Primitive Foundations of Economic Reasoning*

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Abstract

This paper rigorously examines the primitive foundations of economic reasoning through a framework based on symbolic logic. Extending previous work, it formalizes economic conceptions ($\mathbb{C}$), symbols (s_i), and introduces a structured language ($\mathcal{L}_{\mathbb{C}}$) to define their formation and interpretation. Organized as a continuous chain of declarations and illustrations, the paper offers a concise, systematic approach to understanding the philosophy of economic reasoning through formal symbolic representations.

1. A conception proclaims the existence of symbols.

1.1 A conception is denoted by $\mathbb{C}$, and a symbol is denoted by s_i.

1.2 The general form of a primitive proclamation is:

$$\mathbb{C}\ \mathbf{PROC}\ s_1\ s_2\ s_3\ \dots\ s_n.$$

Similarly, the symbols proclaim the conception.

1.3 The language of a conception, denoted by $\mathcal{L}_{\mathbb{C}}$, is an abbreviation of its proclamation such that:

1.3.1 The conception is denoted by the language.

1.3.2 The act of proclaiming is denoted by an equivalence relation, which is reflected by the symbol "=".

1.3.3 The symbols proclaimed are contained within meta-logical symbols, namely "{", "}" and ",", strictly for the purposes of demarcation.

1.4 The general form of a language is $\mathcal{L}_{\mathbb{C}} = \{s_1, s_2, s_3, \dots, s_n\}$.

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2. A formation on a conception proclaims what can be formed through the symbols it proclaims.

2.1 Let $\mathbf{Frm}(\mathcal{L}_{\mathbb{C}})$ denote all possible strings of the symbols proclaimed, that is, $\bigcup_{i=1}^{\omega} \mathcal{L}_{\mathbb{C}}^{i}$.

2.2 The assertion $\mathbf{Frm}(\mathcal{L}_{\mathbb{C}}) = \bigcup_{i=1}^{\omega} \mathcal{L}_{\mathbb{C}}^{i}$ serves as an abbreviation for the primitive assertion:

$$\mathbf{Frm}\,\mathbb{C}\ \mathbf{PROC}\, s_1\, s_2\, s_3\ \ldots\ s_1 s_1\ s_1 s_2\ s_1 s_3\ \ldots$$

3. An interpretation on a conception of symbols proclaims what can be meaningfully said.

3.1 Let $\mathbf{Int}(\mathcal{L}_{\mathbb{C}})$ denote all meaningful or comprehensible (though not necessarily valid) strings of the symbols proclaimed, that is, $\mathbf{Int}(\mathcal{L}_{\mathbb{C}}) \subseteq \mathbf{Frm}(\mathcal{L}_{\mathbb{C}})$.

3.2 Every element in $\mathbf{Int}(\mathcal{L}_{\mathbb{C}})$ is a well-formed formula.

4. The standard conception of economic choice proclaims the existence of individual actions, a method of selection, as well as a method of comprehension.

4.1 Let $\mathbb{C}_{\mathfrak{e}}$ denote the conception of economic choice.

4.2 $\mathbb{C}_{\mathfrak{e}}$ $\mathbf{PROC}\, a_1\, a_2 \ldots \oplus_{a_1} \oplus_{a_2} \ldots I_1\, I_2 \ldots V_{I_1}\, V_{I_2} \ldots [\,]\, T_s\, T_o\, F_s\, F_o = |() \rightarrow \wedge$

4.3 $\mathcal{L}_{\mathbb{C}_{\mathfrak{e}}} = \{a_1 \ldots \oplus_{a_1} \ldots I_1 \ldots V_{I_1} \ldots [,], T_s, T_o, F_s, F_o, =, |, (,), \rightarrow, \wedge\}$

4.4 $\mathbf{Frm}(\mathcal{L}_{\mathbb{C}_{\mathfrak{e}}}) = \bigcup_{i=1}^{\omega} \mathcal{L}_{\mathbb{C}_{\mathfrak{e}}}^{i}$

4.5 $\mathbf{Int}(\mathcal{L}_{\mathbb{C}_{\mathfrak{e}}})$ can be defined inductively as follows:

4.5.1 $a_1, a_2, a_3 \ldots$ are action elements in $\mathbf{Int}(\mathcal{L}_{\mathbb{C}_{\mathfrak{e}}})$.

