International Journal of Contemporary Issues in Social Sciences
Volume 3, Issue 2, 2024 ISSN(P):2959-3808 | 2959-2461

KANTIAN EPISTEMOLOGY IN EXAMINATION OF THE AXIOMATIC PRINCIPLES OF ECONOMICS: THE SYNTHETIC A PRIORI IN THE ECONOMIC BEHAVIOR/STRUCTURE OF SOCIETY

Adil Ahmad Mughal

FCCU, Department of Economics, Lahore, 2024

adilmogul@live.com

Received: 01 March, 2024 **Revised:** 30 March, 2024 **Accepted:** 09 April, 2024 **Published:** 23 April, 2024

ABSTRACT

The axioms of Economic theory combine mathematical formalism with behaviorally stable and reproducible patterns. This paper sees this synthesis as a Kantian synthetic a priori method quantified on prices and revealed preferences. The intuitions as inherently continuous magnitudes in Critique of Pure Reason just sit so well inside the convexity and continuity assumptions in Economics. This aspect of intuitions facilitates a raw economic behavior to be synthesized into formal Economic theory. This paper demonstrates Kant's synthetic a priori criterion to be implied in the axiomatic Economics.

Keywords: Categories of Understanding, Continuity, Convexity, Psyche, Revealed Preferences, Synthetic a priori, Behavioral magnitudes.

INTRODUCTION

Kantian Subtitle:

*"It is remarkable that of magnitudes in general we can know a priori only one **quality**, namely, **continuity**, while with regard to all quality (the real of appearances) nothing more can be known to us a priori than the intensive quantity of appearances, that is, the fact that they have a degree. Everything else is left to **experience**."*

- *Critique of Pure Reason* [1]

"Synthetic a priori proposition, in logic, a proposition the predicate of which is not logically or analytically contained in the subject—i.e., synthetic—and the truth of which is verifiable independently of experience—i.e., a priori." [34]

"You can eat a donut, but not its price" [35], because the price of the donut is not an *analytical* predicate of *donutness* but a *synthetic* of the utility value of it. So this price or the utility it represents is not a *thing in itself* but a *phenomenal* (as opposed to the *noumenal*) and *market* representation of the deliciousness of the donut. Even though the consumption of a particular donut implies the consumption of its utility still the price of any given donut remains as a *synthetic* of a donut's value *a priori* which is a *transcendental* representation of the donut's utility. The implication of Kantian *transcendental* here is that the preferences (from which a utility function is built) are abstract and inherently continuous *magnitude intuitions* on the *phenomenon* of a given object or experience. These magnitudes *transcend* and abstract from that experience like consumption itself and turn them [36] into *synthetic a priori* concepts of value (like

prices[1]). The prices corresponding to the underlying experience like consumption only serve as an *information* feature to make that experience valid in *understanding* ([36], p. 41-42) through utility and revealed preferences[2].

The *transcendental* does not *empirically* cognize objects or experiences (like consumption). "But investigates the conditions of the possibility of our experience of them by examining the *mental capacities* that are required for us to have any cognition of objects *at all* ". This experience for our purpose here is a case of the utility value of consumption. And that the intuitions of time and space are "*transcendentally ideal*, and so are the *objects given in them* ". That is, the experiencing of those objects is only transcendentally possible by intuiting them first in the intuition conditions of space (magnitude) and time (succession) and then by turning those intuitions into concepts *synthetic a priori* towards that experience.[3] [36]

Continuity taken qualitatively in itself can be examined synthetic a priori [33] as can be seen in the common properties of *continuous functions and compact sets* [2]. Yet utility gained from an *experience* of consumption as a behavior and psyche seems to be only *experiential* that cannot be universalized and made to be seen as a measurably stable quantity. Therefore from the underlying continuity in psychic preference structure the transcendental possibility of gaining an intuitive magnitude of utility by explicitly *not taking utility as a thing in itself* brings the quantitative from the qualitative *continuity*. This aspect of the Kantian transcendental is proposed to be implied in Economic theory in this paper. For instance, in the Walrasian general equilibrium sense in Economics, the assumption of *continuity* is a stability condition and it means that a small change in prices should only produce a small change in the quantities of the demanded commodity and vice versa. This continuity condition is mirrored in the assumption of a *convex set* of production technologies in an economy. This assumption simply means that if a product or output y has its input set x then x should not intersect y because if it did it would imply that x = y which is impossible in every phenomenal sense. How do these Economic assumptions translate into Kantian notion of *continuity* in magnitudes? The answer lies in the *magnitude conception* itself for the production and consumption quantities in Economics. When these quantities can be turned into pure magnitudes through helpful concepts, the mathematical formalism makes the Economic axioms *stable* and *consistent* for explaining economic phenomena. And following Kant on the precedence of the a priori, only this axiomatic

[1] Prices are meant here to be transcendental *information packets* on the utility value of goods. And that is exactly how they are taken in Economics in terms of *value representation* in the form of *magnitudes* like lower or higher prices.

