Dame Law School for its financial support. The author is also grateful for the assistance of research librarian Warren Rees. Laura Leslie and Kathleen Lundy provided excellent research assistance. All errors and omissions, of course, are my own.

¹ Some scholars have argued that the objective test of contract would hold users of electronic agents liable for transactions arranged thereby. See Jean-Francois Lerouge, *The Use of Electronic Agents Questioned under Contractual Law: Suggested Solutions on a European and American Level*, 18 J. MARSHALL J. COMPUTER & INFO. L. 403, 417 (1999) (suggesting that under objective theory, user of electronic agent is contractually liable for exchanges arranged by agent); see also Ian R. Kerr, *Spirits in the Material World: Intelligent Agents as Intermediaries in Electronic Commerce*, 22 DALHOUSIE L.J. 190, 214 (1999) (suggesting the same, at least where electronic agents are not operating autonomously). But see Tom Allen & Robin Widdison, *Can Computers Make Contracts*, 9 HARV. J.L. & TECH. 25, 43-45 (1996) (suggesting that to hold

I were to use a person rather than an electronic agent to arrange a purchase for me by interacting with a human agent of the seller, common law contract principles alone would not hold me liable for the purchase. Rather, contract principles operating in conjunction with agency principles would hold me liable. It has been suggested that agency principles,² or even deeming electronic agents “persons,”³ could supplement common law contract principles to hold transactions arranged by electronic agents enforceable. It is doubtful, however, that the usual justifications for employing these principles warrant their application to electronic agents.

Legislative initiatives have addressed the use of “electronic agents” in contract formation, but have not resolved the difficult enforceability questions.⁴ By and large, current initiatives require either a preexisting agreement between persons to arrange transactions electronically, or some direct manifestation of human intent, for exchanges arranged by software agents to be enforceable. The initiatives, like the common law, provide no clear answer to the question of enforceability when these conditions are not fulfilled.

The question thus arises whether a person who willingly uses an electronic agent to arrange transactions *should* be bound to arrangements made thereby. This question is one that courts and legislatures presently must confront.⁵ Intuition suggests that transactions arranged in such a manner should be binding, as is evident in scholarly writings suggesting extensions of doctrine to

users liable under objective theory would require extension of doctrine). As I describe in Part II.B, the question is not as simple as it would seem as a matter of doctrine.

² See Kerr, *supra* note 1, at 239-47 (discussing application of agency law to electronic agents); John P. Fischer, Note, *Computers as Agents: A Proposed Approach to Revised U.C.C. Article 2*, 72 IND. L.J. 545, 546 (1997) (arguing for extension of agency principles to electronic agents).

³ See Allen & Widdison, *supra* note 1, at 35 (discussing the computer as legal person); Leon E. Wein, *The Responsibility of Intelligent Artifacts: Toward an Automation Jurisprudence*, 6 HARV. J.L. & TECH. 103, 105 (1992) (discussing the legal personality of machines).

⁴ See UNIF. ELEC. TRANSACTIONS ACT § 2(6), 7A (pt. I) U.L.A. 28 (Supp. 2001) (defining “electronic agent”); *id.* § 14(1) (providing when a contract is formed by the interaction of electronic agents) (Supp. 2001); Electronic Signatures in Global and National Commerce Act, 15 U.S.C.A. § 7001(h) (West Supp. 2001) (providing when a contract is formed by the interaction of electronic agents); *id.* § 7006(3) (defining “electronic agent”); UNIF. COMPUTER INFO. TRANSACTIONS ACT § 107(d), 7 (pt. II) U.L.A. 9 (Supp. 2001) (providing when a person is bound by the operations of an electronic agent); *id.* § 202(a) (providing how a contract may be formed by the operations of electronic agents); *id.* § 206(a) (providing that a contract may be formed by the interaction of electronic agents); *id.* § 213(a) (providing when certain electronic functions are attributable to a person).

⁵ Even Joseph Sommer, who has argued that most legal issues raised by software technologies are not novel, predicts that “the mature law of machine discretion might look very different than [his] tentative exploration” of it. See Joseph Sommer, *Against Cyberlaw*, 15 BERKELEY TECH. L.J. 1145, 1148, 1185 (2000).

serve that purpose.⁶ Whether this intuition is correct depends on what gives rise to contractual obligation. Scholars have advanced various theories of contractual obligation, the two most dominant being *will* theories and *reliance* theories.⁷ To enforce exchanges arranged by electronic agents appears consistent with certain theories, and inconsistent with others.

This Article seeks to shed light on the question whether exchanges arranged by electronic agents should be enforced by examining it in light of different theories of contractual obligation. Scholars have long debated the normative basis of contract law. Indeed, some have criticized contracts scholarship as overemphasizing philosophical theory.⁸ This criticism stems from two concerns. The first is that over-theorizing has created a gulf between contracts scholarship and transactional practice.⁹ The second is that most theoretical scholarship has focused on what morally justifies contractual obligation, rather than on what the underlying default rules of contract law should be.¹⁰ Notwithstanding the merits of these claims, emerging electronic agent technology implicates the question of what morally justifies contractual obligation. It thus presents a unique opportunity to bridge the perceived distance between a rich body of scholarship¹¹ and a dynamic area of practice.¹²

⁶ See *supra* notes 2 and 3 (citing articles that suggest extending agency and personhood principles to electronic agents).

⁷ Under the category "will" theories, I include Charles Fried's promise theory of contract, see CHARLES FRIED, *CONTRACT AS PROMISE: A THEORY OF CONTRACTUAL OBLIGATION* (1981), and Randy Barnett's consent theory of contract, see Randy E. Barnett, *A Consent Theory of Contract*, 86 COLUM. L. REV. 269 (1986). Under the category "reliance" theories, I include the general conception of contract as akin to tort, see P.S. ATIYAH, *THE RISE AND FALL OF FREEDOM OF CONTRACT* (1979), and Daniel Farber and John Matheson's theory of contract as protecting market confidence, see Daniel A. Farber & John H. Matheson, *Beyond Promissory Estoppel: Contract Law and the "Invisible Handshake"*, 52 U. CHI. L. REV. 903, 927 (1985). I also address similar theories of Joseph Raz and John Finnis that view contractual obligation as allowing individuals to pursue their reasonable objectives by rendering obligations they voluntarily assume to each other reliable. See JOHN FINNIS, *NATURAL LAW AND NATURAL RIGHTS* 323-24 (1980); Joseph Raz, *Promises in Morality and Law*, 95 HARV. L. REV. 916, 916 (1982) (reviewing P.S. ATIYAH, *PROMISES, MORALS, AND LAW* (1981)) ("*Promises*"); see also JOSEPH RAZ, *THE MORALITY OF FREEDOM* 173-76 (1986).

⁸ See E. Allan Farnsworth, *A Fable and a Quiz on Contracts*, 37 J. LEGAL EDUC. 206, 208 (1987) ("The urge to have a 'theory' of contract law has tended to increase the distance between contracts scholarship and practice. In particular, it has led to an excessive emphasis by scholars on why promises are enforced.").

⁹ See *id.*

¹⁰ See Richard Craswell, *Contract Law, Default Rules, and the Philosophy of Promising*, 88 MICH. L. REV. 489, 490 (1989) (arguing that certain philosophical theories of contract law have little or no relevance to the content of the background rules of contract law).

¹¹ See ROBERT A. HILLMAN, *THE RICHNESS OF CONTRACT LAW: AN ANALYSIS AND CRITIQUE OF CONTEMPORARY THEORIES OF CONTRACT LAW* 1 (1997) (describing "modern theories of contract law" as a "rich array").

¹² See Raz, *Promises*, *supra* note 7, at 916 ("No doubt philosophers and lawyers have [a] lot to learn from each other wherever their interests intersect.").

To the extent that philosophical theories of contractual obligation are relevant to rules of contract formation, it is worth exploring the enforceability question in light of each theory.¹³

Part I explores the doctrinal puzzle that the use of electronic agents in contract formation presents. First, the technology that has given rise to the question of enforceability is described. Part I then analyzes the enforceability question under modern contract doctrine, which, in conclusion, provides no clear answer to it. Part I also explores proposals to extend agency or personhood principles to electronic agents, and conclude that the justification that normally warrants their application does not extend to this situation. Finally, statutory initiatives that address agent technology are described. They, too, fail to resolve the difficult questions of enforceability. Part II explores whether the law should enforce exchanges arranged by the interaction of electronic agents. Part II examines how normative theories of contractual obligation inform the issue, with an eye toward the strengths and weaknesses of each theory. In conclusion, the theories that most strongly support the enforcement of exchanges arranged by electronic agents ground contractual obligation in protecting the ability of individuals to pursue their reasonable objectives through reliable arrangements.

I. ELECTRONIC AGENTS AND CONTRACT DOCTRINE

Since the 1980s, businesses have entered into contracts providing for the transaction of business through electronic data interchange ("EDI"). EDI is a method by which businesses transfer data electronically rather than by exchanging paper.¹⁴ The use of EDI is generally governed by an agreement establishing the kinds of transactions that the parties will conduct using this method.¹⁵ The expected use of electronic agents differs from EDI in that parties using electronic agents may not have expressly agreed to conduct transactions electronically prior to the transaction.¹⁶ My interest here is not with electronic interactions that arise pursuant to a prior governing agreement.

¹³ My concern here is with what Richard Craswell calls the "agreement rules" of contract, not with "background rules," such as excuse of nonperformance or remedies. See Craswell, *supra* note 10, at 503-04.

¹⁴ See The Electronic Messaging Services Task Force, *The Commercial Use of Electronic Data Interchange—A Report and Model Trading Partner Agreement*, 45 BUS. LAW. 1645, 1649 (1990) (describing EDI).

¹⁵ See Stephen T. Middlebrook & John Muller, *Thoughts on Bots: The Emerging Law of Electronic Agents*, 56 BUS. LAW. 341, 347-48 (2000) (explaining practice of EDI).

¹⁶ See *id.* at 348.

It is with electronic interactions that themselves are the alleged basis of contract formation.¹⁷

This Part briefly describes emerging technologies that enable individuals to use software to “negotiate” and consummate “agreements.” I address whether exchanges arranged by the interaction of electronic agents are, as a general matter, enforceable under common law contract doctrine. I conclude that common law contract principles fail to provide a clear answer to the enforceability question, and that agency principles are largely inapposite. Finally, this Part describes proposed legislation that generally addresses “electronic agents” in contracting. This legislation fails to resolve the difficult issues left open by the common law.

A. *The Technology*

The term “electronic agent” has no simple definition. An electronic agent has been described colloquially as “a software thing that knows how to do things that you could probably do yourself if you had the time.”¹⁸ A more accurate description (and one that avoids unnecessary attributions of human intelligence) is that an electronic agent is a software thing programmed to execute sophisticated commands of a human user.¹⁹ At present, there exist

¹⁷ Some foresee that the use of electronic agents to arrange exchanges in the first instance will be widespread. See, e.g., Margaret Jane Radin, *Humans, Computers, and Binding Commitment*, 75 IND. L.J. 1125, 1131 (2000); David D. Wong, Note, *The Emerging Law of Electronic Agents: E-Commerce and Beyond* . . . , 33 SUFFOLK U.L. REV. 83, 83 (1999). Others caution against assuming that the existence of technology enabling such transactions will in fact lead to its use on a large scale. See, e.g., Jean Braucher, *Rent-Seeking and Risk-Fixing in the New Statutory Law of Electronic Commerce: Difficulties in Moving Consumer Protection Online*, 2001 WIS. L. REV. 527, 537. No matter how widespread the eventual use of this technology in transactional practice may be, the enforcement questions raised by the possibility challenge the way we generally think about contract formation.

¹⁸ Bjorn Hermans, *Intelligent Software Agents on the Internet: An Inventory of Currently Offered Functionality in the Information Society and a Prediction of (Near-)Future Developments* (1996), at http://www.firstmonday.dk/issues/issue2_3/ch_123/index.html (visited Nov. 14, 2001) (quoting Ted Selker of the IBM Almaden Research Centre).

¹⁹ It is commonplace for writers to attribute unnecessarily a kind of human intelligence to agent technology. For example, an electronic agent is “a component of software and/or hardware which is *capable of acting* exactly in order to accomplish tasks on behalf of its user.” SYED MAHBUBUR RAHMAN & ROBERT J. BIGNALL, *INTERNET COMMERCE AND SOFTWARE AGENTS: CASES, TECHNOLOGIES AND OPPORTUNITIES* 76 (2001) (quoting H.S. Nwana, *Software Agents: An Overview*, KNOWLEDGE ENG. REV., 11(3), 1-40 (1993)). In more technical terms, an electronic agent is “anything that can be viewed as perceiving its environment through sensors and acting upon that environment through effectors.” STUART J. RUSSEL & PETER NORVIG, *ARTIFICIAL INTELLIGENCE: A MODERN APPROACH* 31 (1995) (emphasis omitted). As far as electronic commerce is concerned, relevant properties of electronic agents have been described to include the capacity to

electronic agents that can perform various pre-purchase interactions.²⁰ Electronic agents (or bots, as they are called) search the Internet for products and comparative prices.²¹ Bots search for the best prices on, for example, books or mortgages. Researchers have developed bots that now perform tasks beyond merely gathering information. The next generation of bots interacts over terms and settles upon exchanges.²² (I would say, “negotiates terms and makes contracts,” but that would beg the question at issue in this Article.) The ideal is for the user to direct the agent to accomplish a task, for example, “buy this at the lowest possible price and with the best possible return and warranty terms,” and trust that the agent will figure out how to do so.²³ A researcher at the University of Southern California has developed a bot that orders his lunch based on his daily preferences. The bot asks the user what he craves, and then orders it.²⁴ It is predicted that future bots will order groceries based on the user’s eating habits or arrange flights and hotel rooms based on the user’s appointment calendar.²⁵

B. *The Common Law*

Suppose that a consumer unleashes an electronic agent on the Internet to arrange a purchase of a book for no more than a specified price. The electronic agent interacts with various electronic agents used by booksellers unknown to the consumer. The agents seek out the best combination of price, shipping, return policy, and other terms. Ultimately, the electronic agent places an order with the electronic agent of a particular bookseller. Do the consumer and the bookseller have a contract? It has been argued that, in this context, the parties have sufficiently *manifested assent* for there to be one. As I will explain here,

accomplish tasks on behalf of a user, autonomy, and the social ability to interact with other agents. RAHMAN & BIGNALL, *supra*, at 78.