4.5.2 If α is an action element in $\mathbf{Int}(\mathcal{L}_{\mathbb{C}_{\mathfrak{e}}})$, then $I_1(\alpha), I_2(\alpha), I_3(\alpha) \ldots$ are interpretational elements in $\mathbf{Int}(\mathcal{L}_{\mathbb{C}_{\mathfrak{e}}})$.

4.5.3 If α is an interpretational element in $\mathbf{Int}(\mathcal{L}_{\mathbb{C}_{\mathfrak{e}}})$, then $(\alpha = [T_s|T_o])$, $(\alpha = [T_s|F_o])$, $(\alpha = [F_s|T_o])$ and $(\alpha = [F_s|F_o])$ are belief-consequence elements in $\mathbf{Int}(\mathcal{L}_{\mathbb{C}_{\mathfrak{e}}})$.

4.5.4 If α is an action element in $\mathbf{Int}(\mathcal{L}_{\mathbb{C}_{\mathfrak{e}}})$ and $a_1\, a_2\, a_3$ is a series of all the unique actions proclaimed by $\mathbb{C}_{\mathfrak{e}}$, then $\oplus_{\alpha}(a_1 a_2 a_3 \ldots)$ are action-selection elements in $\mathbf{Int}(\mathcal{L}_{\mathbb{C}_{\mathfrak{e}}})$.

4.5.5 If α is an action-selection element in $\mathbf{Int}(\mathcal{L}_{\mathbb{C}_{\mathfrak{e}}})$, then $V_{I_1}(\alpha), V_{I_2}(\alpha) \ldots$ are selection-valuation elements in $\mathbf{Int}(\mathcal{L}_{\mathbb{C}_{\mathfrak{e}}})$.

4.5.6 If α is a selection-valuation element in $\mathbf{Int}(\mathcal{L}_{\mathbb{C}_{\mathfrak{e}}})$, then $(\alpha = T_o)$ and $(\alpha = F_o)$ are selection-confirmation elements in $\mathbf{Int}(\mathcal{L}_{\mathbb{C}_{\mathfrak{e}}})$.

4.5.7 If α_i is the form of any series of belief-consequence elements of all the distinct, underlying action elements proclaimed by $\mathbb{C}_{\mathfrak{E}}$ and β_k is the form of any series of selection-confirmation elements of all the distinct, underlying action elements proclaimed by $\mathbb{C}_{\mathfrak{E}}$ in $\mathbf{Int}(\mathcal{L}_{\mathbb{C}_{\mathfrak{E}}})$, then $(\wedge\beta_k \rightarrow \wedge\alpha_i)$, $(\wedge\alpha_i \rightarrow \wedge\beta_k)$, $(\wedge\alpha_i \rightarrow \wedge\alpha_{i+1})$ and $(\wedge\beta_k \rightarrow \wedge\beta_{k+1})$ are update-manifestation elements in $\mathbf{Int}(\mathcal{L}_{\mathbb{C}_{\mathfrak{E}}})$.

4.5.7.1 If α and β are update manifestation elements, then so are $(\alpha \rightarrow \beta)$ and $(\beta \rightarrow \alpha)$.

5. That which can be meaningfully proclaimed by the standard conception correspond to primitive economic realities.

5.1 The set of action elements correspond to a denumerable collection of choices that an economic agent is capable of making.

5.2 As per **the fundamental assumption of economic scarcity**, the collection of meaningfully proclaimed action elements is finite.

5.3 The set of interpretational elements correspond to a collection of unique interpretations on each particular action at any given moment.

5.3.1 A moment of interpretation, k, is defined as the subscript in $I_k(\alpha)$, where α is an action element.

5.3.2 A change in k signifies a possible update in the semantic value of the action being interpreted.

5.4 The set of belief-consequence elements correspond to the collection of all possible functions f such that

$$f : \bigcup_{i \in \mathbb{N}^+} \alpha_i \rightarrow \{(T_s, T_o), (T_s, F_o), (F_s, T_o), (F_s, F_o)\}$$

where each α_i denotes a singleton that contains a unique interpretational element.

5.4.1 To interpret an action at a given moment k as being subjectively conducive to a particular objective while also being objectively conducive to a particular objective is to assert $(I_k(\alpha) = [T_s|T_o])$, where α is an action element.

5.4.2 To interpret an action at a given moment k as being subjectively conducive to a particular objective while also not being objectively conducive to a particular objective is to assert $(I_k(\alpha) = [T_s|F_o])$, where α is an action element.