[2] If a is preferred to b and both are affordable for the consumer i then, given changes in income and prices such that a and b still remain *affordable* for i, the consumer i still prefers a over b. Alternatively, if i does prefer b over a it can only be due to the fact that a is *no longer affordable* for i. This is the revealed preference of i, for a over b.

[3] "space and time… are rather only forms of our sensibility, hence conditions under which objects of experience can be given at all and the fundamental principle of their representation and individuation…. Only in this way, Kant argues, can we adequately account for the necessary manifestation of space and time throughout all experience as single but infinite magnitudes …. and also explain the a priori yet synthetic character of the mathematical propositions expressing our cognition of the physical properties of quantities and shapes given in space and time…. in general terms it is the claim that it is only from the human standpoint that we can speak of space, time, and the spatiotemporality of the objects of experience, thus that we cognize these things not as they are in themselves but only as they appear under the conditions of our sensibility."

stability and consistency makes possible the knowledge of any empirical deviations from those axioms.

*A*lmost unwittingly, the Economic theory employs the transcendentally taken (like abstract intuitions) magnitudes of something like psyche ("prescientific comportment") and puts them in the mathematical apparatus of the synthetic a priori ("scientific comportment" through "objectification" [41]). The budget-price pairing that maps preferences, as psychic potential of choice rules, into revealed preferences makes utility, the *experiential*, to become knowable in the synthetic a priori instead of the contemplation of utility itself.

The additive quantity of consumption makes itself less valuable in preference *intuitions* in the form of the psychological fact and then the concept of diminishing marginal utility. Whereas this diminishing valuability of marginally added consumption of a consumed good and its qualitative result of the nonemptiness[4] [2][33] is the method of convex and therefore continuous preference structure with respect to choice relation sets. The intuitions taken as measures of magnitudes, in magnitude intuition of *space* as the external sense in Kantian formulation, are to be specifically regarded here as *behavioral magnitudes* because of their psychic content. Some literature is discussed below.

The [5] questions the *additivity and independence*[5] in the formulation of economic value in mathematical terms of *Euclidean space*. This is because of the concerns regarding *inter-subjectivity* of preferences. A similar concern is raised by Morgenstern [6] about inter-dependence of market demand which to a lesser extent is implied by [2] (induced preferences) and [4]. Addressing these concerns, as done further below, is somewhat central to this study because first there are negligible, or *eventually price-able*, *imperfections* in the applications of the axiomatic theory as discussed in the passage of [4] below. But then there are certain *inter-subjectivities* which are *structural* to the psychic content of intuitions themselves such that these are as fundamentally *systemic* and *shared* as the capacity for language acquisition or social existence.

General Equilibrium [4]:

"An essential point in the proof and in the economic application of the First and Second Fundamental

[4] The counter-argument to nonemptiness is only as healthy as the prevalent objections to Axiom of Choice regarding the continuity of continuous functions and compact sets in mathematics. These objections are linearly a questioning of the phenomenon itself - like in Alain Badiou's *Being & Event* [32]. Now, a priori and pure intuition of space as a Kantian 'condition', of all possibility of pure and empirical conceptions of experience and possibility of experience itself, just makes phenomenon a derived but a necessary attribute of this 'condition'. And because this condition is a priori therefore it's universal and necessary. Thus in such a reverse framing, the objections, to Axiom of Choice and the necessity and universality of a possible phenomenon, are wrong. See [33]: "Thus it [the Axiom of Choice] is a synthetic a priori judgment without which the “theory of cardinals” would be impossible, for finite as well as infinite numbers.”

[5] In very simple terms, additivity and independence mean that if additively, a + a = 2a, then additivity implies additive separability, as if b = a then b = 2a - a, through the independence of an a from the other a. Suppose if a is not independent or separable, or is dependent and inter-dependent on the other a, then the intersection of the two a's is non-zero. This implies that a - a is also non-zero which amounts to a phenomenal incompleteness and non-conservation of quantities. Now, if a and b are two different commodities their phenomenal completeness implies that a does not mean b. When separability or independence is generalized it means this: the agents i and j prefer a and b respectively over the alternatives. If i starts preferring b or c over the alternatives it does not affect j's preference for b because it is independent of i's preference.

[Welfare] Theorems is the absence of external effects (external economies and diseconomies). This notion shows up mathematically in specifying the possible consumption sets of the households, of the household sector, the possible production sets of individual firms and of the production sector. All of the relations are additive. That is, each household's tastes and opportunities are independent of the others' and of the firms'. Each firm's technology is independent of other firms. When external effects, issues like water and air pollution (diseconomies) or beneficial effects of a neighbor's garden (external economies), are significant, the theorem does not correctly apply."