²⁰ RAHMAN & BIGNALL, *supra* note 19, at 79.

²¹ *Id.* at 110.

²² The Software Agent Group of the Massachusetts Institute of Technology has developed “Kasbah,” a web-based system on which autonomous agents buy and sell goods on behalf of users. Buyers and sellers use agents endowed with knowledge to negotiate deals autonomously. The agents are autonomous insofar as they interact and conclude transactions without direct intervention by the users. Alexandros Moukas et al., *Agent-mediated Electronic Commerce: An MIT Media Laboratory Perspective*, at 5-7, at <http://ecommerce.media.mit.edu>.

²³ *Id.* at 6. The MIT group has also developed “Tete-a-Tete,” a program that enables electronic agents to negotiate not only price, but several other terms of a transaction, including warranties, shipping, service, returns, and payment options. *Id.* at 12.

²⁴ Anick Jesdanum, *Already Roaming the Web, Bots Are Heading into a New Domain*, PHILA. INQUIRER, Feb. 15, 2001, available at http://inq.philly.com/content/inquirer/2001/02/15/tech_life/ROBOTS15.html.

²⁵ *Id.*

however, it is unclear whether, as a matter of general common law principles there is a contract. Further, it has been argued that electronic agents should be deemed legal *agents* of the users, or even legal *persons* capable of making contracts. The justification that normally warrants application of these principles, however, does not warrant their application to electronic agents.

1. *Manifested Assent*

Scholars have argued that certain transactions arranged by electronic agents would be enforceable because the users of the agents have manifested assent to be bound.²⁶ It is axiomatic that external (objective) manifestations of the parties, rather than their internal (subjective) intents, determine the existence of a contract.²⁷ Where parties use electronic agents, the argument goes, they manifest assent to be bound by the actions thereof, and thus the agents may interact to form a contract. Is the matter this straightforward?

The *Restatement (Second) of Contracts* defines a contract as “a promise or a set of promises for the breach of which the law gives a remedy, or the performance of which the law in some way recognizes as a duty.”²⁸ A promise is not the commitment that the promisor subjectively intends, but the intention that the promisee reasonably perceives.²⁹ A promise may be stated in words or inferred from conduct.³⁰ The use of an electronic agent would seem to be properly characterized as an act of conduct. To use an electronic agent is to transmit a string of zeros and ones that no human will ever see. It is true that once electronic agents interact, their respective users may receive generated messages in words that set forth the terms of the transaction. But these are not words that either party communicated before the transaction—the alleged contract—was arranged. If a contract exists, it must be justified based on acts that preceded, or at least coincided with, its formation.³¹

²⁶ See Kerr, *supra* note 1, at 213-14; Lerouge, *supra* note 1, at 416-17.

²⁷ See RESTATEMENT (SECOND) OF CONTRACTS § 2(1) (1981) (“RESTATEMENT OF CONTRACTS”) (“A promise is a manifestation of intention to act or refrain from acting in a specified way, so made as to justify a promisee in understanding that a commitment has been made.”). To be bound, however, a party must in some way be responsible for the creation of the manifestation, even if by mere negligence. See *id.* § 19 cmt. c.

²⁸ *Id.* § 1. The U.C.C. provides no more specific guidance on this issue than do general common law formation principles.

²⁹ See *supra* note 27 and accompanying text.

³⁰ See RESTATEMENT OF CONTRACTS, *supra* note 27, § 4 (“A promise may be stated in words either oral or written, or may be inferred wholly or partly from conduct.”); *id.* § 19(1) (“The manifestation of assent may be made wholly or partly by written or spoken words or by other acts or by failure to act.”).

³¹ Allan Farnsworth has observed that cases in which conduct, as opposed to spoken or written words, constitutes a promise are the exception. E. Allan Farnsworth, *Decisions, Decisions: Some Binding, Some Not*,

Two conditions are necessary for an act to bind an individual to contractual obligation. First, the act must convey a promise—to wit, a manifestation of intent that justifies a promisee in understanding that a commitment has been made.³² Second, the manifestation of intent must be made with reference to the manifestation of intent made by the other party.³³ It is questionable whether either condition is satisfied when electronic agents interact to arrange an exchange.

With respect to the first condition, the use of an electronic agent may not convey a promise before the contractual obligation arises. The *Restatement* example of an act of conduct bespeaking promise is a customer passing a market, where the customer has an account, and seeing apples marked “25 cts. each.”³⁴ The customer holds up an apple so that the market clerk sees the act. This is conduct functioning as offer. The clerk nods, and a contract is formed.³⁵ More typical than conduct functioning as offer is conduct functioning as an acceptance.³⁶ I offer you a sum certain of money to replace my roof, and you commence work on the roof. Your conduct is held to constitute a promise to perform the work.³⁷ The conduct of releasing a bot onto the web to negotiate a deal for the purchase of a good or service does not manifest assent in the same way that the conduct in these two examples manifests it. In the case of the bot, neither party is aware of the other’s manifestation until after their respective bots arrange the transaction. Under the *Restatement*, “[t]he conduct of a party is not effective as a manifestation of his assent unless he intends to engage in the conduct and knows or has reason to know that the other party may infer from his conduct that he assents.”³⁸ The question is whether conduct may manifest assent—e.g., convey a promise—when neither party is aware of the other’s conduct until after contractual obligation arises, if it arises at all.³⁹

28 SUFFOLK U. L. REV. 17, 24 (1994) (explaining that “cases in which a promise is spelled out from non-verbal conduct are the exception”).

³² See *supra* note 27 and accompanying text.

³³ See RESTATEMENT OF CONTRACTS, *supra* note 27, § 23 (“It is essential to a bargain that each party manifest assent with reference to the manifestation of the other.”).

³⁴ *Id.* § 4 cmt. a, illus. 2.

³⁵ *Id.*

³⁶ See Farnsworth, *supra* note 31, at 24 (explaining acceptance by conduct).

³⁷ See *Ever-Tite Roofing Corp. v. Green*, 83 So. 2d 449 (La. Ct. App. 1955) (holding that commencement of performance constituted acceptance of offer that invited acceptance in that manner).

³⁸ RESTATEMENT OF CONTRACTS, *supra* note 27, § 19(2).

³⁹ My concern here is with the primary question of whether a user has manifested assent to be bound. If the user has done so, there could be secondary questions of mistake, fraud, or unconscionability. See Lerouge, *supra* note 1, at 426-32 (discussing these issues).

It is sensible to ask with respect to parties known to one another whether “the *other party* may infer from his conduct that he assents.”⁴⁰ Even when one party is unknown to the other, as, for example, in the case of a reward offered to the general public (the offeror does not know of each specific offeree, but an offeree by definition must know of the offeror), it is sensible to ask whether the alleged offeree is justified in understanding that the offeror has made a commitment to the offeree.⁴¹ For example, persons who know that an offeror would never pay them a reward may not be justified in understanding that their performance will conclude a bargain.⁴² In the paradigmatic case of electronic agent interaction, neither party to the alleged contract is specifically aware of the other party at the time the transaction is arranged. Thus, before the electronic agents arrange the “contract,” there is not the same basis upon which to ask whether either party has reason to know that the other party assents as there is when at least one party is known to the other.

It is true that persons using electronic agents have reason to know that other unknown persons may be using electronic agents capable of arranging transactions with theirs. What persons using electronic agents do not know or have specific reason to know is whether unknown persons assent to perform an arrangement thus made. Suppose a person using an electronic agent has rumored links to a terrorist organization. Does that person have reason to know that other users assent to perform an arrangement—say, for the lawful sale of fertilizer or the rental of a truck—that results from the interaction of their agents? It seems that there is no basis upon which to know the assent of the other until *after* the existence of a legal obligation, if indeed the exchange is enforceable.⁴³ Insofar as a promise must be communicated to another

⁴⁰ RESTATEMENT OF CONTRACTS, *supra* note 27, § 19(2).

⁴¹ *Cf.* *Carlill v. Carbolic Smoke Ball Co.*, 1 Q.B. 256 (1893) (explaining that as a general matter “advertisements offering rewards . . . are offers to anybody who performs the conditions named in the advertisement”). It is, of course, not a universal rule that in all cases both parties must know of each other’s assent before a contract arises. An offeror may invite acceptance by the offeree in a manner that will not be immediately known to the offeror, though legal obligation will arise upon acceptance in that manner. For example, an offeror who invites acceptance by return mail or commencement of performance will be bound upon the offeree’s mailing an acceptance, see *Adams v. Lindsell*, 106 Eng. Rep. 250 (1818), or commencing performance, see *Ever-Tite Roofing*, 83 So. 2d. 449, respectively. In these cases, however, at least one party—the offeree—will be aware of the offeror’s assent, and will have expressed assent with reference to the offeror’s assent, at the time legal obligation arises.

⁴² See RESTATEMENT OF CONTRACTS, *supra* note 27, § 2(1) (explaining that manifestation of intent must be “so made as to justify a promisee in understanding that a commitment has been made”).

⁴³ This is one basis for distinguishing arrangements made by electronic agents from the so-called “battle of the forms,” see U.C.C. § 2-207 (1989), to which the use of electronic agents has been compared. See Radin,

person, a contract, if one exists, precedes the making of a promise. It is true that the user finds out the price that the seller is willing to accept, but it is the enforceable sale that is conveyed to the user, not the seller's manifestation of assent to sell the item. The issue is whether the arranged exchange is itself a contract, which, if a promise must precede a contract, it is not, as, at the time the exchange is arranged, neither party is aware that the other has made a commitment.⁴⁴

Does this analysis elevate form over substance? It seems to, in some ways. In particular, it seems to elevate when it is that a contractual obligation arises over what it is that justifies contractual obligation in the first place, namely assent. The effect is significant. To hold that a promise must be communicated before or at the time contractual obligation arises would render conditional assent insufficient to create a contract in this context. Suppose that on Monday, I unconditionally assent to pay Jane \$50 for a particular book. Suppose that on Tuesday, I assent to pay up to \$50 for a book to whomever my electronic agent identifies as being willing to accept \$50 for the book. The Tuesday assent is conditional on my electronic agent interacting with other electronic agents to identify such a seller. Is my Tuesday assent any less genuine than my Monday assent?⁴⁵ There is no question that contract law treats conditional assent that is communicated to a party before or at the time of contract formation as genuine assent. An insurance company's assent, for consideration, to pay an insured \$100,000 *if* a fire destroys the insured's property, is as effective to create contractual obligation as would be its assent, for consideration, to pay someone \$100,000 unconditionally. If assent is the concern, whether it is communicated before or after a legal obligation arises should matter less than that it exists at the time the legal obligation arises.⁴⁶

supra note 17, at 1136 (drawing analogy and rejecting it). Insofar as transmission of a form implies assent, legal obligation does not precede assent.

⁴⁴ After the electronic agents arrange the exchange, the parties may act as if they have a contract and thus have a contract. *See, e.g.*, U.C.C. § 2-204(1) (1989) ("A contract for sale of goods may be made in any manner sufficient to show agreement, including conduct by both parties which recognizes the existence of such a contract.").

⁴⁵ *See* John Finnis, *On Conditional Intentions and Preparatory Intentions*, in *MORAL TRUTH AND MORAL TRADITION: ESSAYS IN HONOR OF PETER GEACH AND ELIZABETH ANSCOMBE* 163 (Luke Gormally ed., 1994). As Finnis explains, "[p]resuppositions (such as that the world will continue in much the same shape as it is today) condition every or virtually every formation of intention, and every intending, but many of them come to one's attention only in unusual circumstances, and most of them ordinarily do so without saying." *Id.* at 168.

⁴⁶ *Cf.* U.C.C. § 2-204(2) ("An agreement sufficient to constitute a contract for sale may be found even though the moment of its making is undetermined."); *RESTATEMENT OF CONTRACTS*, *supra* note 27, § 22(2) (same in substance for non-goods transactions).

Surely, the Tuesday assent exists at the time electronic agents arrange a transaction for the sale of the book.

Given the substance of the matter, is it possible that the preceding analysis misread the *Restatement* to require at least one party specifically to convey a promise to another before contractual obligation arises? As a matter of doctrine, I believe that analysis stands. The *Restatement*, as previously mentioned, sets forth a second condition for an act to provide the basis for a contract. Not only must an act convey a promise, but the promise must be made with reference to the promise of the other. This second condition strongly suggests that the perception of a promise must precede, or least coincide with, the creation of a legal obligation.

For there to be a contract, the *Restatement* provides, each party must “manifest assent with reference to the manifestation of the other.”⁴⁷ The comment states, “Ordinarily one party, by making an offer, assents in advance; the other, upon learning of the offer, assents by accepting it and thereby forms the contract.”⁴⁸ If taken literally, a rule that each party must manifest assent with reference to the manifestation of the other would preclude parties unknown to each other, and thus unaware of each other’s manifestations, from forming a contract. The comment just quoted, however, would allow at least one party—the offeror—to assent in advance. Thus, these principles would not preclude all use of machines in contract formation. A beverage company may use a machine to make an offer of a can of soda. The conduct of using a machine marked “Soda \$1.00” manifests assent in advance to produce a bottle if the user accepts the offer by depositing a dollar. The buyer deposits the dollar with reference to the soda company’s manifestation. A contract is formed. But what if the buyer uses a machine to buy soda? May both parties assent “in advance” to a contract? Suppose I construct a soda-buying machine marked “\$1.00 for Soda,” with a slot for inserting the soda and a slot for dispensing dollars. If we add to our machines robotic eyes and arms that make them capable of interacting with each other, may they form a contract? Neither party in this case, it seems, has manifested assent *with reference to* the manifestation of the other.

But if the comment allows offerors to manifest assent in advance, may not both parties, as offerors, assent in advance to the anticipated assent of the

⁴⁷ RESTATEMENT OF CONTRACTS, *supra* note 27, § 23 (“It is essential to a bargain that each party manifest assent with reference to the manifestation of the other.”).

