Economics as Moral Exchange: James Buchanan Meets Martin Buber

Tyler J. BroughUtah State UniversityRandy T. SimmonsUtah State University

In this article, we examine the methodological writings of James M. Buchanan and relate them to those of the moral philosopher, Martin Buber. We analyze Buchanan's views on the morality of the exchange relationship between individuals that are both explicit and implicit in his writings. We imagine a hypothetical meeting between Buchanan and Buber and conclude that Buchanan would have agreed with Buber's dialogical philosophy of human interaction as a foundation for his catallactic point of view.

"My mother took her knitting needles and a ball of wool and improbably turned it all into a sweater. Fantastic! And I found out the secret of it holding together was the combination of warp and woof, the process in which one thread goes under the other, then over the other, then under the other, and so on, until it all just holds up.... In the same way, human beings depend on each other - without mutual support, none of us could exist.... We live in the midst of a woven tapestry [of] the warps and woofs.... If you didn't have one, you wouldn't have the other, because it takes two to reveal the pattern. We are patterns in a weaving system. We wouldn't be here if it weren't for the interlocking of all these different spectra of dimensions." – Alan Watts¹

Section I: Introduction

One of the dominant themes in the writings of James M. Buchanan was that of economic methodology. One sees in Buchanan's writings a constant striving to wrestle with the deepest questions of his discipline. Perhaps, most famously, he asked, "What should economists do?" [Buchanan, 1964, p. 213]. He did not mince words in stating that "most modern economists have no idea of what they are doing or even of what they are ideally supposed to be doing" [Buchanan, 1979, p. 90]. One of the most important questions for economists to answer, according to Buchanan, was

¹See Watts [2017], p. 43.

"what is it all about?" "What is the proper domain of economics?" And subsequently, "What is the proper methodology economists should employ?"

For Buchanan, it was essential to get this right, stating that "economists should ... face up to their basic responsibility ... [and] ... at least try to know their subject matter" [Buchanan, 1964, p. 213]. His own answer was that:

The subjective elements of our discipline are defined precisely within the boundaries between the positive, predictive science of the orthodox model on the one hand and the speculative thinking of moral philosophy on the other. [Buchanan, 1982, p. 8].

Perhaps Buchanan is most famous for his own writings on the technical subject of the theory of Public Choice, and less well known for his views on moral philosophy. In this chapter, we wish to take Buchanan at his word and examine his explicit and implicit views of moral philosophy and its relation to his economic theory. In doing so, we will compare and contrast his views of morality with those of the moral philosopher, Martin Buber. There is no evidence that Buchanan was aware of Buber's writings, or that if he were that he ever expressed any explicit interest in them. Despite this, we contend that Buchanan adopted a moral view of the relationship between individuals very similar to that of Buber. In doing so, we note that we engage in our own "speculative thinking,"² but trust that he would have at least approved of the effort, if not the conclusions.

This chapter is organized as follows: In Section 2, we review Buchanan's writings on methodology, specifically his ideas on the spontaneous coordination of markets and on the transactional relationship between individuals who engage in exchange. In Section 3, we examine briefly the moral philosophy of Martin Buber and his concepts of two word pairs. These are the I-It and the I-Thou. In Section 4, we frame the discussion in the context of the oft-cited scenario of the Crusoe Economy of introductory textbooks. In Section 5, we conclude.

Section II: Buchanan on Catallactics and Symbiotics

In his writings on methodology, Buchanan pleaded with his fellow economists to consider as the central issue of the discipline the study of the transactional relationship between economic actors engaging in exchange. In his most famous paper on the topic, Buchanan quotes the founder of the

²See Buchanan [1982], p. 8.

discipline, Adam Smith, in noting, "… a certain propensity in human nature … the propensity to truck, barter, and exchange one thing for another." [Buchanan, 1964, p. 213]. In answering the question posed in the title of his essay, Buchanan puts forward a "theory of markets" and claims:

Economists *should* concentrate their attention on a particular form of human activity, and upon the various institutional arrangements that arise as a result of this form of activity. Man's behavior in the market relationship, reflecting the propensity to truck and to barter, and the manifold variations in structure that this relationship can take; these are the proper subjects for the economist's study. [Buchanan, 1964, p. 214].

For Buchanan, economics is about more than the efficient allocation of resources, and the appropriate methodology for economic theory is deeper than mere "computation"³ or the "maximization of objective functions subject to constraints." [Buchanan, 1979, p. 81]. He states further that "the maximization paradigm is the fatal methodological flaw in modern economics" [Buchanan, 1979, p. 281]. Buchanan would have economists focus instead on the Smithean propensity of the trader to truck and barter in an exchange relationship. It is this uniquely human propensity that creates value and leads to mutually beneficial outcomes between agents. He writes that "I want them [economists] to concentrate on *exchange* rather than on *choice*" [Buchanan, 1964, p. 217].

At one point Buchanan mentions that he considered titling the postscript to his book on economic methodology, "Why I am not an economist."⁴ Apparently, he felt that it might be too late to turn the tide of association the term "economics" with the methodology of constrained maximization. In its place he proposes:

Should I have my say, I should propose that we cease, forthwith, to talk about *economics* or *political economy*.... Were it possible to wipe the slate clean, I should recommend that we take up a wholly different term such as *catallactics*, or *symbiotics*. [Buchanan, 1964, p. 217]

Rothbard [2008] explains the term *catallactics* as follows:

The term, meaning 'the science of exchange', was proposed as a replacement for the name 'political economy' by the Rev. Richard Whately.

³See Buchanan [1964], p. 216.

⁴See Buchanan [1979], p. 279.

Both Ludwig von Mises and Friedrich Hayek used the term *catallactics* in their writings. Hayek proposed the word derived from the Greek root *katallasso*, which has the meanings: "to exchange", "to admit in the community", and "to change from enemy into friend."⁵ Suffice it to say that, for Buchanan, catallactics is preferred to the word economics due to the former's focus on exchange.

Buchanan preferred the term symbiotics because it connotes the "association is mutually beneficial to all parties" [Buchanan, 1964, p. 217]. This, for Buchanan, is the heart of economics because it highlights the cooperative "association of individuals, one with another."⁶ This is the single most important aspect of economics for Buchanan and it is located in the subjectivity of human "active choice." [Buchanan, 1982, p. 9]. It is transactional and is brought about by voluntary means.