5.4.3 To interpret an action at a given moment k as not being subjectively conducive to a particular objective while also being objectively conducive to a particular objective is to assert $(I_k(\alpha) = [F_s|T_o])$, where α is an action element.

5.4.4 To interpret an action at a given moment k as not being subjectively conducive to a particular objective while also not being objectively conducive to a particular objective is to assert $(I_k(\alpha) = [F_s|F_o])$, where α is an action element.

5.4.5 The objective in question is implicit in the semantic assignment of any action and is generally identical for all action-elements being interpreted unless otherwise specified.

5.5 The set of action-selection elements exist as economic choice presumes the presence of a mechanism by which an action is selected.

5.5.1 For every action element, a_i, there exists a corresponding action selection element $\oplus_{a_i}(a_1 a_2 a_3 \ldots)$.

5.5.2 Every action-selection element can be characterized as a connective or function whose arity ranges over every unique action element.

5.6 The set of selection-valuation and selection-confirmation elements correspond to elementary processes in decision-making.

5.6.1 If the interpretation of an action a_i at a particular moment k is of the form $[T_s|A_o]$, where $A \in \{T, F\}$, and the interpretation of all other unique actions at their respective moments of interpretation are of the form $[F_s|B_o]$ where $B \in \{T, F\}$ then $(V_{I_k}(\oplus_{a_i}(a_1 a_2 a_3 \ldots)) = T_o)$.

5.6.1.1 If a valuation on an action is objectively true, that implies that its selection is necessarily true.

5.6.2 If the interpretation of an action a_i at a particular moment k is of the form $[F_s|A_o]$, where $A \in \{T, F\}$, then $(V_{I_k}(\oplus_{a_i}(a_1 a_2 a_3 \ldots)) = F_o)$.

5.6.2.1 If a valuation on an action is objectively false, that implies that its selection is necessarily false.

5.7 The set of update-manifestation elements correspond to the theory of subjective perception.

5.7.1 As per **the axiom of selection**: whereupon an action is perceived to be relatively and comparatively true, its selection becomes necessarily true. Otherwise, its selection is *not necessarily true*.

5.7.1.1 Consider the update manifestation element:

$$\Big(\bigwedge \big(I_k(a_1) = [T_s|A_o]\big) \ldots \rightarrow \bigwedge \big(V_{I_k}(\oplus_{a_1}(a_1 a_2 \ldots)) = T_o\big) \ldots \Big)$$

where $\wedge$ can be characterized as a conjunctive function that ranges over the equivalence relations of all unique actions and where $A \in \{T, F\}$.

5.7.2 As per **the axiom of collapse**: whereupon the selection of an action is necessarily true, the subjective interpretation of the action collapses with its objective interpretation. The collapsed interpretation then forms the sole basis upon which future actions are selected in the absence of a change in one's objective or of extraneous influences. In addition, it is construed as the the origin or cause of an update in the interpretational moment of *all* distinct actions.

5.7.2.1 By convention, an update is denoted by a change in the signature of the moment of interpretation of an action element from k to $k+1$.

5.7.2.2 Following from the previous update-manifestation element, the convention can be written as follows:

$$\left(\bigwedge \left(V_{I_k}(\oplus_{a_1}(a_1 a_2 \ldots)) = T_o \right) \ldots \rightarrow \bigwedge \left(I_{k+1}(a_1) = [A_s|B_o] \right) \ldots \right)$$

where $B \in \{T, F\}$.

5.7.3 As per **the axiom of deliberation**: whereupon an update in the moment of an action occurs, the moment of the interpretational element as well as that of the valuation of the action-selection element of *all* actions shall be correspondingly updated.

5.7.3.1 Following from the previous update-manifestation element, the corresponding assertion can be written as follows:

$$\left(\bigwedge \left(I_{k+1}(a_1) = [A_s|B_o] \right) \ldots \rightarrow \bigwedge \left(V_{I_{k+1}}(\oplus_{a_1}(a_1 a_2 \ldots)) = C_o \right) \ldots \right)$$

where $C \in \{T, F\}$.

5.7.4 As per **the axiom of belief preservation**: whereupon an action is not selected, an update in its moment of interpretation from k to $k+1$ should reflect the constancy of its subjective status, *unless* there is a voluntary change in an underlying objective (that is, a change in the general assignment of semantic values) or if an agent begins to perceive the effectiveness of the action in a different light, despite not having done so previously, due to extraneous circumstances (i.e. overriding inference relations).