⁴⁸ *Id.* § 23 cmt. a.

other? This characterization implicates the problem of "crossing offers." If I mail you an offer to buy soda for \$1.00, and you simultaneously mail me an offer to sell soda for \$1.00, no contract results.⁴⁹ Neither party has manifested assent with reference to the manifestation of the other. Under this principle, a contract would no more result from crossing offers to buy and sell something at a price to be fixed by computer software than it would from crossing offers to buy and sell something at a price to be fixed by an arbitrator. The use of an electronic agent to buy something is akin to making an offer to buy on terms to be fixed by computer software. The use of an electronic agent to sell something is akin to making an offer to sell on terms to be fixed by computer software. That the offer is made with open terms is not the problem. So long as the parties mutually manifest assent to an agreement, open terms generally will not preclude contract formation.⁵⁰ The problem is that neither party's assent to uncertain terms is made with reference to the other party's assent to uncertain terms. If I send an offer to buy on terms to be fixed by my representative and your representative, and you send an offer to sell on terms to be fixed by your representative and my representative, what the representatives may fix would not be binding until you or I was aware of the other's offer and assented thereto.⁵¹ What if each party stated in its offer, "I consider myself bound to the terms of this offer if, before you are aware of it, you send me an offer with the same terms, even though I may not yet be aware of your offer?" Is there a contract before either party is aware of the other's offer? In other words, may both parties expressly assent with reference to the anticipated but unknown assent of the other? Commentary to the *Restatement* suggests that a party may do so,⁵² but, not surprisingly, no cases appear to have addressed this issue. In any event, it is uncertain whether the advance assent expressed in these hypothetical offers could be attributed fairly to the use of an electronic agent.

⁴⁹ The *Restatement* notes:

Cases have occurred in which identical offers have crossed in the mails. Such an event is unusual, and the ordinary offer does not manifest assent to the formation of a contract in this way. Hence, neither offer accepts the other, and there is no contract unless one of the parties accepts the offer he has just received.

Id. § 23 cmt. D.

⁵⁰ *Id.* § 204 ("When the parties to a bargain sufficiently defined to be a contract have not agreed with respect to a term which is essential to a determination of their rights and duties, a term which is reasonable in the circumstances is supplied by the court.")

⁵¹ This assumes, of course, that the representatives are not agents in law.

⁵² See *RESTATEMENT OF CONTRACTS*, *supra* note 27, § 23 cmt. d ("theoretically, just as the offeror may assent in advance to an acceptance, so each of two offers could assent in advance to a cross-offer").

Now, lest we lose sight of actual practice, of course countless contracts are formed between parties who do not manifest directly assent with reference to a manifestation made by the other. My employee agrees with your employee that I will purchase goods from you. I am unknown to you, as you are to me. There is no question that we have a contract. The contract exists, however, not because I have manifested assent to be bound merely by using employees, and that you have done the same. Rather, the contract depends for its validity on agency principles.⁵³ Each employee is an agent with authority to enter into the contract on behalf of the principal. Is the answer to the question of enforceability of exchanges arranged by software agents to be found in agency principles?

2. Agency

This section analyzes arguments that agency principles should be applied to resolve the enforceability question raised by the use of electronic agents. The phrase “electronic agent” is misleading insofar as it may carry the legal connotations of the word “agent.” To avoid confusion, I will use the term “bot” rather than “electronic agent” in this section.

Scholars have suggested that applying agency principles to the use of bots in electronic contracting would eliminate the doctrinal difficulties presented.⁵⁴ Under agency law, an agent may have the power to contract on behalf of a principal. An agent has *actual* authority to contract on behalf of a principal when the principal has manifested consent to the agent that the agent do so.⁵⁵ It has been argued that if a user consents to using a bot to form contracts, the bot has actual authority to contract on behalf of the user.⁵⁶ An agent has *apparent* authority to contract on behalf of a principal when the principal has manifested to a third person that the agent has authority to do so.⁵⁷ It has been argued that

⁵³ See RESTATEMENT (SECOND) OF AGENCY § 50 (1958) (“RESTATEMENT OF AGENCY”) (“Unless otherwise agreed, authority to make a contract is inferred from authority to conduct a transaction, if the making of such a contract is incidental to the transaction, usually accompanies such a transaction, or is reasonably necessary to accomplish it.”).

⁵⁴ See Kerr, *supra* note 1, at 239-47; Fischer, *supra* note 2, at 546.

⁵⁵ See RESTATEMENT OF AGENCY, *supra* note 53, § 7 (“Authority is the power of the agent to affect the legal relations of the principal by acts done in accordance with the principal’s manifestations of consent to him.”).

⁵⁶ See Kerr, *supra* note 1, at 243; Fischer, *supra* note 2, at 560-61.

⁵⁷ See RESTATEMENT OF AGENCY, *supra* note 53, § 8 (“Apparent authority is the power to affect the legal relations of another person by transactions with third persons, professedly as agent for the other, arising from and in accordance with the other’s manifestations to such third persons.”).

if a user makes it appear that a bot is acting on the user's behalf to form contracts, the bot has apparent authority to contract on behalf of the user.⁵⁸

As a matter of legal doctrine, there are several problems with invoking principles of actual or apparent authority to argue that exchanges arranged by bots are enforceable. The problems are apparent from the very definition of agency: "Agency is the fiduciary relation which results from the manifestation of consent by one person to another that the other shall act on his behalf and subject to his control, and consent by the other so to act."⁵⁹ Agency with actual authority requires *consent* between the principal and the agent. Software cannot consent to act as a user's agent.⁶⁰ If agency principles are to apply to bots, the law must dispense with the consent of the "agent."⁶¹

Why is consent a matter of importance in agency law? It is consent that justifies the legal obligations assumed by both parties to an agency relationship. A person must consent to becoming an agent because an agent not only may gain legal rights but also assume legal duties. Specifically, agents assume *fiduciary* duties to principals. Agents have a duty of loyalty—a duty to act solely for the principal's benefit in matters related to the agency.⁶² Agents owe principals a duty of obedience—a duty to follow the instructions of the principal.⁶³ Though bots may be programmed to obey and act loyally, they can be under no legal duty to do so (in the sense that they must make reparations for program malfunctions).⁶⁴ Bots simply do what they are programmed to do without exercising the kind of judgment that gives rise to fiduciary duties. It makes no sense to think of a bot as exercising a duty of care and skill,⁶⁵ avoiding improper conduct,⁶⁶ giving information,⁶⁷ keeping and

⁵⁸ See Kerr, *supra* note 1, at 243.

⁵⁹ RESTATEMENT OF AGENCY, *supra* note 53, § 1.

⁶⁰ If software ever can be said to have "consented" to anything, electronic contracting issues, as one commentator has put it, "will be the least of the law's concerns." Fischer, *supra* note 2, at 569.

⁶¹ See Kerr, *supra* note 1, at 242 ("[C]onsent is the paradigmatic mechanism by which authority is conferred."); Fischer, *supra* note 2, at 569 ("There is no way to circumnavigate [the consent requirement] without the use of a presumption or a legal fiction of consent . . .").

⁶² See RESTATEMENT OF AGENCY, *supra* note 53, § 387 ("[A]n agent is subject to a duty to his principal to act solely for the benefit of the principal in all matters connected with his agency.").

⁶³ See *id.* § 385(1) ("[A]n agent is subject to a duty to obey all reasonable directions in regard to the manner of performing a service that he has contracted to perform.").

⁶⁴ Cf. Sommer, *supra* note 5, at 1177-78 (explaining why a programmed machine "can owe no duty of obedience").

⁶⁵ See RESTATEMENT OF AGENCY, *supra* note 53, § 379(2) ("[A] gratuitous agent is under a duty to the principal to act with the care and skill which is required of persons not agents performing similar gratuitous undertakings for others.").

⁶⁶ See *id.* § 380 ("[A]n agent is subject to a duty not to conduct himself with such impropriety that he

rendering accounts,⁶⁸ and so forth. Bots may be programmed to do all these things, but a malfunction is not a breach of a legal duty.⁶⁹ A principal would be legally responsible for the acts of the electronic agent, even those that resulted from program malfunction.⁷⁰

This consequence is significant. A legal agent exercises more than merely mechanical or instrumental authority. Actual authority to conduct a transaction typically includes authority to perform acts that are incidental to it, usually accompany it, or are reasonably necessary to accomplish it.⁷¹ Actual authority also may include authority to perform necessary tasks in an emergency.⁷² It is not far-fetched to imagine a bot that could perform incidental or emergency functions, say, borrowing money in order to exercise its express authority to make a purchase. If agency principles apply, the user may be bound. Actual authority to conduct a transaction also typically includes limited authority to delegate parts of the task to subagents.⁷³ Technologies employing collaborative bots are now being developed.⁷⁴ If agency principles apply, when one bot delegates parts of a task to another bot, the user could be bound to an exchange arranged by someone else's bot. In each of these scenarios, the relationship between "principal" and "agent" that would result from deeming bots agents with actual authority would be unrecognizable as one of principal-agent. If a principal is liable for all acts of a bot, what value does calling bots "agents" with actual authority add? Why not just say that the user of a bot is

brings disrepute upon the principal or upon the business in which he is engaged.").

⁶⁷ See *id.* § 381 ("[A]n agent is subject to a duty to use reasonable efforts to give his principal information which [*inter alia*] is relevant to affairs entrusted to him.").

⁶⁸ See *id.* § 382 ("[A]n agent is subject to a duty to keep, and render to his principal, an account of money or other things which he has received or paid out on behalf of the principal.").

⁶⁹ See Lerouge, *supra* note 1, at 408-09 ("Since computers are not considered as capable under the law, they may not be considered liable for their acts.").

⁷⁰ Of course, it could be argued in certain cases that mistake on the part of the user would render a contract made by a bot voidable. Since, however, for the defense of mistake to be viable, the other party must have reason to know of the mistake or somehow be otherwise at fault, cases surely would arise in which the principal would be liable for the acts of the bot, notwithstanding the defense of mistake. See RESTATEMENT OF CONTRACTS, *supra* note 27, § 153.

⁷¹ See RESTATEMENT OF AGENCY, *supra* note 53, § 35 ("[A]uthority to conduct a transaction includes authority to do acts which are incidental to it, usually accompany it, or are reasonably necessary to accomplish it.").

⁷² See *id.* § 47 (explaining when an agent "is authorized to do what he reasonably believes to be necessary in order to prevent substantial loss to the principal with respect to the interests committed to his charge").

⁷³ See *id.* § 79 (providing circumstances when "an agent is authorized to appoint another agent for the principal").

⁷⁴ See Kerr, *supra* note 1, at 202-05, 244-45 (discussing possibilities of collaborative technologies).

bound by functions performed by the bot? The additional layer of “agent with actual authority” seems superfluous.

Would apparent authority more aptly apply to the use of bots, inasmuch as it is less concerned with the relationship between principal and agent than with the relationship between principal and third party? Apparent authority arises when a principal manifests to a third party that another is the agent of the principal.⁷⁵ If a person uses a bot to transact business, would not the bot have apparent authority to bind the user based on the manifestation the user makes merely by using the bot? Insofar as apparent authority rests on the objective theory of contract, it is arguable that the use of a bot would not be apparent to the third party until after a binding legal obligation exists, if it exists at all.⁷⁶ Moreover, for there to be apparent authority, the manifestation to the third party must be not merely that this is my bot, but that this is my *agent*.⁷⁷ Apparent authority thus presupposes a capacity for actual authority. (A representation to my neighbor that “my dog is my agent” should not suffice to bind the dog owner to transactions arranged by the dog and the neighbor.) Arguably, the law must recognize a capacity in software to exercise actual authority before a representation that it has authority would give rise to the appearance of authority.

The question thus becomes whether bots should have some new species of agent authority, perhaps one that holds principals responsible to third parties for the acts of agents, but not agents to principals for failure to perform their duties properly.⁷⁸ If a bot fails to obey instructions, exceeds its incidental actual authority, or impermissibly delegates functions to another bot, so be it. The user of the bot or the third party must bear the risk of what we would deem an impermissible exercise of authority were the bot a human agent. This may be a wholly acceptable solution to the problem, but it would be a misnomer to

⁷⁵ RESTATEMENT OF AGENCY, *supra* note 53, § 8 (“Apparent authority is the power to affect the legal relations of another person by transactions with third persons, professedly as agent for the other, arising from and in accordance with the other’s manifestations to such third persons.”); *see also* FLOYD R. MECHAM, A TREATISE ON THE LAW OF AGENCY § 57 (2d ed. 1982) (“[T]he law must often, for the protection of third persons, proceed upon the appearance of authority created by the alleged principal.”); JOSEPH STORY, COMMENTARIES ON THE LAW OF AGENCY 153 (4th ed. 1851) (“If a person is held out to third persons, or the public at large, by the principal, as having a general authority to act for and to bind him . . . it would be the height of injustice . . . to allow him to set up his own secret and private instructions to the agent . . .”).

⁷⁶ *See supra* notes 34–43 and accompanying text.

⁷⁷ *See supra* note 75 and accompanying text.

⁷⁸ *See Kerr, supra* note 1, at 242 (“[T]he only aspects of agency law relevant to electronic commerce are those that pertain to the relationship between the person who initiates an electronic device and third parties who transact with that person through the device.”).

justify it as an *agency* solution. The “external” elements of agency (those governing the relationship between principal and third party) and the “internal” elements of agency (those governing the relationship between principal and agent)⁷⁹ are not severable, such that the mere presence of the external elements suffices to create an agency. The moral and economic justifications of agency law assume the existence of both elements.

Agency law presupposes “the freedom of autonomous beings.”⁸⁰ Agency law does not govern the relationship between a principal and a mere mechanical tool or instrument.⁸¹ It governs the relationship between a principal and a person in whose discretion and understanding the principal trusts. That is why when a person performs for another a task involving no exercise of human discretion or judgment, the law does not deem that person an agent. For example, when one person

serves as an aid in performing some purely ministerial or mechanical part,—such as signing the other’s name, attaching his seal, and the like,—of an act which that other is engaged in performing and to which he brings his own volition, judgment and determination in all matters which concern the essence of the transaction, the act is regarded in law as the direct and personal act of the latter, and the person who aided ministerially or mechanically is deemed to be a mere tool or instrument.⁸²

Likewise, when a person is incapable of exercising judgment and understanding, that person cannot be an agent.⁸³ It has long been recognized that a “person *non compos mentis*, cannot do any act, as an agent or attorney, binding upon the principal; for they have not any legal discretion or understanding to bestow upon the affairs of others, any more than upon their own.”⁸⁴

⁷⁹ See *id.* (explaining the distinction).