It is essential to understand what Buchanan refers to as "subjective active choice" of individuals in a symbiotic relationship. The inception of economic exchange is rooted in this uniquely human behavior, which is is emergent, creative, entrepreneurial, and, therefore, unpredictable. As the most essential aspect of economics, exchange could not have evolved in the setting of the equilibrium models of mathematical economics, in which agents optimize objective functions subject to constraints. In such equilibrium settings, agents respond only passively to stimuli, and thus could not spontaneously organize through exchange institutions in the first place. It is this "active choice" that Buchanan refers to as "arbitrage" or "entrepreneurship" [Buchanan, 1979, p. 281]. However, note that this is not the perfect and zero-sum arbitrage of modern financial economics that is by definition risk free. Instead, it is an arbitrage that is creative of opportunities for others and thereby leads to positive-sum outcomes. Instead of a theory that seeks to explain the relative prices of commodities or financial assets in markets, it seeks to explain the very existence of such exchange institutions that constitute such markets! To summarize this point, Buchanan writes:

Mutual gains can be secured through cooperative endeavor, that is, through exchange or trade. This mutuality of advantage that may be secured by different organisms as a result of cooperative arrangements, be these simple or complex, is the one important truth in our discipline. [Buchanan, 1964, p. 218].

Buchanan was wary of the dominant methodology of utility optimization of mathematical

⁵See Hayek [1976], pp. 108-109.

⁶See Buchanan [1964], p. 217.

economics. He thought it would lead to a paradigm of economists as "social engineers"⁷ instead of conveyors of this "one important truth." Buchanan vehemently resisted the trend of objectification in economic theory. It is only the passive element of economic behavior that is amenable to mathematical treatment, and thus he saw the trend of mathematization in economic theory as perverse and "productive of intellectual muddle."⁸ It is not that there is any harm in the use of mathematics *per se*, but rather the focus exclusively on the predictable element of behavior that alone could never have given rise to the institutions of exchange. It is the exchange relationship that is the most central aspect of the discipline. He states that in the maximization paradigm:

The *market* becomes an engineered construction, a *mechanism*, an *analogue calculating machine*, a *computational device*, one that processes information, accepts inputs, and transforms these into outputs which it then distibutes. [Buchanan, 1964, p. 219].

Buchanan rejects the teleological view embedded in this paradigm, in which the market "solves" the "economic problem," and results, under ideal circumstances, in the efficient allocation of resources. While this objective view of the market institution is amenable to mathematical modeling, it obscures the emergence of the exchange relationship itself. Economists should instead study the bottom-up, emergent process of mutually beneficial exchange that results from the subjective propensity to truck and barter and create value for others. Indeed, on this point Buchanan is unyielding:

The *market* or market organization is not a *means* toward the accomplishment of anything. It is, instead, the institutional embodiment of the voluntary exchange processes that are entered into by individuals in their several capacities. *This is all there is to it.* [Buchanan, 1964, p. 219]

We hasten to note that Buchanan does not deny that there exists an element in human behavior that is amenable to mathematical modeling, and, therefore, to predictive analysis. He cites economic experiments conducted on rats⁹ that find a basic agreement with the objective theory of utility maximization. For Buchanan, these results do point to a discipline of genuine predictive

⁷See Buchanan [1964], p. 216.

⁸See Buchanan [1964], p. 218.

⁹See Kagel et al. [1981].

science. Thus, he claims that, "There is surely room for both sciences to exist in the more inclusive rubric that we call economic theory." [Buchanan, 1982, p. 17]. But again, it must be pointed out that for Buchanan, the primary, most essential economic concept is that the market institution achieves spontaneous order through the process of voluntary exchange. The proper domain of the discipline of economics does not belong wholly to the field of moral philosophy. Instead, it exists as a nexus between the subjective elements of moral philosophy and the objective elements of predictive science.

Knightian Reciprocity and Mutuality

Throughout his academic career, James Buchanan insisted on a position of methodological individualism as the basis for any sound economic reasoning and modeling. For Buchanan, any concept of the organic collective or of coercive collective decision making was simply outside the scope of economics. Economics is by definition to be regarded as the study of voluntary exchange. He shared with Hayek a dissatisfaction with the word "economics" due to its Greek root meaning "household management." He much preferred the term catallactics or symbiotics, as pointed out above, as those terms highlighted the roots of the discipline in voluntary exchange.

Indeed, one sees the very strong influences of Hayek and Knight upon Buchanan in these strands of his thought. In his essay *From the Outside Looking In* [Buchanan, 1992, pp. 148-149], Buchanan quotes at length his mentor and Professor Frank Knight:

It is intellectually impossible to believe that the individual can have any influence to speak of, ... on the course of history. But it seems to me that to regard this as an ethical difficulty involves a complete misconception of the social-moral problem ... I find it impossible to give meaning to an ethical obligation on the part of the individual to improve society.

The disposition of an individual, under liberalism, to take upon himself such a responsibility seems to be an exhibition of intellectual and *moral* conceit...; it is *unethical*. Ethical-social change must come about through a genuine moral consensus among individuals meeting on a level of genuine equality and mutuality and not with any one in the role of cause and the rest in that of effect, of one the "potter" and the others as "clay."

Commenting on this quotation from his mentor, Buchanan cautions the reader not to misunderstand:

He is not advancing a logic of rationally grounded abstention from discussion about changes in the rules for social order. He is defining the limits or constraints under which any individual must place himself as he enters into such discussion. The moral conceit that bothers Knight arises when any individual, or group, presumes to take on the responsibility for others, independently of their expressed agreement in a setting of mutuality and reciprocity. The the underlying principle is indeed a simple one: *Each person counts equally.*

Knight indeed had a profound impact on Buchanan's development as an economist. When asked to write about his "evolution as an economist," Buchanan wrote:

... [this was] an assignment that I could not fulfill. I am not a "natural economist" as some of my colleagues are, and I did not "evolve" into an economist. Instead I sprang full-blown, upon intellectual conversion, after I "saw the light" ... I was indeed converted by Frank Knight, but he almost single-mindedly conveyed the message that there exists no god whose pronouncements deserve elevation to the sacrosanct, be this god within or without the scientific academy. Everything, everyone, anywhere, anytime - all is open to challenge and criticism. There is a moral obligation to reach one's own conclusions.