This passage is what exactly might also seem like the objections [14] raises, namely, those related to whether the assertions in Economic theory come as analytical or synthetic, whether a priori or empirical. The "external effects" and "diseconomies" in the quoted passage refer to empirical problems faced by the proposed synthetic a priori apparatus of Economic theory. Firstly, [14]'s argument per se confuses the synthetic with the empirical, whereas, given the Kantian framework, the synthetic knowledge that comes to us in being available, does not come through experience, but from prior experience that is taken transcendentally. This implies that it abstracts from the experience itself and retains the synthetical as a priori as synthetical conceptions made possible by the intuitions for those conceptions. So, much more than only being "logical", the Kantian method approaches the problem in terms of the transcendental logic, which makes the whole deduction one of the psychological kind - which is yet another clue into the *psychologico-transcendental* nature of magnitudes and their qualitative continuities in Economic theory. As regards [14]'s reference to reality and certainty of Economic theorems this again implies the synthetic a priori being confused with the empirical yet as far as the empirical concerns matter per se those themselves are possible as knowledge only because of the synthetic a priori. And any deviations from theory that come empirically refer us back to what the quoted passage above shows. Secondly, what is implied by [14] in *action* being an offshoot of reason by Von Mises, at least in terms of the Kantian frame, connects the *reason* with dialectics, which is not the proper scope of *Transcendental Analytic* and *Logic* in the *Critique of Pure Reason*. Because *reason* can tend more towards an application of the *categories of understanding* to the cases where 'no objects' can be the 'possible content' of these categories. This leaves no *possibility* of an empirical reduction in sight (say in the case of *action* as *reason*). Thus such an application of *categories* is not a valid deployment of them, as per Kant[6]. Finally, before addressing the analytic-synthetic dichotomy and their imputed confounding in the Economic theory, the

[6] "But empirical cognition is experience ; consequently no à priori cognition is possible for us, except of objects of possible experience. * But this cognition ,which is limited to objects of experience, is not for that reason derived entirely from experience, but and this is asserted of the pure intuitions and the pure conceptions of the understanding - there are, unquestionably, elements of cognition, which exist in the mind à priori. Now there are only two ways in which a necessary harmony of ex perience with the conceptions of its objects can be cogitated. Either experience makes these conceptions possible, or the conceptions make experience possible . The former of these statements will not hold good with respect to the categories (nor in regard to pure sensuous intuition), for they are à priori conceptions, and therefore independent of experience. The assertion of an empirical origin would attribute to them a sort of generatio æquivoca. Consequently, nothing remains but to adopt the second alternative (which presents us with a system, as it were, of the Epigenesis of pure reason), namely, that on the part of the understanding the categories do contain the grounds of the possibility of all experience." [1] 23§.

psychological-logical divide of the synthetic a priori itself needs to be sorted out perspectivally which, as will be made plain, is of the essence for parsing what the transcendental is. For which Prichard's [15] *'Kant's Theory of Knowledge'* is discussed.

"*Time is a necessary representation, lying at the foundation of all our intuitions."*

- *'Of Time', Critique of Pure Reason* [1]

Prichard asserted quite wrongly that as if, the Kantian intuitions of space and time as *conditions* of phenomenon and its concepts, were a rendering of phenomenon and the character of the external world as merely "mental". Kant's *Refutation of Idealism* precisely counters *this* implication; as extensively problematized below. This seems to be a fundamental error in critiquing the *Transcendental Aesthetic*. In fact, Prichard's claim (of a direct relation between the knower and the reality) is strange when the said "*directness*", while examining the *Critique*, is the very impossibility that is defended in the Kantian œuvre. Because Kant posits an impossibility of experience itself without the necessary conceptions for experiencing it. Kant's *psychologico-transcendental* is not *logical* [39] in the conventional general logic sense as implied by [14] precisely because in order not to take things as things in themselves they are taken in transcendental abstraction. The content of the thing in itself is left behind in noumena and intuitions as psychic magnitudes thus created are then subjected to the logical in the method of transcendental logic. First, this method does not take things to be only *mental* if they are considered unknowable for being things in themselves. That is, the unknowability of a thing as a thing in itself does not mean that the thing is only mental or *imaginary*. Claiming to the contrary is a "grossest misunderstanding" of Kant as shown by [41] that also shows the alleged 'unknowability of *reality* ' to be a wrong interpretation of Kantian *transcendental* by [42]. In an alternative view from a neurological perspective - *Interface Theory of Perception*[7] (ITP) - [40], the transcendental is like a functionally useful but *unreal* parallel to the object it represents. Yet practically it's as mundane as $y = f(x)$, where both y and x could be magnitude abstractions of anything like *weight* and *size* or *price* and *utility* respectively. The *illusory* as taken by [40] is only as much so as y and x are in both of the examples. Second, the implied psychological content is not as such per se in the transcendental[8] because as far as the transcendental is concerned the things are taken in abstraction as intuitions and conceptions of magnitudes [39] while the remaining object-content is abstracted away into the things in themselves which are declared unknowable. Thirdly, the magnitudes are deployed only as far as the categories permit while these themselves must not be wrongly applied to things of an object-content with no possibility of an empirical validation (see [36], p. 41-42). In essence, Kantian epistemology, it seems, like Economic theory, is neither dialectical nor a positive science. It denies more than it affirms. Now finally, we come to the alleged analytic-synthetic

[7] "Suppose you're crafting an email, and the icon for the file is blue, rectangular, and in the center of the desktop. Does this mean that the file itself is blue, rectangular, and in the center of your computer? Of course not. The color of the icon is not the true color of the file. The shape and location of the icon are not the true shape and location of the file. Indeed, the file has no color or shape; and the location of its bits in the computer is irrelevant to the placement of its icon on the desktop. The blue icon does not deliberately misrepresent the true nature of the file. Representing that nature is not its aim. Its job, instead, is to hide that nature—to spare you tiresome details on transistors, voltages, magnetic fields, logic gates, binary codes, and gigabytes of software."