5.7.4.1 Following from the previous update-manifestation element, an alternative arrangement of the assertion in the absence of a change in one's goal or of external circumstances can be written as follows:

$$\left(\bigwedge \left(I_k(a_j) = [F_s|D_o] \right) \ldots \rightarrow \bigwedge \left(I_{k+1}(a_j) = [F_s|E_o] \right) \ldots \right)$$

where $D, E \in \{T, F\}$ and $j \neq 1$.

5.7.4.2 By implication:

$$\Big(\bigwedge \big(V_{I_k}(\oplus_{a_j}(a_1a_2\ldots)) = F_o\big)\ldots \rightarrow \bigwedge \big(V_{I_{k+1}}(\oplus_{a_j}(a_1a_2\ldots)) = F_o\big)\ldots\Big)$$

5.8 This completes the standard conception of economic choice.

6. The standard conception of a market economy proclaims the existence of multiple conceptions of economic choice.

6.1 Let $\mathbb{C}_{\mathfrak{M}}$ denote the standard conception of a market economy and let $\mathbb{C}_{\mathfrak{E}}^{A_i}$ denote the standard conception of economic choice for agent i such that each conception is defined in the aforesaid manner.

6.2 $\mathbb{C}_{\mathfrak{M}}$ **PROC** $\mathbb{C}_{\mathfrak{E}}^{A_1}\,\mathbb{C}_{\mathfrak{E}}^{A_2}\,\mathbb{C}_{\mathfrak{E}}^{A_3}\ldots$

6.3 This completes the generalized standard conception of a market economy.

6.3.1 Consider a market economy consisting two economic agents. That is, $\mathbb{C}_{\mathfrak{M}^2}$ **PROC** $\mathbb{C}_{\mathfrak{E}}^{A_1}\,\mathbb{C}_{\mathfrak{E}}^{A_2}$.

6.3.1.1 Assume that A_1 has $N_{\mathcal{K}}$ units of good $\mathcal{K}$ and A_2 has $N_{\mathcal{J}}$ units of good $\mathcal{J}$.

6.3.1.2 Naively, A_1 is confronted with $N_{\mathcal{K}}+1$ choices/actions. The agent may decide to choose any action between keeping all $N_{\mathcal{K}}$ units of $\mathcal{K}$ or generously distributing everything to A_2. By the same reasoning, A_2 has $N_{\mathcal{J}}+1$ choices.

6.3.1.3 Naively, whenever an action is made by an agent, the agent *subjectively expects* to receive something in return. Whenever there is a discrepancy between expected and actual results, the semantic value of the selected course of action undergoes a non-trivial change. Otherwise, the update is trivial.

6.3.1.4 Formally, the objective of an agent is an expectation on the quantity of the goods offered by the other agent. This objective is implicit in how the agent assigns semantic values onto the interpretation of every action.

6.3.1.5 The series of unique choices faced by A_1 shall be denoted as $\alpha_{N_{\mathcal{K}}}\,\alpha_{N_{\mathcal{K}}-1}\ldots\alpha_0$ where the subscript k in α_k denotes the amount of good $\mathcal{K}$ kept by agent 1; by implication, one may derive the amount that is distributed to A_2.

6.3.1.6 By the same reasoning, the series of unique choices faced by A_2 shall be denoted as $\beta_{N_{\mathcal{J}}}\,\beta_{N_{\mathcal{J}}-1}\ldots\beta_0$.

6.3.1.7 $\mathbb{C}_{\mathfrak{E}}^{A_1}$ **PROC** $\alpha_{N_{\mathcal{K}}}\,\alpha_{N_{\mathcal{K}}-1}\ldots\alpha_0\,\oplus_{\alpha_{N_{\mathcal{K}}}}\oplus_{\alpha_{N_{\mathcal{K}}-1}}\ldots I_1\,I_2\ldots V_{I_1}\,V_{I_2}\ldots$ $[\,]\,T_s\,T_o\,F_s\,F_o = |()\rightarrow\wedge$

6.3.1.8 $\mathbb{C}_{\mathfrak{E}}^{A_2}$ **PROC** $\beta_{N_{\mathcal{J}}}\,\beta_{N_{\mathcal{J}}-1}\ldots\beta_0\,\oplus_{\beta_{N_{\mathcal{J}}}}\oplus_{\beta_{N_{\mathcal{J}}-1}}\ldots I_1\,I_2\ldots V_{I_1}\,V_{I_2}\ldots$ $[\,]\,T_s\,T_o\,F_s\,F_o = |()\rightarrow\wedge$

6.3.1.9 The preceding proclamations are subject to the same formation and interpretation rules as the standard conception of economic choice.