⁸⁰ Radin, *supra* note 17, at 1130.

⁸¹ *Id.* at 1130 (“[N]o ‘agent’ in a ‘principal-agent’ relationship could be in the mechanized relationship that one who causes a computer to run . . . is with that computer’s activities.”).

⁸² MECHAM, *supra* note 75, § 63.

⁸³ A person with limited capacity, such as a minor, may be an agent, but a person with no capacity whatever may not. See HAROLD GILL REUSCHLEIN & WILLIAM A. GREGORY, *THE LAW OF AGENCY AND PARTNERSHIP* 22-23 (2d ed. 1990).

⁸⁴ STORY, *supra* note 75, at 9; see also RESTATEMENT OF AGENCY, *supra* note 53, § 21 cmt. a (“One whom a court has adjudged mentally incompetent *but who retains volition* . . . has power to affect the principal as fully as if he had complete capacity.”) (emphasis added); GLEASON L. ARCHER, *THE LAW OF AGENCY* 30 (1915) (stating that it is “a well settled rule of agency that any person may act as agent for another unless too young, or too weak in intellect to be able to perform the act in question”); ERNEST W. HUFFCUT, *THE LAW OF*

One of the traditional justifications for having a law of agency is to support relationships of trust and confidence between persons—the trust and confidence that one person has placed in the judgment and understanding of another.⁸⁵ If the agent breaches that trust, the principal has recourse against the agent. There is no recourse to be had against software. The same is true of apparent authority principles: apparent authority binds a person not because the person manifests that he or she will be bound by a contract made by another, but because the person manifests that another is his or her *agent*.⁸⁶ It is the manifestation that this person is my agent, and thus is liable to me for breach of confidence or transgression of authority, that reasonably induces another to believe that I will make good on any contract within the apparent scope of authority.

Some would justify agency rules not on the ground that mutual trustworthiness is worthy of protection for its own sake, but on the ground that protecting it is efficient.⁸⁷ As utility maximizers, agents may have incentives to pursue their own interests rather than interests of their principals. An agent may shirk, for example, by exerting insufficient effort or appropriating benefits. To monitor the agent directly may be prohibitively costly for the principal.⁸⁸ It is generally regarded that rules of fiduciary liability, if properly conceived, create incentives for agents to act in the best interest of principals.⁸⁹

AGENCY 34 (2d ed. 1901) (“Any person may, as to third persons, act as an agent, unless, perhaps, one who is too young or too imbecile to perform at all the act in question.”); REUSCHLEIN & GREGORY, *supra* note 83, at 22-23 (“[A]ny human being who has the capacity to receive and, in a contract situation, the capacity to convey ideas, can bind another”); cf. FRANCIS B. TIFFANY, HANDBOOK OF THE LAW OF PRINCIPAL AND AGENT 107 (1903) (“[I]t is improbable that it would be held without exception that a person non compos mentis cannot, as agent, do any act binding upon his principal.”).

⁸⁵ As the very first sentence of Teller’s agency treatise explains: “The notion of agency is one of delegation, resulting in a relationship of trust and confidence entered into for the more convenient and effective management of human affairs, the rules and principles of which have grown in importance with the expansion of commercial life.” LUDWIG TELLER, *AGENCY* 1 (1948).

⁸⁶ See *supra* note 75 and accompanying text.

⁸⁷ Much has been written on the economics of the principal-agent relationship. *E.g.*, Kenneth J. Arrow, *The Economics of Agency*, in *PRINCIPALS AND AGENTS: THE STRUCTURE OF BUSINESS* 37 (John W. Pratt & Richard J. Zeckhauser eds., 1991); Robert Cooter & Bradley J. Freedman, *The Fiduciary Relationship: Its Economic Character and Legal Consequences*, 66 N.Y.U. L. REV. 1045 (1991); Stephen A. Ross, *The Economic Theory of Agency: The Principal’s Problem*, 63 AMER. ECON. REV. 134 (Issue II 1973); Steven Shavell, *Risk Sharing and Incentives and the Principal and Agent Relationship*, 10 BELL J. ECON. 55 (1979); Joseph E. Stiglitz, *Principal and Agent*, in *THE NEW PALGRAVE: ALLOCATION, INFORMATION, AND MARKETS* 241 (John Eatwell et al. eds., 1989).

⁸⁸ See Cooter & Freedman, *supra* note 87, at 1049 (“[D]irect monitoring of the agent by the principal may be prohibitively costly or require expert knowledge.”).

⁸⁹ *Id.* at 1074 (explaining that fiduciary duties are best “understood as the law’s attempt to create an incentive structure in which the fiduciary’s self-interest directs her to act in the best interest of the

A bot, of course, is not a utility maximizer, and cannot be subject to a fiduciary duty. A bot may, however, act contrary to the user's best interests, no matter how well thought out the programming. It is by no means clear that applying only the external aspects of agency to hold the user liable for the bot's transgressions would lead to efficient outcomes. If a bot programmed to purchase an airline ticket at a reasonable price offers to pay \$10,000 for a domestic airfare, it may be the seller who is able to avoid the effects of the malfunction at least cost. Or the software developer may be the least cost avoider. In certain circumstances, the user may be. Perhaps a law that holds one particular class of party always responsible would provide incentives to maximize aggregate utility. In any event, plucking from the body of agency law specific rules to hold the user liable would not necessarily lead to efficient outcomes, assuming efficiency is a valid end in this context.

If select agency principles are to be employed for holding arrangements made by electronic agents enforceable, some justification is necessary. The justifications typically offered to support the principal-agent relationship (promoting mutual trustworthiness and efficiency) do not presumptively extend to the relationship between principal and machine. Indeed, if the bottom line is that a "principal" (user) is simply liable for the actions of the "agent" (bot), calling bots agents appears to add nothing more than a label. The question remains why users should be liable for the acts of bots.

3. *Personhood*

At root, the problem with treating bots like agents is that agency law presumes agents that are persons. Why not, then, recognize bots as legal persons? The argument has been suggested.⁹⁰ If recognized as legal persons, bots could serve as agents of their users in every sense, and could even enter into contracts on their own behalf.

Those who advocate personhood for bots (now or at some future time with more advanced technologies) have asked whether bots share the essential attributes of personhood. Do bots now, or will they at some future time, have the necessary judgment, consciousness, soul, intentionality, feelings, interests,

beneficiary").

⁹⁰ See Allen & Widdison, *supra* note 1, at 35-43 (addressing whether the law should confer personhood status on electronic agents); Lawrence B. Solum, *Legal Personhood for Artificial Intelligences*, 70 N.C. L. REV. 1231, 1238-40 (1992) (addressing whether an "artificial intelligence" can become a legal person); Wein, *supra* note 3, at 105-40 (addressing whether the law should confer personhood status on computerized machinery).

or free will to be persons, assuming these are appropriate attributes of personhood?⁹¹ Should bots be deemed persons because they now have, or at some future time will have, a moral entitlement to certain rights or the social capacity for autonomous action?⁹² There is no need here to take on seriously the question whether the law should ever treat software as persons on the same plane as humans. The only question that need be addressed here is whether recognizing bots as legal persons for any purposes would solve the legal problems their use presents. It would not.

John Chipman Gray defined the “technical legal meaning of a ‘person’” as “a subject of legal rights and duties.”⁹³ Among “persons” are natural persons and artificial persons. As Blackstone defined them, “[n]atural persons are such as the God of nature formed us: artificial are such as are created and devised by human laws for the purposes of society and government”⁹⁴ Bots are not natural persons; they are created by natural persons. The question is whether the law should recognize them as artificial persons for purposes of society and government. Among the artificial persons the law has recognized are corporations, government entities, and select inanimate objects (ships, for example).

To say that something other than a human being is a “person” is not to say that that something shares all the legal rights and duties of natural persons. It is rather to say as a matter of legal expediency that something shares some particular rights or duties with natural persons. A corporation, like a natural person, has the right to own property and make contracts. It does not have the right to vote or hold office. A ship, like a natural person, has the duty to satisfy certain legal judgments. That is about it. If bots are to be deemed “persons,” it must be determined which rights and duties they are to share with natural persons, and what purpose of society or government this sharing would serve.

⁹¹ E.g., Solum, *supra* note 90, at 1262-74 (addressing personhood for “artificial intelligence” in light of these attributes).

⁹² See Allen & Widdison, *supra* note 1, at 35-43.

⁹³ JOHN CHIPMAN GRAY, *THE NATURE AND SOURCES OF THE LAW* 19 (David Cambell & Phillip Thomas eds., 1997); see also *Byrn v. New York City Health & Hospitals Corp.*, 31 N.Y.2d 194, 201 (1972) (“What is a legal person is for the law, including, of course, the Constitution, to say, which simply means that upon according legal personality to a thing the law affords it the rights and privileges of a legal person.”).

⁹⁴ 1 WILLIAM BLACKSTONE, *COMMENTARIES* *119.

A right that has been advocated for personified software is the right to make contracts as either principal or agent.⁹⁵ The corresponding duty as principal presumably would be to fulfill the obligation, and as agent to account to the principal for any malfunction. The purpose this fiction would serve, it is argued, is to protect those who reasonably rely on the actions of the software. The fiction, however, would not serve its intended purpose. As Jean-Francois Lerouge has asked, "What is the point in declaring a computer liable if it lacks personal assets?"⁹⁶ A corporation can have contractual rights and duties because it also has the right to hold assets to satisfy a judgment (or to receive in satisfaction of a judgment). Unlike a corporation, software is not an association of persons who, as an association, can hold assets. A party may proceed directly against a personified ship because the ship as an asset itself may satisfy a judgment. What sense would it make to proceed against a software agent *in rem*? Indeed, what would the agent be? The hardware? The CD-ROM? The bits? Even if the agent could be identified, its value would bear no relation to a contractual dispute in the way that the value of a ship may relate to an admiralty dispute. It has been suggested that software could satisfy a judgment if the law required that it be insured for that purpose.⁹⁷ In that case, however, the responsible party would not be the computer, but rather the party responsible for procuring the insurance—presumably the user. If the law requires the user to insure its software, the user is ultimately liable, not the computer. Why deem software a person if the user bears all risk of loss?

"Personality" is something of a distracting metaphor for describing the legal relations of human associations and property when the fundamental point of law is the service of persons—human persons.⁹⁸ To argue that an electronic agent should be deemed a "person" is to miss the point that electronic agents present simply another mode by which natural persons can conduct their business.⁹⁹

⁹⁵ See, e.g., Allen & Widdison, *supra* note 1, at 36-43 (arguing that reasons of social capacity and legal expediency might justify conferring the right to contract on electronic agents).

⁹⁶ Lerouge, *supra* note 1, at 410-11.

⁹⁷ See Solum, *supra* note 90, at 1245 (arguing that "artificial intelligence" could be insured against the risk of legal liability); Wein, *supra* note 3, at 141 (explaining that the law could require that machines be insured for the purpose of satisfying legal judgments).

⁹⁸ John Finnis, *The Priority of Persons*, in OXFORD ESSAYS IN JURISPRUDENCE, FOURTH SERIES 1, at 9 (Jeremy Horder ed., 2000).

⁹⁹ I agree with Wesley Hohfeld that corporations serve the same purpose. See Wesley N. Hohfeld, *Nature of Stockholders' Individual Liability for Corporation Debts*, 9 COLUM. L. REV. 285, 288 (1909) ("[T]ransacting business under the forms, methods, and procedure pertaining to so-called corporations is simply another mode by which individuals or natural persons can enjoy their property and engage in

C. Statutes

As previously argued, uncertainty surrounds the question whether exchanges arranged by electronic agents are enforceable under the common law. Recent statutory initiatives have broadly addressed the use of electronic agents in contract formation. By and large, however, these initiatives have not resolved the difficult questions that common law principles leave unanswered. These initiatives are briefly described here, and the issues they leave unresolved are noted. The next Part discusses whether contract theory sheds light on how these issues should be resolved.

1. UETA

In July 1999, the National Conference of Commissioners on Uniform State Laws (NCCUSL) approved and recommended for enactment in the states the Uniform Electronic Transactions Act (UETA).¹⁰⁰ UETA addresses, to a limited extent, the enforceability of contracts formed by the interaction of electronic agents. It defines an “electronic agent” as “a computer program or an electronic or other automated means used independently to initiate an action or respond to electronic records or performances in whole or in part, without review or action by an individual.”¹⁰¹ The comment describes an electronic agent as a mere “tool” of the user.¹⁰² UETA proceeds on the paradigm that electronic agents have the ability to act “automatically” but not “autonomously.”¹⁰³ The comment advises that should autonomous electronic agents be developed—bots that can learn through experience, modify instructions, and devise new instructions—“courts may construe the definition of electronic agent accordingly, in order to recognize such new capabilities.”¹⁰⁴

UETA goes on to provide that electronic agents, so defined, may interact to form a contract, “even if no individual was aware of or reviewed the electronic agents’ actions or the resulting terms and agreements.”¹⁰⁵ The comment advises that this provision “negates any claim that lack of human intent, at the time of contract formation, prevents contract formation.”¹⁰⁶ When bots are

business.”).

¹⁰⁰ UNIF. ELEC. TRANSACTIONS ACT § 2(6), 7A (pt. I) U.L.A. 28 (Supp. 2001).

¹⁰¹ *Id.* § 2(6).

¹⁰² *Id.* § 2(6) cmt. 5.

¹⁰³ *Id.*

¹⁰⁴ *Id.*

¹⁰⁵ *Id.* § 14(1).