[8] This is an alternative *Mathematical Psychics* approach from that of Edgeworth who took it from Hamilton's principle of stationary action : "*all the unknowns in a system can be reduced to one unknown and that single unknown is connected with the known* ". Now compare with footnote-10.

confounding that Economic theory is regarded to have.

Given the problems like the *identity of indiscernibles* (and the analytical difficulty of rendering $a = a$ without the synthetic intervention of b synthetically identified to be a to render a, for example, in $a - b = 0$ implying $a = b$) it is the synthetic per se that delivers the analytical identities. For instance, the *regular* verb forms of Pinker [24] are *discrete* and self-defined like *fax-faxed* and *map-mapped*. And then the idiosyncratic *irregular* forms of verbs like *bring-brought* are *continuous* and memorized in the structure of a mind working with language. Language thus is a vocabulary of the words and their arrangement rules defined by their useful *meanings*. These meanings are more likely to be contextual, continuous, idiosyncratic and therefore *synthetic*, instead of being discrete, regular and *analytical*. It can be induced that the *irregular* forms are *synthetic* concept analogs while the *regular* forms are *analytical* ones. Economic theory is analytical in its general logical results, for instance, in its use of mathematical quantities, and synthetic a priori in its transcendental logic, for instance, in Economic axioms. These axioms may be continuity and convexity of preferences or the convex set assumption on the production technology set. But the development of new analytical identities is done through the synthetic a priori method. Mathematical convexity and continuity are just the synthetic results which make the analyticals like a = a reliable. This is proven through the Economic meaning of these concepts in terms of *comparativity*, as discussed below. Kantian philosophy replies in the negative when we say we can know directly through experience; likewise, Economic theory also gives the negative when we think we can directly act on *value* in the economic sense. The same as the experience of a language is hard to come by if it is used in the form of words without its rules and underlying concepts creating meaningful connections.

The *aim* of this study is the following: The *criterion* of the truth of axiomatic Economics in its theoretical as well as practical experience is to be taken as synthetic a priori thus *universal and necessary* in Kantian sense and that only this makes its empirical content economically and behaviorally meaningful. So if *preferences* are seen as *intuitions* of magnitude inherently *continuous* in the Kantian sense then the mathematical need of establishing *continuity, Axiom of Choice and non-emptiness* for axiomatic purposes in Economic theory [2] [33] is greatly facilitated from this simultaneously behavioral and epistemological perspective.

The main *hypothesis* of the paper posits that the axiomatic content of Economic theory and practice is epistemologically Kantian as synthetic a priori and this simultaneously abstract and practical nature of economic value is made possible through the psychic and behavioral experience of utility. Utility is itself a qualitative experience but it is quantified through abstracted (*intuited*) experience of real consumption in Economics. Whereas the qualitative property of continuity is a priori inherent in magnitudes or quantities as per Kant such that the mathematical need of continuity in the Economic axioms is, in this way, already fulfilled.

Psychic intuitions of preferences are transcendental in the Kantian sense and these behavioral intuitions are magnitudes with a priori inherent quality of continuity which makes preference relations and choice rules possible through budget-price pairs. This quantification of psychic intuitions through a priori and qualitative continuity, in the Kantian sense, yields the everyday experience of utility which is psychic and qualitative itself.

REVEALED PREFERENCES AND TRANSCENDENTAL MAGNITUDES

Preferences as a set of inuitions for synthesizing a utility value can only be ordered and therefore comparative in the market value case. Un-ordered preferences are not convex and therefore are discontinuous. If preferences are ordered in terms of a case of market value, as in prices, then they must be ordered. Thus un-ordered preferences are *things in themselves* in Kantian sense. The quantitative instance of budget-price pairs is continuous because

of the preference magnitudes having the inherence of continuity as a quality. What we are getting here at is that through continuity of preferences, the psychic is being transformed into the quantitative as the quantitative side of the itself-qualitative continuity which has been transcendentally inferred from the psychic-qualitative notion of preferences. What about preferences in-themselves then? Are they things-in-themselves? If so, what can be turned into a transcendental space-and-time magnitude measure from them to turn them into phenomena? *Behaviorally* speaking, this is an alternative formulation for what by Kahneman is termed as the *two-selves'* problem [17] for defining utility to be *decision utility* on the one hand and *experienced utility* on the other. Decision utility corresponds to the *priced* revealed preferences and, as an introductory case of the *thing in itself* for our Economic purpose, here experienced utility corresponds to the psychic *experience* of consumption itself. The answer to the questions above lies in *rendering* preferences; and this time not in budget-price pairs of choice rules (which would've been the revealed preferences) but directly in the form of *immediacy* of preferences which lies in the consumption of the corresponding goods. This consumption then enables a preference ordering on which a utility function is built [3].[9] Yet this ordering as *experienced utility* is never such that through it the commodities are given in the market because it is only through *decision utility* and revealed preferences that goods become a phenomenon of consumption through the market. That is, when they become *priced* in the synthetic a priori concepts as prices from the ordered preference inuitions.