It is not difficult to see this insistence on personal authority for one's positions in Buchanan's writings. Still, we argue that what might be called the Knightian moral-social or ethical-social position is foundational in the thought of James Buchanan. Commenting on this foundation, Buchanan writes:

Critics have charged that my work has been driven by an underlying normative purpose, and, by inference, if not directly, they have judged me to be mildly subversive. [But] anyone who models interaction structures that might be is likely to be accused of biasing analysis toward those alternatives that best meet his personal value standards. Whether or not my efforts have exhibited bias in this sense is for others to determine. I shall acknowledge that I work always within a self-imposed constraint that some may choose to call a normative one. I have no interest in structures of social interaction that are nonindividualist in the potter-clay analogy mentioned in the earlier citation from Frank Knight. That is to say, I do not extend my own analysis to alternatives that embody the *rule* of any person or group of persons over other persons or group of persons. *If this places my work in some stigmatized normative category, so be it.*

We argue that this Knightian moral-social position is foundational to the intellectual world of James Buchanan. It is self-evident in his scholarship that he followed his mentor's insistence that one work out one's positions for oneself, We thus conclude that Buchanan indeed held this position firmly. This provides a very fertile ground for the intellectual meeting of Buchanan and Buber.

The Market as a Creative Process

One additional element of Buchanan's catallactic point of view¹⁰ deserves mention. In Buchanan [1999], he gives a short, but powerful statement of his view of the market as a creative process where order emerges endogenously from genuine subjective choice. This statement is related to other statements [see Buchanan, 1982, and Buchanan [1979] p. 93] in which he distinguishes between *reactive choice* and truly *creative choice*. It is only in the latter that a modern society can locate its necessary dynamism to coordinate the ever more complex and constantly shifting plans of individuals. Indeed, he states [Buchanan, 1999, p. 244]:

[T]he "order" of the market emerges *only* from the *process* of voluntary exchange among the participating individuals. The "order" is, itself, defined as the outcome of the *process* that generates it. The "it," the allocation-distribution result, does not, and cannot, exist independently of the trading process. Absent this process, there is and can be no "order."

¹⁰We borrow this phrase with appreciation from Martin [2011].

And commenting on the neoclassical view of the utility-maximizing automaton, he further states [Buchanan, 1999, pp. 244-245]:

[I]n this presumed setting, there is no genuine choice behavior on the part of anyone. This...is misleading. Individuals do not act so as to maximize utilities described in *independently-existing functions*. They confront genuine choices...

In a lecture titled Natural and Artifactual Man [see Buchanan, 1979, p. 93], Buchanan distinguishes between modes of human nature that parallel his concepts of reactive choice and creative choice. The natural man is the man of reactive choice, while what he calls the artifactual man is the man of truly creative choice. Once again citing the studies conducted on rats, he agrees that there is a natural-reactive element to man that is amenable to scientific prediction. This is the microeconomic theory of standard textbooks. But again, it is the artifactual-creative aspect of man that has been almost entirely neglected in mainstream economic theory. He mentions the common examples of an individual deciding to lose weight by dieting or another individual who may decide to stop smoking as simple examples of human behavior that the received theory simply cannot explain. For Buchanan, the essence of the artifactual man is the sense of constructing oneself through purposeful action as the real-time process of life unfolds. Another aspect of the artifactual man is his ability to engage in counterfactual reasoning. His past choices may constrain his future opportunity set, but within those constraints he deliberately makes choices (in the creative sense) to become what he can envision himself to be. Because its sole domain is that of the natural man amenable to predictive analysis, neoclassical theory must be entirely silent on this most human aspect of life. He ends the essay with this strong statement [see Buchanan, 1979, p. 112]:

Man wants liberty to become the man he wants to become. He does so precisely because he does not know what man he will want to be in time. Let us remove once and for all the instrumental defense of liberty, the only one that can possibly be derived directly from orthodox economic analysis. Man does not want liberty to maximize his utility, or that of the society of which he is a part. *He wants liberty to become the man he wants to become.*

In the final essay in Buchanan [1979]¹¹ titled *Retrospect and Prospect* Buchanan makes what he ¹¹See Buchanan [1979], pp. 280-281. calls a few "crpytic statements or assertions" meant to "challenge thought". In the third of these cryptic statements, he writes:

Economics involves actors. Without actors, there is no play. This truism has been overlooked by modern economists whose universe is peopled with passive responders to stimuli.... How can entrepreneurship be modeled? Increasingly, I have come to the view that the role of entrepreneurship has been the most neglected area of economic inquiry, with significant normative implications for the general understanding of how the whole economy works.

This passage is very much in line with Buchanan's view of the artifactual man who engages in genuinely creative choice. But at this stage, we detect a divergence from his mentor, Frank Knight, who is perhaps most famous for his work on entrepreneurship. The Knightian entrepreneur represents a specialized role in the economy that he likened to biological cephalization.¹² For Buchanan, the entrepreneurial spirit is universal. It is present in every human being. While the models of orthodox economics are populated with the automaton *Homo economicus*, the agents that peopled the models of James Buchanan were *Homo sapiens*.¹³ These agents are fully human. They are flawed, fallible, subject to cognitive constraints and the full spectrum of human foibles; but also, and crucially, they are creative, dynamic, immaginative and entrepreneurial. There is a very strong case to be made that the only economic models Buchanan was interested in were comprised of genuine human actors.

Section III: Buber's Worlds of It and Thou

Martin Buber was an influential Jewish philosopher and thinker often associated with the existentialist philosophical tradition. He was born in Vienna in 1878, and he died in 1965 in Israel. In 1923, he was appointed lecturer in *Jewish Religious Philosophy and Ethics* at the University of Frankfurt. In 1933, he resigned after Hitler came into power and soon was banned from teaching until, in 1938, he left Germany for British Palestine. After his emigration, Buber was appointed Chair of the Department of Sociology of Hebrew University. During his later career, Buber received

¹²See Knight [2014], pp. 268-269.

¹³Recall that the Latin name means "wise man."

many awards, including the Goethe Prize of the University of Hamburg (1951), the Peace Prize of the German Book Trade (1953), the first Israeli honorary member of the American Academy of Arts and Sciences (1961), and the Erasmus Prize (1963). He was nominated for the Nobel Prize in literature ten times and for the Nobel Peace Prize seven times [see Scott, 2019, pp. 1-5].