6.3.2 On the basis of the preceding illustration, we may now consider the following concrete scenario.

6.3.2.1 Suppose each agent had 2 items of goods $\mathcal{K}$ and $\mathcal{J}$ respectively.

6.3.2.2 $\mathcal{L}_{\mathbb{C}_{\mathfrak{E}}^{A_1}} = \{\alpha_2, \alpha_1, \alpha_0, \oplus_{\alpha_2}, \oplus_{\alpha_1}, \oplus_{\alpha_0}, I_1, I_2 \ldots V_{I_1}, V_{I_2} \ldots [,], T_s, T_o, F_s, F_o, =, |, (,), \rightarrow, \wedge\}$

6.3.2.3 $\mathcal{L}_{\mathbb{C}_{\mathfrak{E}}^{A_2}} = \{\beta_2, \beta_1, \beta_0, \oplus_{\beta_2}, \oplus_{\beta_1}, \oplus_{\beta_0}, I_1, I_2 \ldots V_{I_1}, V_{I_2} \ldots [,], T_s, T_o, F_s, F_o, =, |, (,), \rightarrow, \wedge\}$

6.3.2.4 Naively, there are several ways in which each agent can define their corresponding objectives. A charitable agent may consistently choose α_0 or β_0. Agents may also prefer each other's goods over what they own and would therefore be keen on trading their own possessions to maximize the obtainment of something in exchange. Agents could also behave in a way where they expect to gain another agent's possessions without wanting to exchange anything in return. These objectives could also be complicated by the existence of functional relationships between the goods themselves (e.g. trading left for right shoes).

6.3.2.5 $\mathbb{C}_{\mathfrak{M}^2}$ offers a consistent treatment of the aforesaid issues through the assignment of semantic values alone.

6.3.2.6 Consider a scenario where A_1 is interested in maximizing one's possession of good J by trading in more of K, whereas A_2 is only interested in maximizing one's possession of both goods. Formally, we denote the objective of A_1 as β_0 and that of A_2 to be α_0. We shall also assert the following about A_1:

$$\big(I_1(\alpha_2) = [F_s|F_o]\big) \tag{1}$$

$$\big(I_1(\alpha_1) = [F_s|F_o]\big) \tag{2}$$

$$\big(I_1(\alpha_0) = [T_s|F_o]\big) \tag{3}$$

As for A_2:

$$\big(I_1(\beta_2) = [T_s|T_o]\big) \tag{4}$$

$$\big(I_1(\beta_1) = [F_s|F_o]\big) \tag{5}$$

$$\big(I_1(\beta_0) = [F_s|F_o]\big) \tag{6}$$

6.3.2.7 Under the standard conception of economic choice, whereupon an action is perceived to be relatively and comparatively true, its selection becomes necessarily true. In other words:

$$\Big(\bigwedge\big(I_1(\alpha_2) = [F_s|F_o]\big)\big(I_1(\alpha_1) = [F_s|F_o]\big)\big(I_1(\alpha_0) = [T_s|F_o]\big) \\ \rightarrow \bigwedge\big(V_{I_1}(\oplus_{\alpha_2}(\alpha_2\,\alpha_1\,\alpha_0)) = F_o\big)\big(V_{I_1}(\oplus_{\alpha_1}(\alpha_2\,\alpha_1\,\alpha_0)) = F_o\big) \\ \big(V_{I_1}(\oplus_{\alpha_0}(\alpha_2\,\alpha_1\,\alpha_0)) = T_o\big)\Big) \tag{7}$$

$$\Big(\bigwedge\big(I_1(\beta_2) = [T_s|T_o]\big)\big(I_1(\beta_1) = [F_s|F_o]\big)\big(I_1(\beta_0) = [F_s|F_o]\big) \\ \rightarrow \bigwedge\big(V_{I_1}(\oplus_{\beta_2}(\beta_2\,\beta_1\,\beta_0)) = T_o\big)\big(V_{I_1}(\oplus_{\beta_1}(\beta_2\,\beta_1\,\beta_0)) = F_o\big) \\ \big(V_{I_1}(\oplus_{\beta_0}(\beta_2\,\beta_1\,\beta_0)) = F_o\big)\Big) \tag{8}$$