Marginal utility of consumption implies the value in succession of consumed units. This turns time/succession into a transcendental concept in terms of economic value[10]. Consumption is additive - quantitative magnitude - and is a possibility of that in the number of units consumed, and then the succession in consumed units. The latter synthesizes time as properly synthetic here because from prior experience it can be even a priori built that every additional unit consumed gives a diminishing marginal utility which is a continuous case of the utility itself as well as the additive-quantitative nature of consumption. As continuity can be conceived either in space or in time, the choice rules case of revealed preferences is about synthetic a priori case of *space* as magnitude as a *priced cross-section* of a good's aggregate demand but that of preferences directly rendered through utility of consumption is a case of continuity in time in the form of diminishing marginal utility. Hence the concavity of the utility function. Practically speaking, it is the latter case of preferences in themselves from utility of consumption that, in the prime, builds the former case of choice rules of budget-price pairs. And this is where both kinds of continuities merge. The time continuity of non-linear or diminishing marginal utility actually builds the possibility for the continuity in choice rules; which is really important to understand. In the time-continuity of preferences in the utility from direct consumption, the higher the consumption of the good a, the lower the utility and thereby a continuously increasing preference for the good b, whereby the good a can be foregone as an implied price for buying b. The

[9] Utility function, a real-valued continuous function, as a monotonic increase in a pre-ordered preferences' set.

[10] The debate about the *marginals implying the level* is quite basically mathematical one. Given a linearly homogeneous function y = x, the dy/dx = 1 is its rate of change, and by Euler's theorem, if this rate is multiplied with the input, x, the original function is returned in the form of output, y. In Economics *this rate, is the marginal, the slope*; and it exactly is *the price* of that input, x. That is, the *price* of an input (or a good) is equal to its marginal contribution to the output (or utility of that good). This marginal contribution is called marginal productivity and marginal utility in production and consumption respectively.

diminishing utility of good a here is like an implied[11] budget set for buying b, that is, to pay the-now-less-desirable good a, to buy the good b. To put it in perspective, in consumption utility the number of units consumed *in succession* is the implication of a conception of time here from its intuition, that is, the time itself is being taken only *transcendentally* (not as time itself) as an intuition-condition - *internal* intuition as succession. This is a most explicit deployment of Kantian transcendentalism in Economic theory as a synthesis a priori [36] as the *marginalist* principle of value necessarily implies time just not time as a *thing in itself*.

And because every individual is at each individual good's utility preference from consumption, there can be many individuals at almost every point of slope on each good's utility curve so that there are many price-budget pairs possible for all goods a, b, c,...n, such that the choice rules have a linear *Euclidean space* continuity with the standard Economic assumption of a large number of goods, buyers and sellers. The continuity in revealed preferences is the synthesis of these continuities that are synthetic as well as a priori where the questions of universality and necessity are successfully implied too.

CATEGORIES OF UNDERSTANDING

Now we turn to the problem of examining utility through continuity under Kantian categories of understanding. Of the four classes of categories namely, of Quantity, of Quality, of Relation and of Modality, Kant puts the first two classes as of intuition, "either pure or empirical" [1] that relate with the "mathematical"-ity of magnitudes as intuitions in extensive (of space) or intensive (of coninuously varying *degree*) from which we derived continuity[12][36]. The latter two classes are put as "*dynamic*"; it is notable that the class of categories under Quality is not taken as partaking in the dynamic classes of Relation and Modality. This is because the continuity as being qualitative is enumerated as a result of the quantitative as an analytical property of the magnitudes in general in *Transcendental Analytic*. Care should be taken for not turning the "criteria of thought" (as in ITP

[11] This is here a suggested result of an implication of Envelope theorem and that of indifference curves too.