Buber's most famous work is the book titled *I and Thou*, in which he outlined his "dialogic" philosophy of human relations. In the introduction of the book, he writes of the "twofold attitude" and "twofold nature" of our most basic relationships in life [Buber, 1937, pp. 3]. It's perhaps best to quote Buber directly in the matter:

To man the world is twofold, in accordance with his twofold attitude. The attitude of man is twofold, in accordance with the twofold nature of the primary words which he speaks. The primary words are not isolated words, but combined words. The one primary word is the combination *I-Thou*. The other primary word is the combination *I-It*.... Hence the *I* of man is twofold.... Primary words are spoken from the being. If *Thou* is said, the *I* of the combination *I-Thou* is said along with it. If *It* is said, the *I* of the combination *I-Thou* is said along with it. The primary word *I-Thou* can only be spoken with the whole being. The primary word *I-It* can never be spoken with the whole being. [Buber, 1937, p. 3]

Buber distinguishes between two different modes of existence. In doing so, he discusses two fundamental word pairs: *I-It* and *I-Thou*. He does not deny that there are more than these two binary classes of being (especially for the complex state of the inner being), but he holds that when man acts outwardly, he engages in one of these two basic forms. The reality of being for Buber is relation. The I in each of the word pairings is defined in relationship to its pair: It and Thou. These two basic forms of relation for Buber define man's outward behavior. For Buber, these two basic word pairs that define relationships are present in three basic ways: first, man's relationship to nature; second, man's relationship to his fellow man; and third, man's relationship to Spirit or God. In this essay, we will focus exclusively on the second category. It is here where we imagine a meeting of the minds of James Buchanan and Martin Buber.

The World of It

In the I-It pairing, the relationship of the I is defined in terms of the It. It is a relationship that is all about experience, function, and objects. In each possible relation, the It represents an object. It is something fully classified, wholly defined, completely circumscribed, and therefore limited and predictable. This, for Buber, defines the dominant form of man's relationship to others. In each possible case, it is entirely possible that the It in the I-It word pairing could be replaced with *he* or *she*. That is, (and perhaps especially so in economics) it is entirely possible for the objectification of the It that the I relates to, to be another human being. In this world, others are regarded as a means to an end; they are defined by their function and are seen as objects to either be used or experienced. This fundamental limitation implies that they are not seen as whole beings; they are fragmented. For Buber, the essential outcome of this objectification process is that the I that relates to the it is also fundamentally limited and fragmented. The I can never relate to the It with the wholeness of his or her being.

The World of Thou

The second basic word pairing for Buber is that of I-Thou. As opposed to the I-It, the I-Thou mode of existence is focused on wholeness, humanity, mutuality, and authentic human relation. When an I relates to a Thou in the I-Thou mode, he or she does so in an open and active manner. In this way, the I develops into a whole and complete being through the transactional process of relating to the Thou. The I of the I-Thou pairing does not objectify an It, but rather stands in relation to another Thou in an open and dynamic dialogue. In this sense, Buber's I-Thou orientation can be said to be *transactional*. For Buber, this is not merely an abstraction, but an ontological reality. It is through a process of encounter in which individuals meet each other in reciprocity that our full humanity is made manifest.

It and Thou in Language Patterns

In the I-Thou mode of being, the relation is one of subject to subject, whereas in the I-It mode of being, the relation is one of subject to object. For Buber, these are not merely suggestive classifications, but ontological realities. He suggested that the two fundamental modes of relating can be readily detected in the way we use language. In particular, he calls us to pay careful attention to how we use the word *I*. Do we use the word *I* in relation to a mere object even if we use personal pronouns, or do we use the word *I* in relation to another subject? And for Buber, it doesn't matter if the subject is non-human. For instance, he spoke about the possibility of an *I-Thou* relation with a tree. We present some linguistic examples below from *Robinson Crusoe* and from standard economics textbooks.

The Temporal Modalities of I-It and I-Thou

One very important dimension of the two ways of relating is their temporal modalities. The temporality of the I-It is perpetually in the past. The It is treated as a fixed set of patterns developed through habit over time. The I relates to the It in terms of this fixed set of patterns and does not allow for change or dynamism. There is nothing creative about the I-It. There is no exploration, only exploitation. The temporality of the I-Thou is ever in the spontaneously unfolding present. It is the fundamental source of creativity, novelty, and all genuine becoming. When an *I* opens one-self to another as a *Thou* it requires an openness to innumerable possibilities. It is in this crucial aspect that the *I-Thou* is essentially a dynamic mode of relation. For Buber, this was the source of all meaningfull growth and development. All genuine growing and becoming require the presence of a *Thou*. By being open to the innumerable possibilities in others, one becomes open to innumerable paths of growth and development in oneself. In the unpredictable flux of open and authentic relation, Buber saw the source of all creative activity and spiritual development.

Section IV: James Buchanan Meets Martin Buber

To facilitate the comparison of Buchanan's economics and Buber's philosophy, we present the following outline in tabular form. This outline will serve as a side-by-side comparison of Buchanan's approach to economics versus the mainstream approach organized according to Buber's modes of relation. In the following section we develop the comparison.

We have previously compared Buchanan's catallactics with the orthodox model of allocative efficiency, but we can now add to the discussion the *I-It* and *I-Thou* modes of relation as a means

Table 1: Classifying Buchanan's Catallactics via Buber's Two Modes of Orientation

	I-It	I-Thou
Central Paradigm:	Allocative-distributive	Catallactic or symbiotic
Model of Choice:	Reactive choice	Creative choice
Human Nature:	Natural man (rat-like)	Artifactual man (counterfactual)
Model of the Individual:	Utility-maximizing automaton	Creative entrepreneur
Temporal Modality:	Static, rooted in the past	Dynamic, spontaneously unfolding present

to distinguish between the two. As we will see, this provides a deeply insightful interpretation of Buchanan's economics.

As has been pointed out earlier, Buchanan rejected the allocative-distributive model of market dynamics in favor of a catallactic-symbiotic paradigm. But what is it about the orthodox model for Buchanan that is most objectionable? He explains as follows:

Its flaw lies in its conversion of individual choice behavior from a social-institutional context to a physical-computational one. [S]urely this is nonsensical social science....¹⁴

The most offensive aspect of the standard model is that it objectifies the individual agent. It turns attention away from the very human process of mutually beneficial exchange to one of rote computation - the kind a mere machine could do. While he does not use Buber's exact language, he comes close to saying that the basic difference is between an *I-It* and an *I-Thou* way of relating. The *I-It* corresponds to the allocative-distributive model, in which the agent is a mere computational cog in a machine. The *I-Thou* corresponds to Buchanan's symbiotics, in which actual creative humans (capable of artifactual reasoning) encounter opportunities for exchange on grounds of mutuality and reciprocity. Stated clearly in these Buberian terms, Buchanan's objections to orthodox methods become sharper and his insights gain greater depth. We contend that Buchanan's view of man as a creative, entrepreneurial, artifactual being when combined with the

¹⁴See Buchanan [1979], p. 29.