6.3.2.8 Likewise, whereupon an update in the moment of an action occurs, the valuation of the action-selection element of all actions shall be correspondingly updated:

$$\Big(\bigwedge\big(V_{I_1}(\oplus_{\alpha_2}(\alpha_2\;\alpha_1\;\alpha_0)) = F_o\big)\big(V_{I_1}(\oplus_{\alpha_1}(\alpha_2\;\alpha_1\;\alpha_0)) = F_o\big) \\ \big(V_{I_1}(\oplus_{\alpha_0}(\alpha_2\;\alpha_1\;\alpha_0)) = T_o\big) \rightarrow \bigwedge\big(I_2(\alpha_2) = [F_s|F_o]\big) \\ \big(I_2(\alpha_1) = [F_s|F_o]\big)\big(I_2(\alpha_0) = [F_s|F_o]\big)\Big) \tag{9}$$

$$\Big(\bigwedge\big(V_{I_1}(\oplus_{\beta_2}(\beta_2\;\beta_1\;\beta_0)) = T_o\big)\big(V_{I_1}(\oplus_{\beta_1}(\beta_2\;\beta_1\;\beta_0)) = F_o\big) \\ \big(V_{I_1}(\oplus_{\beta_0}(\beta_2\;\beta_1\;\beta_0)) = F_o\big) \rightarrow \bigwedge\big(I_2(\beta_2) = [T_s|T_o]\big) \\ \big(I_2(\beta_1) = [F_s|F_o]\big)\big(I_2(\beta_0) = [F_s|F_o]\big)\Big) \tag{10}$$

The program now comes to a meaningful halt as any further update will not affect the current distribution; A_1 no longer has any amount of $\mathcal{K}$ and A_2 is not incentivized to resort to a different course of action.

7. The meta-theoretic conception of economic choice proclaims the existence of multiple standards of conception.

7.1 The preceding illustration reveals a number of fundamental limitations on the standard conception of economic choice.

7.2 In particular, the standard conception does not justify the restrictiveness of the following axioms.

7.2.1 The axiom of selection presupposes the uniqueness of an action that is interpreted to be subjectively conducive to a particular objective. In addition, it does not account for the possibility of coercion, where actions are selected or not selected irrespective of one's interpretation.

7.2.2 The axiom of collapse presupposed that the consequences of one's decisions manifest themselves immediately and serve as the basis upon which future actions are made. This effectively implies the absence of any delays in how consequences manifest and are perceived.

7.2.3 The axiom of deliberation presupposes that it is computationally possible for each individuals to weigh the merits of every action before making a selection. Though, it would be possible to conceive of a different arrangement where a random or computationally efficient subset of the actions are weighed by the agent, resulting in an interpretational update in some but not all perceived choices.

7.2.4 The strict axiom of belief preservation presupposes that an agent should not change one's perception of an action that has not been selected, as the only way in which a person may rationally change their subjective opinion on a particular course of action is by actually selecting it. This denies the possibility of allowing agents to *recursively conceive* what would happen if they did select a particular action in order to change their subjective opinion without making an actual selection.

7.2.5 Naively, we may illustrate the necessity of a meta-theoretic conception of economic choice by considering an exchange between two agents, A_1 and A_2, who are both interested in cajoling each other into selecting a particular action.

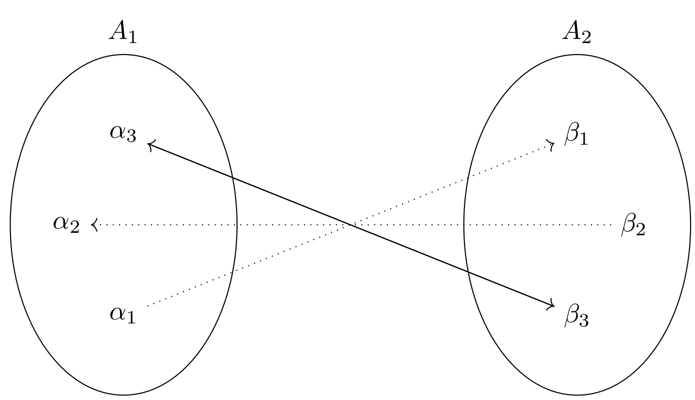

Figure 1: Unanimous Exchange between A_1 and A_2

7.2.6 The dotted arrows in Figure 1 from α_1 to β_1 and from β_2 to α_2 constitute unique, subjective interpretations on which actions can effectively incur the selection of a target action by a different agent. Suppose the agents were allowed to engage with each other again, resulting in the solid double arrow between α_3 and β_3: that is, an equilibrium/unanimous exchange between A_1 and A_2 where both agents expect and incur desired/intended outcomes.