[12] "Kant organizes the principles of pure understanding under four headings corresponding to the four groups of categories. For each of the first two groups of categories, those listed under "Quantity" and "Quality," Kant supplies a single "mathematical" principle meant to guarantee the application to empirical objects of certain parts of mathematics, which are in turn supposed to be associated with certain parts of the logic of judgment. The first principle, under the title "Axioms of Intuition," guarantees that the a priori mathematics of extensive magnitudes, where wholes are measured by their discrete parts, applies to empirical objects because these are given in space and time which are themselves extensive magnitudes (A I62-6IB 202-7). The general implication of this argument is that the empirical use of the logical quantifiers (one, some, all) depends on the division of the empirical manifold into distinct spatiotemporal regions. The second principle, under the title of the "Anticipations of Perception," guarantees that the mathematics of intensive magnitudes applies to the "real in space," or that properties such as color or heat, or material forces such as weight or impenetrability, must exist in a continuum of degrees because our sensations of them are continuously variable (A 166-761 B 207-18). Here Kant's argument is that since the use of the logical functions of affirmation and negation is dependent on the presence or absence of sensations that come in continuously varying degrees, the empirical use of the categories of "Quality" is connected with the mathematics of intensive magnitudes in a way that could not have been predicted from an analysis of the logical content of these categories themselves (another example of how a synthetic a priori rather than merely analytic judgment arises)."

example) into "properties of objects" [1] to be reminded of the fundamental method of transcendental logic of not taking appearances, as representations of objects, for the objects as things in themselves. For the transcendental cognition of an object, not the object itself, Kant gives for the class of Quantity, the categories of Unity, Plurality and Totality with their subtitles of qualitative unity, qualitative plurality and qualitative completeness (think of convexity in Economic theory [2]) for an attribution to the criteria for a cognition of an object, not for the object of cognition as the thing in itself. The categories, insofar as they are categories of understanding under the class of Quantity, have qualitative syntheses of unity, plurality and completeness in the form of sensibility from intuitions to the concepts in which objects are cognized. The qualitative unity of conception makes possible the qualitative result from the quantitative category of Unity. For instance, a measure conception of magnitudes taken transcendentally of a content that is just psychic like utility, for the economic case at hand. The truth of it determines its 'objective reality' in the form of qualitative plurality of the different instances of actual consumption. For instance, the synthetic truth of diminishing marginal utility in its a priori and synthetic universality. Whereas it is the qualitative completeness of conception that renders the extent or perfection of judgment under the category of Totality. For instance, the linear space conception of the market - the zero *Lebesgue measure* of a single point [4] - wherein the global moment aggregation of budget-price pairs is possible as a continuous measure 'spanning' *all* the revealed preferences linearly. This covers the 'law of one price' for each good in Economics.

THE REALITY OF ECONOMIC EXPERIENCE

Is the everyday economic experience just a product of its formal Economic conception, or does it have a reality of its own? The content of utility or of revealed preferences is not cognized in itself as a thing in itself; that's why the assumptions of Economic theory, as per the synthetic a priori method, are mathematical. Likewise, the transcendental deduction preserves only a logical *possibility of experience* which explains the empirical and everyday economic experience too.

As Kant writes [1]:

"§10" (Transcendental Logic):

"The whole aim of the transcendental deduction of all à priori conceptions is to show that these conceptions are à priori conditions of the possibility of all experience. Conceptions which afford us the objective foundation of the possibility of experience, are for that very reason necessary. But the analysis of the experiences in which they are met with is not deduction, but only an illustration of them, because from experience they could never derive the attribute of necessity."

Experience of an object under its concept or that of a good under its economic value can only be transcendental and comparative[13]. That is, the psychic magnitudes of intuitions/preferences remain transcendental no matter if their use is experiential or conceptual. The transcendental content in the form of the value of a good belongs to the ordered domain of intuitions or preferences. This ordering as the value of a good, a synthetic a priori concept, is a subset of the ordered preferences/intuitions set, such that, the complement of this subset must be always strictly greater than itself. If this subset of preference

[13] For instance, the stability meaning of continuity in the sense of Walrasian general equilibrium as remarked previously. In Kantian sense, *comparativity* only means the mathematical preservation of a number line difference in a given set of magnitudes e.g. a > b as interval [0, 1] : a — b implies b - a > 0. Or the angular preservation in a right angled triangle. The overarching implication of comparativity is that the *meanings* of concepts remain stable across instances. One can see that this stability can only be there *transcendentally*.

ordering is equal to or greater than its complement then it implies the inseparability of a *concept* of value from the *experience* (of the object of) this value. The comparative separability of ordered subsets of value in the ordered preference set is only possible if no single subset commands a *decisive influence*. For instance, this *decisive influence* is in the sense of *Dirac measure = 1* [37]. This is just an Economic equilibrium condition of *large numbers of buyers and sellers* such that no single agent or a subset of agents can manipulate the price or market value of a good.