Knightian moral-social stance amounts to insisting on an *I-Thou* mode of relation as foundational to all economic process. With this emphasis in mind we again quote Buchanan:

[Human] behavior in the market relationship, reflecting the propensity to truck and to barter, and the manifold variations in structure that this relationship can take - these are the proper subjects for the economist's study.¹⁵

While Buchanan did not explicitly use Buber's precise vocabulary in stating the case, he came to the same basic conclusion. The difference between reactive choice of the orthodox models and Buchanan's creative choice can be drawn along similar lines. The agent who is represented by a utility function, constrained by a budget, and who must choose among a pre-existing vector of goods, is merely reacting to external stimuli. There is no role for the creative entrepreneur in these models. If the individual is restricted to this confining view, there is essentially no difference between the individual and the utility function. The agent becomes a mere mathematical object - a computational device. He is little more than a rat, or a squirrel, or a machine. While this may give economics a mathematical-scientific veneer, it strips it of its essential nature. In this setting, there is no injection of creative arbitrage possible. And thus, for Buchanan, no room for the emergence of the exchange process and the myriad of institutional structures and arrangements that make it possible. While the appeal of scientific rigor draws in many economists (maybe even most) Buchanan bridles at the bargain. For, in this deal, individuals become automatons and markets become analogue computational devices that spit out equilibrium prices. This is too much for Buchanan, and the single-minded pursuit of mathematical rigor yields to scientism. While such economists may enjoy a reputation of hard-nosed scientists, they do so a the price of becoming irrelevant (or worse a real danger to the liberty of their fellows as they become "social engineers," those chosen few with the skill and aptitude to program the complex machine).

For Buchanan, this is truly nonsensical social science bordering on madness. Most importantly, it ignores "the one important truth in our discipline,"¹⁶ the spontaneous order achieved by voluntaristic exchange. The mathematical objects of the orthodox model are simply incapable of evolving the institutions, contracts, products, and services that make markets even possible in the

¹⁵See Buchanan [1979], p. 19.

¹⁶See Buchanan [1979], p. 28.

first place. Only the creative (and fully human) entrepreneur meeting his fellows on a ground of mutuality could give rise to such complex phenomena. There is, Buchanan says, an authentically scientific aspect to economics, that of emergent spontaneous order. Its pre-conditions are rooted in a view of mankind that is relational, transactional, and to use the Buberian term, diological. We argue that it is essentially that of an *I* encoutering a *Thou* in creative dialogue.

Temporal Patterns

Consider the pairing of Buchanan's symbiotics and Buber's *I-Thou*. Also consider the pairing of the orthodox equilibrium models and Buber's *I-It*. We can compare and constrast the two pairings in terms of their temporal modalities. As Fisher [1989] (see p. 1) has written, "Economic theorists are most often concerned with the analysis of positions of equilibrium." Economic equilibrium is a broad and deep topic, but a general definition will suffice for the purposes of this article. According to Bannock and Baxter [2011], equilibrium is defined as follows:

A situation in which the forces that determine the behavior of a variable are in balance and thus exert no pressure on that variable to change. It is a situation in which the actions of all economic agents are mutually consistent. It is a concept meaningfully applied to any variable whose level is determined by the outcome of the operation of at least one mechanism or process acting on countervailing forces. For example, equilibrium price is affected by a process that drives suppliers to increase prices when demand is in excess and to undercut each other when supply is in excess - the mechanism thus regulates the forces of supply and demand.

One sees in this definition that the concept is essentially one of static anlysis. In recent decades, much work has been done regarding a more dynamic concept of equilibrium. But here too, even though some variables are changing over time, they are doing so in a regular way. What is interesting about this definition is the assumptions that need to be made about the state of knowledge and the nature of the economic process. Analyzing the language of the definition, one readily detects the objectifying nature of it. In an analogy to physical machinery, the economy is described in deterministic verbage; it is viewed as a mechanism. The human players are objectified by their functions in the mechanistic process. Consumers in the models are "passive responders to stim-

uli,"¹⁷ as are producers who respond deterministically to conditions of excess demand or excess supply. The knowledge in the economy is, for all intents and purposes, fully static. For this reason, the temporal modality is centered in that of the past. In order for the models to have a solution, this objectification process is absolutely necessary. Without this aspect, the models would not serve their predictive purpose. However, to be predictive, the temporal orientation of the models must always be backward looking to the past. We find the same temporal modality in Buber's description of the *I-It*.¹⁸

The *I* of the primary word *I-It*, that is, the *I* faced by no Thou, but surrounded by a multitude of "contents," has no present, only the past. Put in another way, in so far as man rests satisfied with the things that he experiences and uses, he lives in the past, and his moment has no present content. He has nothing but objects. But objects subsist in time that has been.

The present is not fugitive and transient, but continually present and enduring. The object is not duration, but cessation, suspension, a breaking off and cutting clear and hardening, absence of relation and of present being.

True beings are lived in the present, the life of objects is in the past.

Game theoretic advancements have developed over the decades as well. The concept of equilibrium in game theory becomes one of a "set of mutually compatible strategies in which, given the strategies of other players, each player will be content with his/her own strategy."¹⁹ One might think that game theory comes closer to modeling a situation of exchange between individuals, but notice that individuals are still treated as mere "strategies," that is, as objects. It is still inexorably linked to a means-end framework. The same temporal modality thus applies to even the most advanced concepts of equilibrium in economics, and forever must. Equilibrium by definition is static (even in its most sophisticated forms) and, therefore, must be oriented in the past along its temporal dimension. Again, Buber writes:

¹⁷See Buchanan [1979], p. 281.

¹⁸See Buber [1937], p. 11.

¹⁹See Bannock and Baxter [2011], p. 124.

It does not matter how exclusively the *Thou* was in the direct relation. As soon as the relation has been worked out or has been permeated with a means, the *Thou* becomes becomes an object among objects ... fixed in its size and its limits. (see p. 16)

It is perhaps along the temporal dimension that we find the tightest correspondence between the ideas of Buchanan and Buber. As we have already remarked above, for Buchanan, the economy is a continuously and endogenously unfolding dynamic process. Key to understanding the process is to understand what he called genuine choice. "There's been a tremendous neglect of the notion of emergent choice... we don't really have before us objects among which to choose; we create them in the act of choice" he says.²⁰ This is again the mode of creative-artifactual choice by the entrepreneur. For Buchanan, the source of all creativity and novelty is embedded in the economic process. It is a process that must unfold over time and by its very nature is unpredictable. Buber describes the temporal modality of the *I-Thou* relation in almost identical terms as the spontaneously unfolding present. In the *I-Thou*, individuals are present to each other in their complete humanity. This requires an openness to the unexpected and the unpredictable. It is this openness to another in dialogue that expands the moral depth of field of the individual as his *I* relates to a *Thou*; it is a kind of moral catallactics. Symbiotics is a term that would also apply. Similar to Buchanan, Buber views this dialectical process of relation as the source of all genuine creativity and becoming and transcendence. For Buber, "All real living is meeting."²¹

Linguistic Patterns

Buber pointed out that one of the main indicators of whether or not one is in an *I*-*It* or an *I*-*Thou* mode is to observe the way the word *I* is used. This becomes a touchstone for the way one is addressing the world:

For the *I* of the primary word *I*-*Thou* is a different *I* from that of the primary word *I*-*It*.²²

In the first case, the *I-It* way of using the word *I* corresponds to a self-centered and egoistic means of addressing an other the way one would address any other object. This pattern is common

²⁰See Buchanan and Hayek [1978].