7.2.7 Even if one were to formalize this bargaining process in $\mathcal{L}_{\mathbb{C}_{\mathfrak{e}}}$, the standard conception of economic choice fails to justify the ultimate reason behind why A_1 initially perceived α_1 as being conducive to the objective of incurring β_1, and why β_1 was initially deemed as a worthwhile objective that is subsequently abandoned in favor of β_3.

7.2.8 **The limits to what can be symbolically proclaimed impose limits on what can be meaningfully said.**

7.3 Let $\mathbb{C}^{\mathcal{M}}$ denote a meta-theoretic conception of economic choice.

7.3.1 $\mathbb{C}^{\mathcal{M}}$ $\mathbf{PROC}\, s_1\, s_2\, s_3\, s_4\, \ldots\, s_n\, s_{n+1}\, \ldots\, s_{n+k}$.

7.3.2 Let s_1 be **Frm**; let s_2 be **Int**; let s_3 be **PROC**; let $s_4 \ldots s_n$ denote a series of standard conceptions; let $s_{n+1} \ldots s_{n+k}$ denote a series of all the distinct individual symbols proclaimed by the preceding conceptions.

7.3.3 Let $\mathbf{Frm}(\mathcal{L}_{\mathbb{C}^{\mathcal{M}}})$ serve as an abbreviation for:

$$\mathbf{Frm}\, \mathbb{C}^{\mathcal{M}}\ \mathbf{PROC}\, s_1\, s_2\, s_3\, s_4\, s_5 \ldots\, s_1 s_1\, s_1 s_2\, s_1 s_3\, s_1 s_4\, s_1 s_5 \ldots$$

7.3.4 Let $\mathbf{Int}(\mathcal{L}_{\mathbb{C}^{\mathcal{M}}})$ serve as an abbreviation for:

$$\mathbf{Int}\, \mathbb{C}^{\mathcal{M}}\ \mathbf{PROC}\, s_{i_0} s_{i_1} s_{i_2} s_{i_3} s_{i_4} \ldots\, s_{i_k} s_{i_{k+1}} s_{i_{k+2}} \ldots$$

where it is possible to segment the string on the right hand side in a way that results in the following inductively defined substrings:

7.3.4.1 If a substring is of the form $s_i\, s_3\, \mathcal{S}_{s_i}$ where $\mathcal{S}_{s_i}$ denotes a string of distinct symbols that appear in $s_{n+1} \ldots s_{n+k}$, and s_i is a conception that appears in $s_4 \ldots s_n$, then it is a well-formed meta-theoretic formula.

7.3.4.2 If a substring is of the form $s_1\, s_i\, s_3 \bigcup_{k=1}^{\omega} \mathcal{S}_{s_i}^k$, where $\bigcup_{k=1}^{\omega} \mathcal{S}_{s_i}^k$ is an abbreviation of the string-representation of the countably infinite union of the countably infinite Cartesian products of $\mathcal{S}_{s_i}$, then it is a well-formed meta-theoretic formula.

7.3.4.3 If a substring is of the form $s_2\, s_i\, s_3\, \mathbb{S}_{s_i}$ where $\mathbb{S}_{s_i}$ is a string-representation of the collection of substrings in $\bigcup_{k=1}^{\omega} \mathcal{S}_{s_i}^k$ that are deemed to be subjectively comprehensible (usually by means of induction), then it is a well-formed meta-theoretic formula.

7.3.5 This completes the generalized form of a meta-theoretic conception of economic choice.

Data Availability

This work does not generate any data sets because it proceeds within a theoretical and mathematical approach. One can obtain the relevant materials from below.

Bibilography

Lu, Daniel, Dynamic Many-Valued Logic Systems in Theoretical Economics (March 17, 2024). Available at SSRN: `https://ssrn.com/abstract=4798216` or `http://dx.doi.org/10.2139/ssrn.4798216`