If the a priori concept of value [36] or the value of a good, that "affords" us the "possibility" of this experience, is necessary for the validity of a given experience like utility of consumption then at rough it may seem to be a reduction of this experience itself to its conception which, for Kant, makes that experience possible in the first place. That is, if reality, or the reality of an experience, is just a concept of it then the concept *is* the reality. This then can be framed with a charge of a "material idealism" that doubts the possibility of knowing and explaining phenomenon altogether [1]. This is an inculpation not infrequent in these times too, especially regarding the elaborate theoretical apparatus of Economics. In *Refutation of Idealism* [1] in the *Critique of Pure Reason* Kant refutes this material idealism; specifically, the one kind of it he calls the "problematic idealism" of Descartes - that declares anything other than "I am" as "doubtful" - and the other kind as the "dogmatical" one of Berkeley - wherein space itself and anything possible in it is held as just an "imagination". The case here at hand is about reducing an experience (like *actual* utility through its preference intuitions)[14] in its possibility to its concept only (like prices embodying a priori synthesis of the value of utility regardless of the experiential validity of that utility). If this is true then the *truth* of the axiomatic apparatus of Economics is also just an "imagination" *and a material idealism*. It seems useful to explore both of the kinds of material idealism refuted by Kant for the implications of the case at hand. Given that the claim under contest is that experience is nothing but a conception thereof, it is proposed to be comparable with the dogmatic idealism which says that *space and the things in it are just an imagination*. In dogmatic idealism there is a denial of space itself by taking space to be a thing in itself - whereby positing it to be unknowable and *closed* to us by implication[15]. The reason for this is that this denial in the first does not differentiate between the things in space and the space itself. Thus the space becomes a property of the things in it. Kant requires space in a priori intuition to be a *condition* of the things in space because the intuition-condition of space is necessary for *intuiting* any magnitude at all. Thus, following Kant, we can say that the claims, of calling 'experience itself to be just a conception', and like calling 'space to be just an imagination and be able to resort to an empirical intuition of it without a pure intuition. But we know that even calling the experience of space in an empirical recourse as *"a mere imagination"* must confirm the presence of the a priori intuition of it even though only as *a mere imagination* which makes even the empirical intuition itself possible. This clarifies the impossibility of an *only empirical* intuition if it is still held that the observing subject does not consider itself to be *a mere imagination* too.

[14] The a priori intuitions are the beginning and utility the end aim of the whole exercise. The beginning and the end both are separated and mediated by the synthetic a priori concept. If beginning (which is intuitions) is not universal and necessary in its own validity in *understanding* and thereby is not independent of the concept then the end aim experience or object is just as arbitrarily cognized as the concept. By Kant, a concept is impossible to arrive at empirically which means concepts are only as valid as their intuitions.

[15] If space is a thing in itself then it must be closed to us and thus in an experience of space we must only

a property of things in space', are akin to calling 'experience of things to be only noumenal and therefore it being unknowable'. Which again is like calling space to be only experiential, empirical and thereby unknowable a priori. Here we must now vet the Kantian claim that such a material idealism actually means a characterization of space as a thing in itself and not as a condition of intuiting space. Kant takes space to be an external, as time to be internal, intuition. He also does not take space to be a concept but only as the *foundation* of a concept of things in space.

In *Metaphysical Exposition of this Conception (Of Space),* Kant:

"Space is not a conception which has been derived from outward experiences…in order that I may represent them [things in space] not merely as without of and near to each other, but also in separate places, the representation of space must already exist as a foundation. Consequently, the representation of space cannot be borrowed from the relations of external phœnomena through experience;". [1]

And again in *Transcendental Exposition of the Conception of Space* :

"*Space is nothing else than the form of all phœnomena of the external sense, that is, the subjective condition of the sensiblity, under which alone external intuition is possible."* [1]

Which means if space is held to be a *relation* among things in space (*"near to each other"*) then it is a property of those things in themselves. Because, as Kant says about Geometry, the synthetic a priori conception of space must have an a priori intuition of space because a concept just has an "internal necessity" that does not give much about the object or the experience (as utility represented by the priced value) it represents. It is only intuition that first helps construct a concept and then it connects the concept to its object or experience to validate that experience. This is because knowing the concept (like price value) of objects or their experience (like utility) is not equal to knowing those objects *in themselves* (like some absolute or *intrinsic* value). That is, it is only *transcendentally* that the object or the experience can be known. The a priori intuitions enable the making of a concept and only that conception makes empirical knowledge possible, as much as allowed by that conception. And that's why the a priori intuition of space must be pure, not empirical. The Economic analog of 'pure and a priori intuition of space' amounts to 'a pure and a priori magnitude' in the form of preference intuitions as psychic and behavioral magnitudes.

Now if the case at hand, the *mere imaginariness* of experience and the denial of space, treats space as a part of the *concept* of things, as a *property* of things *in themselves* resorted to empirically, and not as the intuition of mind about the external spatiality then it is also a denial of the *separation* of 'intuition' from 'the concept'.[16] Because this concept itself is empirical which, for Kant, is impossible without the a priori conception. Such a denial of this separation, of intuition from the concept, means that there is no "*inner sense*" as a pure intuition existing in a subject, which, as we know, as per Kant *and* even Descartes [1], does exist. Thus, the said denial is wrong.

Let's name this separation as *first separation*[17] (the separation of a priori intuition from the concept it produces), and compare it with the *second separation* (the separation of a concept from its object or experience). If a conception of an experience is the

[16] If space is a property of things in space and not an inutition condition for the possibility of things in space, as per Barkeley, then only the direct experience of those things in space is possible. So the only knowledge possible is empirical including the possibility of intuitions. This means that in Berkeley's dogmatic material idealism there is an implied denial of the separation of intuitions from conceptions while the conceptions in this idealism are also empirical.