²¹See Buber [1937], pp. 11-12.

²²See Buber [1937], pp. 1-2.

in day-to-day life out of simple, practical necessity. In contrast, Buber points to the way that Socrates, Goethe, and Jesus used the word *I* in a very unegostic manner. Of Socrates as a positive example, Buber writes:

[H]ow lovely and how fitting the sound of the lively and impressive *I* of Socrates! It is the *I* of endless dialogue... This *I* lived continually in the relation with man which is bodied forth in dialogue. It never ceased to believe in the reality of men, and went out to meet them.²³

Thus, looking at the common linguistic patterns in economics should be telling. One might well ask which of Buber's two modes of relation an analysis of the language of modern economic theory will reveal. By contrast, which mode will the writings of James Buchanan reveal? Let us consider this thought experiment.

Johansson [2004] has carried out an empirical examination of the vocabulary found in graduate level textbooks used in doctoral programs in Swedish graduate schools of economics.²⁴ His exercise bears remarkable similarities to the one just proposed. He investigates what he terms *entrepreneurship-rich* and *institutions-rich* theories as represented in graduate level textbooks. These categories are familiar to anyone acquainted with Buchanan's research program, as well as to those who have read thus far.²⁵ Regarding his survey, Johansson writes:

I analyze textbooks for the presence of terms that fall naturally into two sets. One set deals with the knowledge discovery: *entrepreneur*, *innovation*, *invention*, *tacit knowledge*, and *bounded rationality*. The other deals with social rules: *institutions*, *property rights*, and *economic freedom*. When the words appear I examine the meaning.

The results are striking. He summarizes his findings in three main points:

- (i) All programs are in the tradition of "mainstream" economics.
- (ii) By and large, the eight expressions scarcely appear in the textbooks.

²³See Buber [1937], pp. 65-66.

²⁴Johansson points out that his analysis applies much more broadly than just to Swedish graduate programs. These, and many others are structured after North American graduate economics programs.

²⁵Indeed, Johansson cites Buchanan to summarize his survey.

(iii) When they do appear, their meaning is diluted or distorted, compared to their meaning in theories where the idea is more central.

Johansson concludes as follows:

In my judgement, the results constitute powerful evidence that today's doctoral programs do not train young economists to identify and analyze important economic issues in a relevant way.

A particular example found in the most popular graduate level microeconomic theory is telling.²⁶ In the leading textbook for microeconomic theory, there is a single mention of the term *entrepreneur*. The reference is made in an exercise at the end of a chapter titled "Adverse Selection, Signaling, and Screening." In the example, an "entrepreneur" goes to the bank to borrow funds, and a signaling exercise is set up for the student to solve. Johansson points out that the "entrepreneur is not mentioned at all in the fundamental function she undertakes in Schumpeterian or Kirznerian theory, but could be any borrower at all." One wonders if the borrower need be human.²⁷

In addition to the considerable evidence provided by Johansson [2004], we here provide a few selections from textbooks found on our shelves. The following exercise is found at the end a chapter titled "Choice and Demand" in [Nicholson, 1998, see p. 120].

a. Mr. Odde Ball enjoys commodities X and Y according to the utility function

$$U(X,Y) = \sqrt{X^2 + Y^2}$$

Maximize Mr. Ball's utility if $P_X = \$3$, $P_Y = \$4$, and he has \$50 to spend.

Hint: It may be easier here to maximize U^2 rather than U. Why won't this alter your results?

b. Graph Mr. Ball's indifference curve and its point of tangency with his budget constraint. What does the graph say about Mr. Ball's behavior? Have you found a true maximum?

While there is no *I* spoken in this example, we can examine its subject. The semantic content of the exercise would not change one bit if the reader were informed that instead of a human being, Mr. Odde Ball were a robot or a software agent.

²⁶See Mas-Colell et al. [1995], p. 475.

²⁷Johansson references Schumpeter's famous quote that compares the entrepreneur's missing place in economic theory being akin to the Prince of Denmark being absent from *Hamlet*.

An additional example is also instructive. Again, this is an end-of-chapter exercise found in [Varian, 1992, p. 357]. The chapter is on the topic of production.

Consider an economy with two firms and two consumers. Firm 1 is entirely owned by consumer 1. It produces guns from oil via the production function g = 2x. Firm 2 is entirely owned by consumer 2; it produces butter from oil via the production function b = 3x. Each consumer owns 10 units of oil. Consumer 1's utility function is $u(g, b) = g^4b^6$ and consumer 2's utility function is $u(g, b) = 10 + .5 \ln b$.

- *a*. Find the market clearing prices for guns, butter, and oil.
- b. How many guns and how much butter does each consumer consume?
- c. How much oil does each firm use?

The meaning of the exercise remains unchanged if, instead of having utility functions (or production functions) Consumer 1 and Consumer 2 *were* utility functions. The language of these examples reveal an imagined world entangled in and bound up with *It*.

A final example is arresting in its clarity. In a podcast discussion on the economics of slavery, Roberts and Munger [2016] discuss the history of slavery in the American South. In their discussion, Roberts and Munger discuss the economic value of a slave after slavery importation was banned by the American Constitution in 1808. Their discussion proceeds as follows:

Munger: [T]hat just meant slaves were more valuable. The cotton gin, the spinning mule, the jenny - those things that allowed the industrialization of the production of cotton thread and textiles meant that slaves doubled in price, and then doubled again... the slave's price is the present value of its - implicitly wages that that person is earning over time.

Roberts: It should accrue to the owner, instead. Yeah?

Munger: It should accrue to the owner. Because it's as if the person were a horse. So, if I rent out a horse, and the horse is strong and is good at work, it's valuable.