¹⁰⁶ *Id.* § 14(1) cmt. 1.

involved, “the requisite intention flows from the programming and use of the machine.”¹⁰⁷ By its terms, however, UETA “applies only to transactions between parties each of which has agreed to conduct transactions by electronic means.”¹⁰⁸ The parties need not have a contract to conduct transactions electronically; rather, each party’s intent to conduct a transaction electronically is determined “from the context and surrounding circumstances, including the parties’ conduct.”¹⁰⁹

Thus, what it gives with the one hand, UETA may take away with the other. Users are bound to exchanges arranged by electronic agents, even if there is a lack of intent at the time of contract formation. But, the parties must have agreed to conduct transactions electronically ahead of time. Whether UETA effects a change in the common law depends on what it means by “agree.” The comment explains that courts should give the term “broad interpretation,”¹¹⁰ but then defines it with reference to sections two, three, and nineteen of the *Restatement (Second) of Contracts*.¹¹¹ Those sections embody the very principles that I argued earlier fail to resolve with certainty the question of enforceability.¹¹² If UETA merely incorporates the *Restatement* principles, it does little, if anything, to change the common law analysis of the problem. Indeed, the prefatory note to UETA provides that it is “NOT a general contracting statute—the substantive rules of contracts remain unaffected by UETA.”¹¹³

2. E-SIGN

The Electronic Signatures in Global and National Commerce Act (“E-SIGN”) took effect October 1, 2000.¹¹⁴ Congress enacted this law to ensure a uniform national law for certain issues in electronic commerce while state legislatures consider enacting UETA. E-SIGN does not preempt UETA in states that have enacted it.¹¹⁵ Like UETA, E-SIGN recognizes that contracts formed by electronic agents are enforceable in limited circumstances. In

¹⁰⁷ *Id.*

¹⁰⁸ *Id.* § 5(b).

¹⁰⁹ *Id.*

¹¹⁰ *Id.* § 5 cmt.

¹¹¹ *Id.* § 5 cmt. 4.

¹¹² See *supra* notes 32-52 and accompanying text.

¹¹³ UNIF. ELEC. TRANSACTION ACT, prefatory note, 7A (pt. I) U.L.A. 22 (Supp. 2001).

¹¹⁴ 15 U.S.C.A. §§ 7001-7031 (West Supp. 2001).

¹¹⁵ *Id.* § 7002(a) (providing that state laws that constitute “an enactment or adoption of the Uniform Electronic Transactions Act” are not preempted).

particular, E-SIGN provides that a contract “may not be denied legal effect, validity, or enforceability solely because its formation, creation, or delivery involved the action of one or more electronic agents so long as the action of any such electronic agent is legally attributable to the person to be bound.”¹¹⁶ It defines “electronic agent” much the same as UETA does.¹¹⁷ Inasmuch as E-SIGN requires the action of an electronic agent to be “legally attributable” to its user, it appears to go no further than the common law in recognizing the enforceability of bot-made contracts.

3. UCITA

In August 2000, the NCCUSL approved and recommended for enactment in the states the Uniform Computer Information Transactions Act (“UCITA”),¹¹⁸ formerly proposed Article 2B of the Uniform Commercial Code. UCITA applies to transactions in computer information—generally speaking, information in electronic form that is obtained from or through the use of a computer.¹¹⁹ UCITA has more extensive provisions governing electronic agents than either UETA or E-SIGN.

UCITA defines “electronic agent” in much the same way as do UETA and E-SIGN.¹²⁰ The comment to the definition explains that “[t]he legal relationship between the person and the electronic agent is not equivalent to common law agency since the ‘agent’ is not a human.”¹²¹ In terms of contracting, UCITA provides that a person who uses an electronic agent for making an agreement “is bound by the operations of the electronic agent, even if no individual was aware of or reviewed the agent’s operations or the results of the operations.”¹²² This concept, the comment explains, “embodies

¹¹⁶ *Id.* § 7001(h).

¹¹⁷ E-SIGN’s definition of “electronic agent” is similar to that of UETA. *Id.* § 7006(3) (“The term ‘electronic agent’ means a computer program or an electronic or other automated means used independently to initiate an action or respond to electronic records or performances in whole or in part without review or action by an individual at the time of the action or response.”).

¹¹⁸ UNIF. COMPUTER INFO. TRANSACTIONS ACT, § 107(d) 7 (pt. II) U.L.A. 9 (Supp. 2001).

¹¹⁹ *Id.* § 102(10).

¹²⁰ *Id.* § 102(27) (“‘Electronic agent’ means a computer program, or electronic or other automated means, used independently to initiate an action, or to respond to electronic messages or perform on the person’s behalf without review or action by an individual at the time of the action or in response to the message or performance.”).

¹²¹ *Id.* § 102 cmt. 23.

¹²² *Id.* § 107(d); *see also* § 112(a)(2) (“A person manifests assent to a record if the person, acting with knowledge of, or after having an opportunity to review the record or term or a copy of it . . . intentionally engages in conduct or makes statements with reason to know that the other party or its electronic agent may infer from the conduct or statement that the person assents to the record or term.”).

principles like those in agency law, but it does not depend on agency law.”¹²³ As a broad matter, the comment goes on, the electronic agent “must be operating within its intended purpose,” which is akin to a human agent “acting within the scope of authority.”¹²⁴

In other sections, UCITA reverts to general common law principles regarding contract formation. One provision states that a contract may be formed by “operations of electronic agents which recognize the existence of a contract.”¹²⁵ The comment to this section explains that “an agreement can be formed by operations of electronic agents,” but “[o]f course, no contract is formed without an intent to contract.”¹²⁶ This provision purports to implement Section nineteen of *Restatement (Second) of Contracts*, which governs contracts formed by conduct generally.¹²⁷ Another provision repeats that a “contract may be formed by the interaction of electronic agents.”¹²⁸ The comment to this provision explains that the “[i]nteraction of electronic agents creates a contract if the parties use the agents for that purpose and the operations of the electronic agents indicate that a contract exists.”¹²⁹ A later provision, however, seems to presume some reliance on agency principles, at least according to its comment. The provision states that “[a]n electronic authentication, display, message, record, or performance is attributed to a person if it was the act of the person or its electronic agent.”¹³⁰ The comment explains that this kind of attribution “might involve reliance on agency law principles.”¹³¹

The drafters of UCITA do not make the claim of those of UETA that their act leaves contract law unaffected. On the one hand, UCITA treats the use of electronic agents as conduct that could give rise to a contract under common law formation principles. On the other hand, its comment would rely on dribs and drabs of agency law. As explained in Part II.B.1, it is uncertain whether the conduct of using bots generally would create an enforceable contract under

¹²³ *Id.* § 107 cmt. 5.

¹²⁴ *Id.*

¹²⁵ *Id.* § 202(a).

¹²⁶ *Id.* § 202 cmt. 2.

¹²⁷ *Id.* (“Subsection (a) follows Uniform Commercial Code § 2-204 (1998 Official Text), the *Restatement (Second) of Contracts* § 19, and common law in most States.”).

¹²⁸ *Id.* § 206(a).

¹²⁹ *Id.* § 206 cmt. 2. Section 206(a) allows a court to “grant appropriate relief if the operations resulted from fraud, electronic mistake, or the like.” *Id.* § 206(a).

¹³⁰ *Id.* § 213(a).

¹³¹ *Id.* § 213 cmt. 2.

the common law. As explained in Part II.B.2, if the conduct of using bots does not itself give rise to a contract, applying select agency principles to create one would seem to have little to do with the purposes agency law as a whole is meant to serve. Inasmuch as UCITA involves bits and pieces of contract and agency, its justification is as uncertain as the standards it purports to provide.

Neither current legislative initiatives nor common law contract principles resolve the enforceability issue with any degree of certainty. Before new initiatives emerge to clarify the applicable law, the question must be asked: Should exchanges arranged by the interaction of electronic agents be enforced? The answer depends on what it is that normatively justifies contractual obligation. In the next Part, I explore how the enforceability issue is informed by various theories of contractual obligation.

II. ELECTRONIC AGENTS AND CONTRACT THEORY

As already explained, the *Restatement (Second) of Contracts* defines a contract as “a promise or a set of promises for the breach of which the law gives a remedy, or the performance of which the law in some way recognizes as a duty.”¹³² A contract, in other words, is a promise or promises that the law recognizes as enforceable. This circular definition presumes no theoretical conception of when promises should be enforced.

In recent years, some scholars have downplayed the importance of questioning the theoretical basis of enforcing promises for two related reasons. The first, as mentioned, is the perceived gap between contracts scholarship and transactional practice.¹³³ The second is the perceived lack of connection between philosophical theories of contract law on the one hand, and default rules of contract law on the other.¹³⁴ Common to both concerns is that, as a practical matter, the legal rules governing promises are themselves part of the social practice of promising.¹³⁵ A promise, according to the *Restatement*, is a manifestation of intention that justifies “a promisee in understanding that a commitment has been made.”¹³⁶ Whether a promisee is justified in understanding that a commitment has been made depends in part on the legal rules that govern the making of commitments. As the preceding Part argues,

¹³² RESTATEMENT OF CONTRACTS, *supra* note 27, § 1.

¹³³ See Farnsworth, *supra* note 8, at 208.

¹³⁴ See Craswell, *supra* note 10, at 491.

¹³⁵ See Louis Kaplow & Steven Shavell, *Fairness v. Welfare*, 114 HARV. L. REV. 961, 1110 (2001).

¹³⁶ RESTATEMENT OF CONTRACTS, *supra* note 27, § 2.

general common law and recent legislative initiatives provide no clear background rule governing when a person is justified in understanding that an enforceable commitment has been made by the use of an electronic agent. The use of electronic agents to arrange exchanges between persons thus presents a unique opportunity to explore unresolved contract formation issues in light of various theories of contractual obligation.

Contract theorists tend to focus on two normative bases of the law of contracts. One theory is that the purpose of contract law is to enforce the *will* of a party as expressed through a promise made by that party. Another theory is that the purpose of contract law is to protect the *reliance* of promisees on promises. I will consider several more particular theories that fall under these two broad categories. Under the will theory, I will consider Charles Fried's promise theory (grounding contractual obligation in individual autonomy and freedom),¹³⁷ and Randy Barnett's consent theory (grounding contractual obligation in the need to facilitate transfers of property rights).¹³⁸ Under reliance theories, I will consider the general tort notion of contract, which grounds contractual obligation in the need to protect promisees from actual harm;¹³⁹ and a theory that would protect not just actual reliance on promises, but the ability of parties to rely on promises. I will call the latter theory, which grounds contractual obligation in the need to foster confidence in economic institutions,¹⁴⁰ the "market-confidence" theory.¹⁴¹ The final theories I will consider, which defy categorization as either will or reliance theories, are those

¹³⁷ See FRIED, *supra* note 7.

¹³⁸ See Barnett, *supra* note 7.

¹³⁹ See GRANT GILMORE, *THE DEATH OF CONTRACT* 95-112 (Ronald K.L. Collins ed., 1995).

¹⁴⁰ See Farber & Matheson, *supra* note 7, 927-29.

¹⁴¹ There is, of course, immense literature addressing issues of contract law from the perspective of welfare economics. From that perspective, the purpose of contract law is to promote the economic welfare of contracting parties. See Kaplow & Shavell, *supra* note 135, at 1102. Economic analysis, however, typically focuses on rules of enforcement rather than upon the sources of contractual obligation. To the extent that another normative basis is necessary to explain why, as a prior matter, only voluntary commitments are enforceable, I will not address welfare economics as a free-standing theory. See generally Barnett, *supra* note 7, at 279-80 ("Efficiency analyses of voluntary exchanges . . . typically focus on issues other than the source of contractual obligation itself, such as appropriate remedies and other enforcement mechanisms, and assume, rather than demonstrate, the enforceability of all voluntary commitments."); Craswell, *supra* note 10, at 490-91 (explaining relationship between efficiency and background rules of contract law). In addition, as Barnett has observed, "[e]fficiency notions alone . . . cannot completely explain why certain commitments *should* be enforced unless it is further shown that economic efficiency is the exclusive goal of the legal order." Barnett, *supra* note 7, at 283. *But see* Kaplow & Shavell, *supra* note 135, at 967 (arguing that "the welfare-based normative approach should be exclusively employed in evaluating legal rules").

of Joseph Raz and John Finnis, which ground contractual obligation in the need to solve coordination problems.¹⁴² I label them “trust” theories.

This Part considers whether enforcing exchanges arranged by electronic agents would be consistent with these various normative theories. The statement and critique of each theory provided is designed not to be comprehensive, but merely sufficient for considering the enforceability issue in its light. The analysis is intended both to shed light on the question of electronic contracting, and to highlight certain truths and failings of each theory.

A. *Will Theories*

Traditional will theory holds that promises are binding as manifestations of the “wills” of sovereign individuals. The grand statement of the will theory is that of Kant: “The act of the united Wills of two Persons, by which what belonged to one passes to the other, constitutes CONTRACT.”¹⁴³ The Kantian idea of contract has long fallen out of favor with contract theorists,¹⁴⁴ though two modern (and quite different) variations of will theory endure—the *promise* theory and the *consent* theory.

1. *The Promise Theory*

Charles Fried is the most recognized modern proponent of the will theory. His version—a “promise” theory—grounds the obligation to keep promises in respect for individual autonomy and freedom.¹⁴⁵ To be free, a person must have some way to make a commitment. Promising, he explains, is a convention, the purpose of which is to permit one individual to make a binding commitment to another. In a promise, there is an invitation to the other to trust, and to break a promise is to abuse that trust. The person who intentionally invokes the convention is thus morally bound to keep the promise.¹⁴⁶

¹⁴² See FINNIS, *supra* note 7, at 324-25; Raz, *Promises*, *supra* note 7, at 933.

¹⁴³ IMMANUEL KANT, *THE PHILOSOPHY OF LAW* 101 (W. Hastie trans., Augustus M. Kelley Publishers 1974).

¹⁴⁴ See, e.g., ATIYAH, *THE RISE AND FALL OF FREEDOM OF CONTRACT*, *supra* note 7, at 407 (“The somewhat mystical idea had gained acceptance that an obligation could be created by a communion of wills, an act of joint, if purely mental, procreation.”).

¹⁴⁵ FRIED, *supra* note 7, at 20-21 (“If we decline to take seriously the assumption of an obligation . . . , to that extent we do not take [the promisor] seriously as a person.”).