Naturally the discussants condemn slavery, and the discussion centers around the economics of slavery. However, because the discussion proceeds in the vocabulary of economic theory, it is couched in terms of *It*. They point out that in the history of the American South, a slave was treated as the present value of his labor that accrues to his owner. As Munger says, "it's as if the person were a horse," or, we might add, a machine. We can compare this to a section of [Nicholson, 1998, p. 703] on the rate of return on capital:

Consider a firm in the process of deciding whether to buy a particular machine. The machine is expected to last n years and will give its owner a stream of monetary returns (that is, marginal revenue products) in each of the n years. Let the return in year i be represented by R_i . If r is the present interest rate, and if this rate is expected to prevail for the next n years, the present discounted value (PDV) of the net revenue flow from the machine to its owner is given by:

$$PDV = \frac{R_1}{(1+r)} + \frac{R_2}{(1+r)^2} + \dots + \frac{R_n}{(1+r)^n}.$$

While modern economists might find this example distasteful, they will also find it to be technically correct. We see in this striking example why Buchanan was concerned about transforming the language of economics from the social-institutional to the physical-computational.²⁸ In Buchanan [1979]²⁹, he warned economists that with an undue emphasis on their mathematial models:

... all "social" content is squeezed out of individual behavior in market organization. The individual responds to a set of of externally determined, exogenous variables, and his choice problem again becomes purely mechanical.

And further, that in such a setting:

The "market" becomes an engineered construction, a "mechanism," an "analogue calculating machine," a "computational device."

²⁸See Buchanan [1979], p. 29.

²⁹See Buchanan [1979], pp. 29-30.

An alien observer of our planet who first looked to our economics textbooks, might well decide that they are, instead, instruction manuals for multiagent software systems [see Wooldridge, 2009] and have nothing whatsoever to do with human organization.

In 1950, the mathematician and early computer scientist Alan Turing proposed a test of artificial intelligence that has come to be known as the *Turing Test* [see Turing]. The test proceeds with a human judge carrying on a natural language conversation with two veiled entities, one of which he knows to be human and the other to be a machine. If the judge cannot tell the difference between the human and the machine, the machine is determined to exhibit intelligent behavior. Finding this wide-spread interpretation lacking, Lanier [2010]³⁰ states:

It seems to me, however, that the Turing test has been poorly interpreted by generations of technologists. It is usually presented to support the idea that machines can attain whatever quality it is that gives people consciousness. After all, if a machine fooled you into believing it was concious, it would be bigoted for you to still claim it was not.

What the test really tells us, however, even if it's not necessarily what Turing hoped it would say, is that machine intelligence can only be known in a relative sense, in the eyes of a human beholder.

The Turing Test presents a joint hypothesis problem. If a machine is indistinguishable from a human, is it because the machine has gained human-level intelligence, or is it because the human has become a mere machine? We put forth the proposition that had *homo economicus* been encoded into a software system in Buchanan's time, he would not have been overly impressed with its ability to pass the Turing Test. We propose a much stronger test of human ability, which we call the *Buber Test*:

If an Artificial Intelligence is capable of taking a stand in relation to a **Thou** *as an* **I***, then it has become a Being of human-like ability.*

We suggest that the Smithean Trader that Buchanan wrote of in his economic research passes such a test.

³⁰See Lanier [2010], p. 29.

The Robinson Crusoe Economy

In this section, we present the *Robinson Crusoe Economy* (RCE) of standard textbook analysis. We present the RCE as the background for a dialogue between Buchanan and Buber.

The so-called RCE is a very common pedogogical device found in textbooks and articles in both the noeclassical and Austrian economics traditions. For an example in a mainstream neoclassical textbook see Varian [1992]. For an example of its use in the Austrian tradition see Spitznagel [2013], who uses it to discuss his idea of the roundaboutness of production. The RCE is a hypothetical economic setting of an isolated individual modeled as a planned economy without market exchange. The model is named for the central character in the Daniel Defoe's famous novel *Robinson Crusoe* [see Defoe, 2013].

The RCE has been used in the Austrian tradition to model the dynamic nature of the capital structure of an economy. In the neoclassical tradition, it is mainly used to introduce the key methodological tools of constrained utility optimization in an equilibrium setting. Crusoe finds himself shipwrecked on a deserted island and must make choices regarding the trade-off between his labor and leisure. Again, the main tool of utility maximization subject to a budget constraint is introduced to solve the economic calculation that Crusoe finds himself confronting. It is in this neoclassical setting that we will employ the RCE as meeting ground for the economic ideas of James Buchanan and the philosophical ideas of Martin Buber.

Robinson Crusoe Storyline

The story that is told in economics textbooks is counterfactual to the actual storyline. It is clear from reading the novel that when Friday arrives on the island, Crusoe views him as a device to accomplish his own goals. He insists on Friday calling him Master. In fact, when teaching Friday to speak English, Crusoe instructs Friday to call him Master before he even teaches him the words yes and no. To quote from the book:

I understood him in many things, and let him know that I was very well pleased with him. In a little time I began to speak to him, and teach him to speak to me; and, first, I made him know his name should be Friday, which was the day I saved his life, and I called him so for the memory of the time: I likewise taught him say Master, and then let him know that was to be my name: I likewise taught him to say Yes and No, and to know the meaning of them. [Defoe, 2013]

If one were to re-read this passage replacing the words *him* and *his* with the words *it* and *its*, the real meaning of the words would become much clearer. We see that the *I* that is spoken here belongs to the *I*-*It*.

I understood *it* in many things, and let *it* know that I was very well pleased with *it*. In a little time I began to speak to *it*, and teach *it* to speak to me; and, first, I made *it* know *its* name should be Friday, which was the day I saved *its* life, and I called *it* so for the memory of the time: I likewise taught *it* to say Master, and then let *it* know that was to be my name: I likewise taught *it* to say Yes and No, and to know the meaning of them.

With this as background, we present a dialogue between Buchanan and Buber in the next section.

Dialogue Between Buchanan and Buber

What follows is a brief conversation between Buchanan and Buber as we have imagined it. We join them just after they have made one another's acquaintance.

Buber: I've been reading your economics textbooks, and I have read about the Robinson Crusoe economy. Can you tell me more about it?

Buchanan: Most economists conceive of it as follows: "Robinson Crusoe, on his island before Friday arrives, makes decisions; his is the economic problem in the sense traditially defined. This choice situation is not however, an appropriate starting point for our discipline, even at the broadest conceptual level, as Whately correctly noted more than a century ago."[^34]

Buber: You disapprove of how most economists frame the problem?

Buchanan: I do.

Buber: Can you tell me why?

Buchanan: "Crusoe's problem [as traditionally framed] is, as I have said, essentially a computational one., and all that he need do to solve it is to program the built-in computer that he has in his mind."[^35]

Buber: What is wrong with that?