¹⁴⁶ *Id.*

Scholars have asserted several problems with the promise theory of contract. First, there is a practical problem of administration. If an individual is bound to a promise only when willingly intending to be, the enforceability of a promise depends on whether the individual has invoked intentionally the convention of promise. If my conduct creates the appearance that I intend to do *x*, but I actually intend to do *not x*, I am not bound to do *x* because I did not “will” to do so.¹⁴⁷ In that system, a promisee could never be certain that a promisor would fulfill a promise until the promisor actually performed it. Thus, you never can be certain that I will fulfill the promise to do *x* until I actually do it.¹⁴⁸

In practice, promisors are bound by the intent they objectively manifest.¹⁴⁹ To maintain its relevance as a descriptive theory, the will theorist could argue that the intent I manifest serves as the best evidence and thus conclusive proxy for my true intentions.¹⁵⁰ This argument would fail to explain, however, why manifested intent controls even when true intent is otherwise provable. The answer may well be to promote certainty in interpersonal dealings; if so, it must then be acknowledged that respect for real intentions is only *part* of the explanation of promissory obligation. To hold promisors liable for manifestations of their will that conflict with their real will suggests that contractual obligation must have a broader purpose than merely effecting the latter.¹⁵¹

¹⁴⁷ This assumes that under the promise theory, negligently invoking the convention of promising is not intentionally invoking it. It is true that one may be culpable for consequences that one foresees but does not intend, but, if one agrees with John Finnis, “the ground of culpability will not be that one intended them, but that one wrongly, e.g. unfairly, accepted them as incidents of what one did intend.” John Finnis, *Intention in Tort Law*, in *PHILOSOPHICAL FOUNDATIONS OF TORT LAW* 244 (David G. Owen ed., 1995).

¹⁴⁸ Barnett, *supra* note 7, at 272 (“It has long been recognized that a system of contractual enforcement would be unworkable if it adhered to a will theory requiring a subjective inquiry into the putative promisor’s intent.”).

¹⁴⁹ See *supra* note 27 and accompanying text.

¹⁵⁰ But see FRIED, *supra* note 7, at 61.

In the face of a claim of divergent intentions, the court imagines that it is respecting the will of the parties by asking what somebody else, say the ordinary person, would have intended by such words of agreement. This may be a reasonable resolution in some situations, but it palpably involves imposing an external standard on the parties.

Id.

¹⁵¹ See *id.* (explaining how adherence to objective theory undermines the moral integrity of the will theory).

The second problem with the will theory is that, insofar as it defines promising as invoking a convention,¹⁵² custom and legal rules of enforceability are themselves part of the convention.¹⁵³ If I promise to give you \$10,000 in exchange for your promise to give me a car, we have invoked a convention for making binding commitments. The will theory does not explain adequately why, divorced from custom or law, we are bound to keep our promises. If it is strictly a matter of autonomy—that an individual has sovereign authority to make binding commitments—the theory fails to answer why an individual does not have sovereign authority to effect a change of heart. As Richard Craswell has observed, there is a “slight paradox in the notion that freedom must include the freedom to limit one’s freedom in the future.”¹⁵⁴ For Fried, however, respecting autonomy is not the only ground for the obligation to keep a promise. Another is protecting trust. Promising, he explains, is a convention that “free, moral individuals have fashioned on the premise of mutual trust, and which gathers its moral force from that premise.”¹⁵⁵ It is unclear from his analysis whether, where legal rules or customs fail to define a convention, protecting mutual trust could justify enforcement of an “unconventional” promissory commitment.¹⁵⁶

In light of this description and critique, would enforcing exchanges arranged through the interaction of electronic agents be consistent with the promise theory of contract? The problem with enforcing such exchanges under the promise theory is that the transaction to be enforced precedes the making of a promise. Suppose I instruct my software agent to purchase an airline ticket for me within certain dates and a price range, and send it off to do its thing. Have I made a promise? Under the promise theory, a promise is not enforceable unless and until there is a promise.¹⁵⁷ If I firmly decide to pay the apple vendor today’s asking price for apples but tell no one, have I made a promise? Inherent in “promise,” at least as defined by the promise theory, is an element of communication.¹⁵⁸ In the context of agreements formed through electronic agents, legal obligation would arise before any promise was

¹⁵² See *id.* at 15.

¹⁵³ See Kaplow & Shavell, *supra* note 135, at 1110.

¹⁵⁴ Craswell, *supra* note 10, at 514.

¹⁵⁵ FRIED, *supra* note 7, at 17.

¹⁵⁶ See *infra* Part II.C for discussion of a “trust” theory of contract.

¹⁵⁷ See FRIED, *supra* note 7, at 42–43 (explaining that there can only be a promise if there is a willing beneficiary; the need for acceptance of a promise ensures that the mutual relation is voluntary on both sides).

¹⁵⁸ See *id.* at 42 (“promise is something essentially communicated to someone”). For the most part, this notion is descriptive of contract doctrine. A person may not accept an offer of which she is unaware. See *Glover v. Jewish War Veterans of United States*, 68 A.2d 233 (D.C. 1949).

conveyed to the other party. I send my electronic agent to purchase a flight within certain parameters. The airline sends its electronic agent to sell a flight within certain parameters. The first the airline hears of me is that I have purchased a ticket from it for a sum certain of money. The first I hear of the airline is that it has sold me a ticket for a sum certain of money. The exchange must be binding before either party is aware that the other has made a commitment if it is to be binding at all.

It could be argued that this analysis is unduly concerned with the actual moment a contract comes into existence. In Fried's view, however, "acceptance of a promise is not just a frame of mind, a favorable disposition, it is an intentional act making implicit or explicit reference to another's promise."¹⁵⁹ That is why Fried would not find contractual obligation in the case of crossing offers. "It is true that both A and B by sending offers showed themselves willing to take the risk of being contractually bound without knowing it," but a contract cannot arise from "mutually complementary surmises."¹⁶⁰ The use of electronic agents, I argued earlier, is somewhat akin to the problem of crossing offers.¹⁶¹ If an acceptance must make reference to the specific promise of another, the act of releasing a bot onto the Internet arguably would not suffice.¹⁶²

It might be argued that one releasing a bot is on constructive notice that others are releasing bots capable of interacting with each other, and that use of a bot is thus an act of will that is conveyed before contractual obligation arises. The same, however, could be said of crossing offers: that one who sends an offer is on constructive notice that the offeree may be sending a definite proposal for the same transaction. As the promise theory would not hold one bound to intentions that one has but does not convey to another, it does not explain why deals struck by electronic agents should be enforced.¹⁶³

¹⁵⁹ FRIED, *supra* note 7, at 53.

¹⁶⁰ *Id.*

¹⁶¹ See *supra* notes 49-52 and accompanying text.

¹⁶² And conditional will, accordingly, would not qualify as genuine will. See *supra* notes 45-46 and accompanying text. Even if crossing offers each expressly stated that the offeror would be bound if there were a crossing offer, it still seems that a contract would be based, in Fried's view, on "mutual complementary surmises."

¹⁶³ For a general noncontractual discussion of whether the use of electronic agents serves interests of individual control and autonomy, see Neil W. Netanel, *Cyberspace 2.0*, 79 TEX. L. REV. 447, 480-84 (2000) (book review).

2. *The Consent Theory*

The “consent” theory of contract has been depicted (fairly or unfairly) as a variation of the will theory. It justifies contractual obligation on different grounds than the promise theory, however, and thus warrants independent consideration. The consent theory describes contract as the means by which individuals transfer property rights. The proponent of the consent theory is Randy Barnett. In his words, the

consent theory of contract requires that an enforceable contract satisfy at least two conditions. First, the subject of a contract must be a morally cognizable right possessed by the transferor that is interpersonally transferable, or “alienable.” Second, the possessor of the alienable right must manifest his intention to be legally bound to transfer the right—that is, he must consent.¹⁶⁴

The emphasis of the consent theory is not on promise, but, as its name indicates, on consent. Consent to alienate rights is determined by an objective standard: “a manifestation of an intention to be legally bound.”¹⁶⁵ Whether there has been consent is determined by social convention. As Barnett explains, the purpose of a concept of “rights” that one may alienate is to set boundaries within which individuals may pursue their own ends.¹⁶⁶ Only an objective standard of assent to transfer rights—e.g., assent that any reasonable person understands as transferring rights—can set useful boundaries of human discretion.¹⁶⁷

The main criticism of the consent theory is that it fails to explain how to determine which rights a specific objective manifestation transfers.¹⁶⁸ For example, if I consent to sell you my car, have I transferred to you the right to the car, such that you would be entitled to specific performance if I fail to deliver? Or, have I made a transfer of either the right to the car or the right to damages for nonperformance, such that the buyer would not be entitled to

¹⁶⁴ Randy E. Barnett, *Squaring Undisclosed Agency Law with Contract Theory*, 75 CAL. L. REV. 1969, 1978-79 (1987) (“*Squaring*”); see also Barnett, *supra* note 7 (propounding a consent theory of contract).

¹⁶⁵ Barnett, *supra* note 7, at 304.

¹⁶⁶ *Id.* at 301.

¹⁶⁷ *Id.* at 301-02. Cf. ATIYAH, *supra* note 7, at 141 (explaining that to “Grotius the critical argument was that a man had a ‘natural’ right to dispose of his property; a promise, being in effect a disposition of a right . . . , could not be less binding”).

¹⁶⁸ Craswell, *supra* note 10, at 525 (“Barnett still faces the task of figuring out just which values *should* inform the objective interpretation of any particular action or agreement.”).

specific performance?¹⁶⁹ The criticism is that consent theory fails to specify which values should inform how a particular action is interpreted.¹⁷⁰ Barnett's primary response to this criticism is that consent justifies the enforcement of default rules that both parties are rationally informed of, or, in the alternative, that reflect a conventional understanding.¹⁷¹

Would enforcing exchanges arranged through the interaction of electronic agents be consistent with the consent theory of contract? Under the consent theory, the possessor of an alienable right must manifest assent to transfer the right. If the user of a bot instructs the bot to purchase an airfare priced between \$200 and \$400, what right has the user manifested an intent to transfer? The ready answer would seem to be whatever fixed amount of money the interacting bots ultimately "agree" upon. There are problems, however, with this answer. Professor Barnett explains that the consent requirement serves to define clearly and communicate "the boundaries of rightful conduct *at the time of the transaction*."¹⁷² At the time a transaction is arranged by electronic agents, neither party is aware of any manifestation by the other. A buyer of airline tickets manifests through a bot: "I consent to transfer in the range $\$x1 - \$x4$ in exchange for airline tickets in the range $y1 - y4$." The airline manifests through a bot: "I consent to transfer $y2 - y5$ in exchange for $\$x2 - \$x5$." Before the bots interact, there have been no manifestations of assent to be bound legally—the airline is unaware of the buyer's consent, and the buyer is unaware of the airline's consent. Suppose the bots interact to reach a deal of $y3$ in exchange for $\$x3$. Is there an enforceable transfer of rights at this point? Until the terms of the deal are communicated to the buyer and airline, respectively, it would seem not, as still no consent has been manifested to the other party. Thus, before the terms of the deal are communicated, the buyer or airline could send another bot to block the

¹⁶⁹ *Id.* (raising this question).

¹⁷⁰ *Id.*; see also Jean Braucher, *Contract Versus Contractarianism: The Regulatory Role of Contract Law*, 47 WASH. & LEE L. REV. 697, 704 (1990) ("Barnett views interpretation to determine the fact and scope of consent as a simple matter.")

¹⁷¹ See Randy E. Barnett, *The Sound of Silence: Default Rules and Contractual Consent*, 78 VA. L. REV. 821 (1992).

¹⁷² Barnett, *supra* note 7, at 305.

[A]n assent to alienate rights must be manifested in some manner by one party to the other to serve as a criterion of enforcement. Without a manifestation of assent that is accessible to all affected parties, that aspect of a system of entitlements that governs transfers of rights will fail to achieve its main function. At the time of the transactions, it will have failed to identify clearly and communicate to both parties (and to third parties) the rightful boundaries that must be respected.

communication. What if the terms are communicated to one party but not the other? Buyer receives a message: "You have purchased \$x3 for y3." Is seller bound, but not buyer? Is neither party bound because implicit in the right transferred to the buyer is, "provided seller receives notice of transaction?" If there are to be set boundaries for the transfer of property rights, as consent theory aims to provide,¹⁷³ obligation would have to arise before communication. Whether the transaction is enforceable under the consent theory thus depends on whether the theory strictly requires that one party have manifested assent to the other "at the time of the transaction."¹⁷⁴

These problems are the same as would arise if I said to you, "Go out and buy me a ticket from an airline within these price and date parameters," and you proceeded to buy me a ticket from a ticket agent. Consent theory does not engage the fiction that I have directly manifested assent to be bound legally to the airline and that the airline has manifested assent directly to me. Consent theory would solve the problem by deeming you to be my agent, and the ticket agent the agent of the airline. "[C]onsent theory defines an agency relationship as a commitment by the agent to transfer to the principal any rights obtained on the principal's behalf."¹⁷⁵ As computer software cannot itself hold legal rights on behalf of a user, agency principles do not suffice to solve the problem. At the end of the day, a theory of enforceability dependent on whether an individual has manifested assent to be bound legally to a transfer of rights at the time a legal obligation arises would fail to explain why agreements formed by the interaction of electronic agents ought to be enforceable.

That said, I do not believe that Professor Barnett's broader aims mandate a strict rule that consent be manifested expressly to the other at the time legal obligation arises. Professor Barnett describes the concept of rights from which he launches his theory as "a social one whose principal function is to specify boundaries within which individuals may operate freely to pursue their respective individual ends and thereby provide the basis for cooperative interpersonal activity."¹⁷⁶ When he first articulated this theory in 1986, electronic agent technology may not have been at the forefront of his thinking.

¹⁷³ See *supra* notes 165-67 and accompanying text.

¹⁷⁴ For a broad discussion of the perceived tension between online contracting and contract as consent, see Radin, *supra* note 17, at 1125-26.

¹⁷⁵ Barnett, *Squaring*, *supra* note 164, at 1990.

¹⁷⁶ Barnett, *supra* note 7, at 301. See also Randy E. Barnett, *Foreword: Is Reliance Still Dead?*, 38 SAN DIEGO L. REV. 1, 12 (2001) ("While reliance remains a fundamental principle or end of contract law, as it always has been, it is consent to be legally bound that provides the essential means to the end of protecting the right to rely on the commitments of others and to other vital ends as well.").

In the typical situation, where at least one contracting party is known to the other, requiring manifested assent to transfer legal rights at the time a legal obligation arises is a reasonable means for defining the boundaries within which individuals may operate without incurring legal obligation. Using an electronic agent is an external act that manifests an intent to alienate rights, though not specifically to the other party until after the rights have been alienated. Holding a user to that external act would seem to define boundaries of individual activity and enable cooperative activity between persons.¹⁷⁷ This broader purpose of solving coordination problems, which consent theory shares with the trust theory of contract, is one to which I will turn in a moment.¹⁷⁸

B. Reliance Theories

Under reliance theories of contract, the purpose of legal obligation is to protect not exercises of will by promisors, but reliance on promises by promisees. Reliance theories are often associated with Grant Gilmore, who, in *The Death of Contract*, argued that contract law originated in tort law, and that tort law eventually would subsume it.¹⁷⁹ There are two distinct theories of contractual obligation that I will consider under this heading—the *tort* theory and the *market-confidence* theory. The tort theory would compensate actual harm suffered in reliance on promises; the market-confidence theory would protect the ability of parties to rely on promises.

1. The Tort Theory

Under the tort theory of reliance, contract law serves to compensate for actual harm caused by a promise upon which a promisee reasonably and justifiably relies.¹⁸⁰ The oft-repeated flaw in the tort theory is that it fails to explain when reliance on a promise is reasonable or justified. No one argues

¹⁷⁷ It also would recognize that conditional assent is genuine assent. See *supra* notes 45-46 and accompanying text.

¹⁷⁸ See *infra* Part II.C.

¹⁷⁹ GILMORE, *supra* note 139, at 95. But see Randy E. Barnett, *The Death of Reliance*, 46 J. LEGAL EDUC. 518, 519-20 (1996) (arguing that "it is as anachronistic to refer to *assumpsit* as a 'tort' action as it is to refer to debt, detinue, or covenant as 'contract' actions").

¹⁸⁰ See GILMORE, *supra* note 139, at 81-83; cf. RESTATEMENT OF CONTRACTS, *supra* note 27, § 90 (1981) ("A promise which the promisor should reasonably expect to induce action or forbearance on the part of the promisee or a third person and which does induce such action or forbearance is binding if injustice can be avoided only by enforcement of the promise."). As Randy Barnett has observed, "no contracts scholar ever published a comprehensive explication of a reliance theory of contract of the kind that Charles Fried had attempted . . . for the 'will theory' . . ." Barnett, *supra* note 179, at 521.

that the law should protect all reliance on promises. I promise you that I will give you a ride to work. I forget to do so. You are late for work and lose your job because, unbeknownst to me, you had received your final warning on tardiness last week. Am I responsible for your lost wages? The common law answer is probably “no,” as I could not foresee the extent of your reliance, or, in light of the stakes, the extent of your reliance was unreasonable.¹⁸¹ The problem with protecting reliance only when it is “foreseeable” or “reasonable” is that liability does not depend solely on the fact of reliance; it depends on whether the promise justified the reliance. The tort theory of reliance fails to explain why reliance is justified only upon certain kinds of promises. In other words, it fails to recognize that the obligation originates not in the reliance but in the promise. It is the nature of the promise that entitles or does not entitle the promisee to rely.¹⁸²

How would the tort theory answer the question whether exchanges arranged through the interaction of electronic agents should be enforced? The tort theory would compensate only harm justifiably incurred in reliance on another’s use of a bot. Is one party that uses a bot to arrange an exchange justified in relying on the fact that others may be using bots with an eye toward the same exchange? Assuming the answer is “yes,” it would be others’ use of bots that justifies the reliance; liability would not exist solely by virtue of the reliance. The question thus remains why one should be entitled to rely on the use of bots by others. The tort theory of reliance provides no clear answer to this question.

Moreover, there would be practical disadvantages to a system that required actual reliance for there to be legal liability. Under the tort theory, the user of a bot would not be bound until another user had relied on that use, and, then, only to the extent of the reliance. Under a system that recognizes promissory liability prior to actual reliance, a seller, for example, may immediately assign its right to payment before incurring any tangible detriment under the contract, as sellers often do.¹⁸³ It could be argued that assignment itself is reliance, but one cannot assign a right that one does not already possess. It also could be argued that assignment is a transfer of the right to rely, but if one is transferring a right to rely on a promise, it is the promise that generates the right to rely, and thus the legal obligation.

¹⁸¹ See generally RESTATEMENT OF CONTRACTS, *supra* note 27, § 90.

¹⁸² See Barnett, *supra* note 7, at 274-76.

¹⁸³ See RESTATEMENT OF CONTRACTS, *supra* note 27, § 317.

2. *The Market-Confidence Theory*

Under the market-confidence theory of reliance, contract law serves to protect not actual reliance, but the ability of parties to rely on certain promises—that is, to trust that when an individual voluntarily assumes a duty, that duty will be fulfilled. This theory, propounded by Daniel Farber and John Matheson, argues that basic economic institutions require confidence in order to function properly.¹⁸⁴ Fostering confidence where commitments are made in furtherance of economic activity benefits all economic actors in the long run.¹⁸⁵ Thus, contract law should serve not to compensate detrimental reliance in individual cases, but rather to foster trust as a public good.¹⁸⁶

One problem with this theory is that, as with other theories of efficiency in contract law, it assumes a voluntary assumption of a duty.¹⁸⁷ The need for a voluntary assumption of duty requires some independent justification. Indeed, recent scholarship suggests that imposing no liability for precontractual reliance (e.g., reliance before there is a voluntary assumption of a duty) may lead to inefficient outcomes.¹⁸⁸

Insofar as it seeks efficient outcomes, the problem with the market-confidence theory is that its calculus is disputed. Farber and Matheson argue that predictable enforcement of promises and the incentives it would create for the disclosure of uncertainty will lead to efficient outcomes.¹⁸⁹ Sidney DeLong disputes this, asserting that nonbinding commitments, rather than enforceable ones, might be most efficient.¹⁹⁰ The proposed default rule he gleans from

¹⁸⁴ Farber & Matheson, *supra* note 7, at 927.

¹⁸⁵ This theory, that the legal obligation to perform promises is justified on the ground that it fosters economic trust, has its roots in the writings of Adam Smith and David Hume, which P.S. Atiyah has synthesized well. See ATIYAH, *supra* note 7, at 392.

¹⁸⁶ Farber & Matheson, *supra* note 7, at 928-29; see also Edward Yorio & Steve Thel, *The Promissory Basis of Section 90*, 101 YALE L.J. 111, 121 (1991) (explaining why Fried's promise theory also "supports principles of trust and integrity").

¹⁸⁷ See Farber & Matheson, *supra* note 7, at 914-15 ("The requirement of a promise makes liability turn on the voluntary assumption of a duty, and thus underlies the function of contract law as a promoter of voluntary agreements.")

¹⁸⁸ Lucian A. Bebchuk & Omri Ben-Shahar, *Precontractual Reliance*, 30 J. LEGAL STUD. 423, 452-57 (2001).

¹⁸⁹ See Farber & Matheson, *supra* note 7, at 928 ("One individual breaking trust in a dramatic way, or many individuals breaking trust less dramatically, can lead to short-run benefits for those individuals but create negative externalities. The willingness of others to trust is impaired, requiring them to invest in precautions or insure themselves against the increased risk of betrayal.")

¹⁹⁰ See Sidney W. DeLong, *The New Requirement of Enforcement Reliance in Commercial Promissory Estoppel: Section 90 as Catch-22*, 1997 WIS. L. REV. 943, 988-91.

Farber and Matheson's work—that promises made in furtherance of economic activity are enforceable—might, it is true, persuade some commercial actors to disclose an intention *not* to be bound.¹⁹¹ But it may not, he argues, comport with the natural incentives that it assumes of commercial actors. If I tell you, “I will not reduce your salary in the upcoming year,” it is unlikely that my next sentence will be, “I do not consider myself legally bound to my prior statement.” It is plausible that the opposite default rule—that all promises are unenforceable unless there is an express disclosure that the promisor deems it legally enforceable—might better comport with the natural incentives of commercial actors and thus result in greater disclosure of information.¹⁹²

The market-confidence theory of reliance shies away from moral values other than efficiency.¹⁹³ By its terms, it extends only to the context of promises made in furtherance of economic activity, not, for example, to donative promises in families.¹⁹⁴ It recognizes the moral value of “mutual trust” as important, but the trust that it purports to protect is not trust between persons (as in “I trust you”); it is the trust that something will happen (as in “I trust that you will fulfill your promise”).¹⁹⁵ If I rely on your promise even though it is not legally enforceable, it is because I trust you in the sense that I place confidence in you. If the law compels you to perform your promise, that does not foster my trust in you. It fosters my trust that you will perform. In other words, it protects my ability to rely on your promise. If the presumption of utility that underlies that protection is erroneous (or if one rejects efficiency as an end in this context), why the law should protect my ability to rely on your promise remains unanswered.

How would the market-confidence theory answer the question whether exchanges arranged through the use of electronic agents should be enforced? More empirical work is probably necessary. Assuming that the theory's underlying economic justification is correct as applied to promises between persons, it is questionable whether it applies when electronic agents serve as

¹⁹¹ See generally Ian Ayres & Robert Gertner, *Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rules*, 99 *YALE L.J.* 87, 87 (1989) (arguing for default rules that neither party would want in order to encourage parties to reveal information).

¹⁹² See DeLong, *supra* note 190, at 988-91.

¹⁹³ See Farber & Matheson, *supra* note 7, at 937 (“[O]ur approach reinforces the moral value of trust only insofar as trust serves to support the functioning of the modern economic system.”).

¹⁹⁴ *Id.*

¹⁹⁵ As Professor DeLong has pointed out, “It seems odd to say that making an employer's promise legally enforceable fosters trust in the employer. Rather, one relies on enforceability precisely because one does not trust the promisor.” DeLong, *supra* note 190, at 991 n.156.

intermediaries. For instance, the theory posits that enforcing promises creates incentives for promisors to reveal their uncertainties about performance. Users of electronic agents in the manner considered here have no means to disclose their uncertainties about performance as, at the time of contract formation, they know neither with whom the bot is arranging an exchange nor the specific terms thereof. Thus, to enforce agreements consummated by bots would not be to create a default rule providing incentives for the disclosure of information; rather, it would be to create an immutable rule requiring some independent justification. Predictable enforcement of exchanges arranged by electronic agents may maximize utility in some sense, but I am unaware that it has been proven.

C. *The Trust Theory*

The final theory addressed is loosely called the trust theory of contract. The modern proponents of this theory are Joseph Raz and John Finnis.¹⁹⁶ While their theories differ in the details, they seem to offer a similar account of promising and contractual obligation.¹⁹⁷

On the surface, the trust theory of contract appears to be the same as the reliance theory propounded by Farber and Matheson. Farber and Matheson argue that the purpose of contract law is to protect the ability of parties to rely on certain promises—that is, to trust that certain promises will be fulfilled.¹⁹⁸ Raz describes the purpose of contract law as “to protect both the practice of undertaking voluntary obligations and the individuals who rely on that practice.”¹⁹⁹ Indeed, this shared notion has long infused contract law. Pollock’s nineteenth-century treatise begins by describing contract as an “imperfect” endeavor of the State “to establish a positive sanction for the expectation of good faith which has grown up in the mutual dealings of men of average right-mindedness.”²⁰⁰ It continues, “He who has given the promise is bound to him who accepts it, not merely because he had or expressed a certain intention, but because he so expressed himself as to *entitle the other party to*

¹⁹⁶ See FINNIS, *supra* note 7, at 300-06; Raz, *Promises*, *supra* note 7, at 927-33.

¹⁹⁷ See FINNIS, *supra* note 7, at 343 n.XI.2 (citing Joseph Raz, *Promises and Obligations*, in *LAW, MORALITY, AND SOCIETY: ESSAYS IN HONOUR OF H.L.A. HART* 210 (P.M.S. Hacker & J. Raz eds., 1977) for a similar account of promising).

¹⁹⁸ See *supra* notes 184-86 and accompanying text.

¹⁹⁹ Raz, *Promises*, *supra* note 7, at 933.

²⁰⁰ FREDERICK POLLOCK, *PRINCIPLES OF CONTRACT: A TREATISE ON THE GENERAL PRINCIPLES CONCERNING THE VALIDITY OF AGREEMENTS IN THE LAW OF ENGLAND AND AMERICA* 9 (4th ed. 1888).

rely on his acting in a certain way.”²⁰¹ What justifies this entitlement is where the Finnis and Raz theories part ways from the Farber and Matheson theory. Farber and Matheson would protect the ability of parties to rely on promises on utilitarian grounds—fostering trust benefits not only the contracting parties, but all future contracting parties.²⁰² Raz justifies protecting the ability to rely on promises on grounds that the relationships that result when individuals assume voluntary obligations to each other are valuable not only for their productivity, but in and of themselves. “The moral pre-suppositions of this conception of promising are the desirability of special bonds between people and the desirability of special relations that are voluntarily shaped and developed by the choice of participants.”²⁰³

Finnis provides a similar account of promising and contract law. Individuals in society pursue different reasonable objectives. In their pursuit of reasonable objectives, individuals must cooperate and coordinate their activities with other individuals. If individuals are to pursue their reasonable objectives, the possibility of coordination must be available. The availability of coordination of constructive action is thus itself a form of good.²⁰⁴ Promising is a uniquely appropriate means by which individuals coordinate their activities with others.²⁰⁵ A promise is not merely the utilization of a social convention; it is the making of any sign that “signifies the creation of an obligation, and which is knowingly made with the intention of being taken as creative of such obligation.”²⁰⁶ The practice of promising is an effective form of cooperation only if promises are kept. Finnis thus explains contractual obligation as “the necessity of a type of means uniquely appropriate for attaining a form of good (e.g. the standing availability of coordination of constructive action) otherwise attainable only imperfectly if at all.”²⁰⁷ Unlike Farber and Matheson, Finnis views “mutual trustworthiness” as “not merely a

²⁰¹ *Id.* (emphasis added).