Buchanan: "The uniquely symbiotic aspects of behavior, of human choice, arise only when Friday steps on the island, and of course, fail to recognize this new fact. He may treat Friday simply as a means to his own ends, as a part of nature, so to speak. If he does so, a fight ensues, and to the victor go the spoils. Symbiotics does not include the strategic choices that present in such situations of pure conflict."³¹

Buber: I am impressed with your concept of symbiotics. Can you tell me more about it?

Buchanan: "The very word *economics*, in and of itself, is partially responsible for some of the intellectual confustion. The 'economizing process' leads us to think directly in terms of the theory of choice.... Symbiotics is defined as the study of the association between dissimilar organisms, and the connotation of the term is that the association is mutually beneficial to all parties. This conveys, more or less precisely, the idea that should be central to our discipline... important elements of the theory of choice remain in symbiotics. On the other hand, certain choice situations that are confronted by human beings remain wholly outside the symbiotic frame of reference."³²

Buber: Yes, I have also read the novel *Robinson Crusoe*. In the story, Crusoe first tries to enslave Friday.

Buchanan: Yes.

Buber: Economics textbooks would allow the slave to be thought of as the present discounted value of the return on the slave's labor that accrues to its owner. What do you think of this?

³¹See Buchanan [1979], p. 27.

³²See Buchanan [1979], pp. 26-27.

Buchanan: This is precisely the kind of thing that I object to. I consider it intellectual muddle. Again, symbiotics, as I conceive of it, does not include such situations.

Buber: When an *I* speaks of an other as such an *It*, the *I* is spoken in the pairing. That is, by treating another being as chattel, he himself becomes a psychopath. Our existence is relational. How you relate to others determines who you will become.

Buchanan: I think I agree with that statement. When I look at my own discipline, I think economists of this sort sorely miss the boat. In my symbiotics, there is no such view of man.

Buber: Your symbiotics embodies an *I-Thou* approach to economics. I commend you for your humanity.

Buchanan: Well, I don't know about that. Perhaps it's only a relatively absolute absolute. But from the very start (from that day in Frank Knight's classroom), the deep wonder that has occupied my attention as an economist seems impossible without the pre-conditions of mutuality and reciprocity. I am convinced that spontaneous order is an outcome only possible between creative human beings and not between mere computational units. It is an order defined in the process of creative choice. Humans are the only ones capable of this kind of choice. Without actors there is no play!

Buber: Would you say between humans and not objects?

Buchanan: Yes, I think I would.

Buber: Between *Thous* and not *Its*?

Buchanan: I see your point. Your case is compelling. It certainly fits, at least on some level with what my old teacher Frank Knight taught me.

Buber: I thank you for this discussion... this dialogue if you will.

Buchanan: I'm very grateful for this exchange, and the pleasure has been all mine. Thank you.

Conclusion

The landscape of James Buchanan's catallaxy is richly populated with the Smithean trader, the artifactual man who engages in mututally beneficial exchange with his fellows. In his scholarship, we see a vision of economics that called us to think deeply about human exchange and emergent processes. Well might Martin Buber have said of him:

But how lovely and how fitting the sound of the lively and impressive I of James Buchanan! It is the I of endless dialogue. This I lived continuously in the relation with man which is bodied forth in symbiotics. It never ceased to believe in the reality of men, and went out to meet them.

References

Graham Bannock and R.E. Baxter. The Penguin Dictionary of Economics. Penguin Books, 2011.

- Martin Buber. I and Thou. Public Domain, 1937.
- James M. Buchanan. What should economists do? *The Southern Economic Journal*, 30(3):213–222, 1964.
- James M. Buchanan. What Should Economists Do? Liberty Fund Inc., 1979.
- James M. Buchanan. The domain of subjective economics: Between predictive science and moral philosophy. In *Method, Process, and Austrian Economics: Essays in Honor of Ludwig Von Mises*. Lexington Books, 1982.
- James M. Buchanan. Better than plowing: and other personal essays. 1992.
- James M. Buchanan. Order defined in the process of its emergence. In *The Logical Foundations of Constitutional Liberty: Volume 1*. Liberty Fund, 1999.
- James M. Buchanan and Friedrich A. Hayek. James buchanan interviews friedrich a. hayek (part 2), 1978. URL http://hayek.ufm.edu/index.php?title=James_Buchanan_Part_II.
- Daniel Defoe. Robinson Crusoe. Haper Collins, 2013.
- Franklin M. Fisher. *Disequilibrium Foundations of Equilibrium Economics*. Cambridge University Press, 1989.
- Friedrich A. Hayek. Law, Legislation, and Liberty, volume 2. 1976.
- Dan Johansson. Economics without enrepreneurship or institutions: A vocabulary analysis of graduate textbooks. *Econ Journal Watch*, 1(3):515–538, 2004.
- John H. Kagel, Raymond C. Battalio, Howard Rachlin, and Leonard Green. Demand curves for animal consumers. *The Quarterly Journal of Economics*, 96(1):1–15, 1981.
- Frank H. Knight. Risk, Uncertainty, and Profit. Martino Publishing, 2014.
- Jaron Lanier. You Are Not A Gadget: A Manifesto. Alfred A. Knopf, 2010.
- Adam Martin. The catallactic point of view. *Studies in Emergent Order*, 3:65–85, 2011.
- Andreu Mas-Colell, Michael D. Whinston, and Jerry R. Green. *Microeconomic Theory*. Oxford University Press, 1995.
- Walter Nicholson. *Microeconomic Theory: Basic Principles and Extensions Seventh Edition*. Harcourt Brace College Press, 1998.
- Russ Roberts and Michael Munger. Munger on slavery and racism, 8 2016. URL http://www.econtalk.org/munger-on-slavery-and-racism/.
- M.N. Rothbard. Catallactics. In *The New Palgrave Dictionary of Economics*. Palgrave Macmillan, 2008.

- Sarah Scott. Martin buber (1878-1965). In *The Internet Encyclopedia of Philosophy*. 2019. ISSN 2161-0002, https://iep.utm.edu/.
- Mark Spitznagel. The Dao of Capital: Austrian Investing in a Distorted World. John Wiley & Sons, 2013.
- Alan Turing. The alan turing internet scrap book. https://www.turing.org.uk/scrapbook/test.html. [Online: accessed 18-June-2019].
- Hal R. Varian. *Microeconomic Analysis Third Edition*. W.W. Norton & Company, 1992.
- Alan Watts. *Out of Your Mind: Tricksters, Interdependence, and the Cosmic Game of Hide and Seek.* Sounds True, 2017.
- Michael Wooldridge. An Introduction to MultiAgent Systems Second Edition. John Wiley & Sons, 2009.