²⁰² *See supra* notes 184–86 and accompanying text.

²⁰³ Raz, *Promises*, *supra* note 7, at 928.

²⁰⁴ *See* FINNIS, *supra* note 7, at 154–56.

²⁰⁵ *See id.* at 303.

²⁰⁶ *Id.* at 299. The account Raz provides is similar:

We are imagining a society in which there are no conventional ways of promising. But these conventional means, useful as they are in helping to clarify people’s intentions, are not essential. If in our imagined society a man communicates to another his intention to undertake by the very act of communication, an obligation to perform an action and confer a corresponding right on his interlocutor, I cannot see how we can avoid regarding his act as a promise.

Raz, *supra* note 197, at 214 (citations omitted).

²⁰⁷ FINNIS, *supra* note 7, at 325.

means to further distinct ends; it is in itself a valuable component of any common life"²⁰⁸:

Fulfilling one's particular obligations in justice, even within the restricted sphere of private contracts . . . is necessary if one is to respect and favor the common good, *not* because 'otherwise everyone suffers', or because non-fulfillment would diminish 'overall net good' in some impossible utilitarian computation, or even because it would 'set a bad example' and thus weaken a useful practice, but simply because the common good *is* the good of individuals, living together and depending upon one another in ways that favour the well-being of each.²⁰⁹

Critical commentary of this theory of contract is not nearly as developed as commentary on the will and reliance theories. Louis Kaplow and Steven Shavell, in surveying promise and reliance-based theories of contract, relegate Raz's theory to a footnote: "it seems to us circular to say that the purpose of contract law is to protect the institution of the making of obligations, that is, of contract."²¹⁰ The circularity may appear from the way Kaplow and Shavell represent the argument. Raz does not say that the purpose of contract law is to protect contract; he says that the purpose is to protect a much wider social practice of undertaking voluntary obligations to people and groups.²¹¹ As Finnis explains, the purpose of contract law is to protect the ability of individuals to be able to make reliable arrangements with each other in order to attain their reasonable objectives. Enforced trustworthiness, in his view, is valuable in and of itself. The criticism thus may not be so much that the account is circular, but that protecting the ability of individuals to pursue their objectives through reliable arrangements is not of value in itself. Kaplow and Shavell write from a standpoint of welfare economics. From that standpoint, the individual may be the locus of value, but the common good is defined not in individual terms but as maximizing the aggregate sum of individual utility in society.²¹² From Finnis' perspective, the common good is not maximizing the

²⁰⁸ *Id.* at 306. By "[m]utual trustworthiness," Finnis must mean trust in the sense that something will happen ("I trust that you will fulfill your promise"), not trust between persons ("I trust you"). The law must enforce promises because not all individuals are trustworthy. See *supra* note 195 and accompanying text.

²⁰⁹ FINNIS, *supra* note 7, at 305.

²¹⁰ Kaplow & Shavell, *supra* note 135, at 1112 n.342.

²¹¹ Raz, *Promises*, *supra* note 7, at 928.

²¹² Kaplow & Shavell, *supra* note 135, at 987 ("[A] method of aggregation is of necessity an element of welfare economics."). For a discussion of the difference between utilitarian and individual freedom moral theories, see Richard W. Wright, *Right, Justice, and Tort Law*, in *PHILOSOPHICAL FOUNDATIONS OF TORT LAW* 159, 161-63 (David G. Owen ed., 1995).

aggregate welfare of society. Where an individual's welfare is sacrificed for the welfare of society, Finnis asserts, the individual is treated as a means to satisfy the interests of others rather than as an end in him or herself.²¹³ The common good, then, is to create conditions that enable members of a community to attain their own reasonable objectives.²¹⁴

Would enforcing exchanges arranged through the interaction of electronic agents be consistent with the trust theory of contract? Neither Finnis nor Raz has as his purpose the derivation of specific rules to comprise the law of contract. It seems fair to ask, nonetheless, whether certain rules would be consistent with their accounts. In broad terms, the trust theory would hold individuals to obligations voluntarily assumed. Broken promises, though, as Raz explains, are not the only threat to the ability of individuals to make reliable arrangements. In order to protect the practice of undertaking voluntary obligations, it is necessary to impose certain non-promissory liabilities.²¹⁵ If I willingly make it to appear that I am undertaking a voluntary obligation, but have no intention of fulfilling it, I must be held to that obligation in order to protect those who rely on the practice of promising. "[I]f people were often to let it appear that they have promised when they have not," Raz explains, "the currency of promises would be debased and their appeal and utility greatly diminished."²¹⁶ Thus, those "who do not make a promise but who knowingly, carelessly, or negligently behave in a way that creates the impression that they have done so should be made to compensate those who innocently rely on the supposed promise."²¹⁷ Likewise, Finnis explains, "the willingness of the promisor to be bound (*or to be taken as willing to be bound*) is one of the necessary conditions of his being bound"²¹⁸

Using bots is a means by which individuals enter into arrangements with others. Indeed, without anyone else using a bot capable of interacting with mine, my bot is useless. It is true that I may have no intention of honoring the commitments arranged by my bot without some further manifestation of assent. I know, however, that another person may assume from my use of the bot that I do intend to honor the commitment arranged. If this means of

²¹³ See FINNIS, *supra* note 7, at 111-18.

²¹⁴ See *supra* note 209 and accompanying text.

²¹⁵ See Raz, *Promises*, *supra* note 7, at 934-37.

²¹⁶ *Id.* at 936.

²¹⁷ *Id.* at 935.

²¹⁸ FINNIS, *supra* note 7, at 308 (emphasis added). Elsewhere, Finnis has explained (in the context of intention in tort law) why one may be culpable for consequences not intended but foreseen. See John Finnis, *Intention in Tort Law*, in *PHILOSOPHICAL FOUNDATIONS OF TORT LAW*, *supra* note 147, at 242-47.

cooperative activity is to be reliable, one who willingly gives the impression of abiding by commitments arranged by the agents should be held liable irrespective of the time the obligation actually arises. A way, Raz explains, of “protecting the practice of undertaking voluntary obligations” is “protecting individuals from abuse of the practice by those who let it appear as if they have promised when they have not,” even if the abuse results from mere negligence.²¹⁹

Under the trust theory, that the parties have not manifested assent with reference to each other’s manifestations would not be fatal to the existence of a legal obligation.²²⁰ To fulfill my objectives, I have performed an act that, regardless of whether I intend to assume an obligation, I have reason to know may cause another to understand that I have done so. If the purpose of contract law is to protect the ability of parties to rely on voluntarily undertaken obligations because the availability of constructive action is good in itself, there is no reason why a choice to undertake an obligation in a context that does not allow for referential manifestations would not be enforceable.

Thus, enforcing exchanges arranged by electronic agents appears consistent with the trust theory of contract. Because this theory has received less scholarly attention than others, it is worth briefly pausing to point out its unifying elements. It recognizes the importance of an act of will (to be bound or to be taken as willing to be bound) as a necessary but insufficient condition for there to be an obligation of the performance promised. The reason why a voluntary act is necessary is that the purpose of promissory obligation is “to enable individuals to exercise a control over their own relationships in community.”²²¹ It also recognizes the importance of protecting reliance—not merely actual reliance, but the ability of individuals to rely on acts purporting to be the voluntary undertaking of obligation and on the obligation so assumed.

D. From Theory to Practice

Recall the criticism that a quest for reasoned “theory” in contracts scholarship has created a gulf between legal scholarship and transactional practice. Scholars continue to debate the relevance of legal theory to the

²¹⁹ Raz, *Promises*, *supra* note 7, at 936-37.

²²⁰ Indeed, without this constraint, which Fried seems to view as essential to his promise theory, the trust theory recognizes that conditional assent (e.g., “I assent to pay \$x-\$y on the condition that my bot finds a seller willing to pay \$x-\$y”) is genuine assent.

²²¹ FINNIS, *supra* note 7, at 308.

formation of legal rules.²²² At a minimum, however, surely it is fair to ask whether enforcing arrangements made by electronic agents would be consistent with the various theories of contract discussed.²²³

Under the promise theory, an individual creates a contractual obligation by communicating a promise—invoking a convention for making binding commitments. If this is our concern—that an individual have the right to create legal obligation by voluntarily conveying a promise—the use of an electronic agent arguably would not itself suffice to give rise to contractual obligation. For there to be a binding commitment, the law would have to require either a precedent promise to abide by commitments to be arranged by electronic agents, or a subsequent promise to abide by a commitment made by an electronic agent. A grace period for opting out of a commitment made by an electronic agent—so long as agent users are on notice that silence through the end of the grace period is assent—would suffice.

It might be asked why the law could not simply declare that, prospectively, those who use electronic agents are bound to exchanges arranged thereby, thus creating a convention that the use of an electronic agent is a promise. To the extent that promise theory deems communication an essential element of any convention capable of being used to create an enforceable promissory obligation, invoking this convention would no more give rise to promissory obligation than would invoking the “convention” that destroying another’s property generally carries an obligation to pay for it. Liability would exist, but it would not be a promissory one.²²⁴

²²² In this regard, Jay Feinman has expressed that “[m]ore is at stake in this debate than getting straight the views of some academic scholars; the meaning and content of contract law are at stake as well.” Jay M. Feinman, *The Significance of Contract Theory*, 58 U. CIN. L. REV. 1283, 1285 (1990). Of course, scholars have long disagreed about the proper level of abstracting principle. Compare Barnett, *supra* note 7, at 270 (highlighting “the need for a more overarching approach that can capture the truths of these theories while avoiding their errors”), with Steven D. Smith, *The Pursuit of Pragmatism*, 100 YALE L.J. 409, 430-33 (1990) (explaining why legal theory is “necessary and valuable,” but demonstrating the impossibility of specifying “any general standard for deciding how much abstraction is too much”), and HILLMAN, *supra* note 11, at 2 (acknowledging “the great importance of theory in explaining our world,” but cautioning against “theory’s potential for rigid ordering and ‘excessive abstraction’”).

²²³ Atiyah has lamented that “[p]ragmatism is the respected approach to policy making, and principle is nowhere to be seen. Every problem is treated on its own merits, every case is entitled to a separate solution, and inevitably, in the process, long-run considerations tend to be forgotten.” ATIYAH, *supra* note 7, at 613.

²²⁴ See Radin, *supra* note 17, at 1127 (discussing computers and binding commitment in the context of the property-rule versus liability-rule dichotomy developed in Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089 (1972)).

Under the consent theory, an individual creates a contractual obligation by manifesting an intention to be bound legally to transfer a property right at the time of contract formation. If our concern is manifested consent at the time legal obligation arises, the law should require the same manifestations as would effect the promise theory—precedent consent to transfer rights that the interaction of electronic agents will specify, or subsequent consent to transfer rights that the interaction of electronic agents has specified. The consent theory does have as its broader purpose, however, enabling individuals to pursue their ends through cooperative activity. An external manifestation of consent, even if another party is unaware of it at the time obligation arises, may serve this purpose as well as a manifestation of consent that another is aware of at the time of contract formation, so long as each person willingly chooses to participate in this form of cooperative activity. The broader purpose of consent theory—protecting boundaries of individual activity and enabling cooperative arrangements—would seem to justify enforcement.

Turning to other theories of obligation, the tort theory of reliance recognizes no legal obligation until the promisee detrimentally relies on the use of an agent. If actual reliance is our concern, a party who uses an agent should be held to no legal obligation until the other party suffers actual injury. Under the market-confidence theory of reliance, an individual is bound to a promise made in furtherance of economic activity in order to foster confidence in economic institutions. If maximizing utility is our concern, more work seems necessary to determine who should bear the risks of loss involved in transacting business with electronic agents.

Finally, under a trust theory of contract, individuals are bound to promises in order to protect the ability of individuals to pursue their reasonable objectives through reliable arrangements. It is not merely the voluntary and intentional act itself that the law protects; it is the ability of individuals to exercise control over their relationships in community.²²⁵ To preserve that

²²⁵ Finnis explains:

Suffice it to observe here that although promissory obligations do not come into being without some voluntary and intentional act such as might be said to manifest an 'act of will' on the part of the promisor, the occurrence of that act is only one of the several facts relevant to the emergence of the necessity which we call obligation, and has no special role in explaining the *obligation* of the performance promised.

FINNIS, *supra* note 7, at 307.

ability, the law could hold individuals who do not make promises responsible for creating the impression that they have done so. A party who uses an electronic agent to arrange exchanges that another will perceive as obligatory generally should be held bound thereto.

This sketch, bringing theory to bear on practice, generally overlooks the flaws of each theory. Of course these flaws bear on which theory, if any, provides the appropriate measure. Has the ongoing quest to identify theories and their flaws been useful? I think it has. Does the fact that legislatures may be animated by concerns other than those represented by these theories render analysis of these concerns irrelevant?²²⁶ I think not, for any concern that carries the day must withstand moral scrutiny.

CONCLUSION

Established contract doctrine provides no clear answer to the question whether exchanges arranged by the interaction of electronic agents are enforceable. In particular, it does not account for contractual obligation between parties unknown to each other, absent agency principles. Agency principles are built around a paradigm of human interaction; to apply select agency principals to the relationship between a human and a machine would require some justification beyond those that warrant applying agency principles in their entirety. Proposed legislation addressing the issue falls short of providing clear answers. The enforceability question is left to future legislation or common law development. The question thus arises whether exchanges arranged by electronic agents *should* be enforced. The theories that appear consistent with enforcing such exchanges are those that seek to protect the ability of individuals to pursue reasonable objectives through reliable arrangements. Other theories appear inconsistent with enforcement, at least in certain aspects of their formulation. Perhaps those aspects warrant rethinking or clarification. It is my hope that by thinking about theories of contractual obligation in light of this specific problem, we will gain greater insight into each theory. It also is my hope that by thinking about this specific problem in light of these theories, we will arrive at a practice that is justified.

²²⁶ See Iain Ramsey, *The Politics of Commercial Law*, 2001 WIS. L. REV. 565, 566 (arguing that commercial legislation often does not serve "rational development of the law" but rather the political objectives of private groups).