[17] A separation which, for instance, Maïmon [26], a contemporary of Kant, almost like Descartes and Berkeley, so explicitly but quite unsuccessfully tried to override.

experience itself (the violation of *second separation*) then the experience is the conception that must access the pure intuition directly - the pure intuition which has just been proven to exist in the above passage because the *dogmatic* (and *problematic*) idealism itself concedes its existence. But the pure intuition being simple and a priori sense of space (as a '*possibility space* ' for magnitudes) coming in direct contact with experience must become empirical, not a priori, which should then lead to an empirical conception; if the *first separation*, of a concept from its pure intuition, is held to be *preserved*. But if this *preservation* of the *first separation* still holds then the *second separation* is also true; because how can a pure intuition (from the *first separation*) lead to an empirical conception directly without an external a priori conception? Either the intuition is not 'pure a priori' (which it is, as we have seen), or, the conception is not empirical (which it is not)! Summing up, the empirical conception cannot meaningfully and phenomenally access the 'pure intuition a priori' directly without a mediation of the synthetic a priori concept. This means, following Kant's refutation of material idealism, there is a strict order:

pure intuitions → conceptions synthetic a priori → the empirical object or its experience → empirical conceptions and intuitions → understanding in terms of the categories → pure intuitions.

Finally on this, the a priori pure intuition as the condition for concepts and experience of the things in space is universal and necessary because of its locational primitiveness precisely lying in the a priori.

Having given the Kantian exposition of the falsity of Berkeley's dogmatic material idealism in Kantian terms we now move towards such an exposition on the Cartesian, "problematic" kind of material idealism. But before that, there is a parallel result that should be achieved alongside establishing the very need and scope of contesting a material idealism charge (which equates the intuition, the concept and the object as shown above) on the Kantian claim of "conceptions creating the very possibility of experience" (§10 [1]). The revealed preferences' synthesis of utility through continuity in preference inuitions, is essentially framed here as a question of whether such a synthesis *is* a 'material idealism by other means, or *not* '. If it *is* so (as *just another material idealism*), *then* the conception, of a priced value to represent consumption utility, is only possible *empirically*. Which in its turn means that *'either'* : 'there is no possibility of even an empirical conception', *'or'* : 'the empirical conception is possible without the a priori concept'. If the *either*-part is correct then it denies the "inner sense" (as shown above) and thereby annuls the *personhood* of the subject by implication; whereby the *either*-part stands refuted. If the *or*-part is correct then the conceptions come from experience whereby the above established *first separation*, of intuition from the concept, is violated which makes the *or*-part stand refuted too. Finally with this, it is conveniently remarked that, following Kant, the refutation of the *either*-part is a direct refutation of the Cartesian material idealism also.

THE PRICED, THE SOCIAL AND THE PERSONHOOD

Consider the problem of a gift. A *true* gift must escape the realm of exchange in order not to oblige the receiver to the giver to avoid the awkwardness of the instance of oxymoronically "exchanged gifts". Then it follows that a true gift must be of a non-magnitude measure and therefore must remain unpriced. That is, it must be so *subjective* that it beats every magnitude-measurable social intuition, which is to say the paradoxical that a true gift - which Derrida always thought to be *impossible* - must be *a-social*. Or in the economic sense, it must be *unpriced*. In [28] comparably, the *implicit* or *explicit reputational concerns* creep in whenever a *prosocial* behavior is under observation while even a most *genuinely* altruistic behavior does not lead to an outcome such as a true gift that leaves no implicit or explicit *obligation* like a reputational concern. A solution to the above paradox is given in the form of a true gift being *aesthetically* defined as a truly

subjective and therefore an *unpriced self-interest* [18] for instance in exercising an a-social and therefore *unpriced strict preference* within the social and therefore *priced preference pre-orders* [45]. That is, for instance, when a and b are two similar goods from two different brands (which for pricing linearity must command the same price) but the good a is *strictly preferred* over b. This *strict preference value, v• = v(a) - v(b) > 0*, is the unpriced and a *true* gift value.

This leads us to define *the social* itself as a synthesis of *phenomenal* and *measurable* intuition-magnitudes. This translates into the *priced value* in the economic sense as shown above. Yet, Kantian view[19] regarding the case of a true gift shows that the priced value *conception* makes the unpriced value possible both in empirical and a priori conceptions. If the social, like the intuition-magnitudes of which the *understanding* [36] is made of, is structurally framed in intuitions of magnitudes then the social is not merely *arbitrary*. This means that the social, as being a *phenomenon* instead of *noumena*, is made of magnitudes of intuitions and a priori syntheses of those magnitudes in the form of the concepts which behaviorally *render* the social itself. And this too, with necessary *separations* between intuitions and concepts and then between the concepts and their possible and corresponding objects and experiences.

The preceding is another implication of Kantian epistemology here held to be so thoroughly pervading Economic theory and practice in society. Autonomously out of what just preceded above, there is a moral argument to make here too. The socio-ethical as being non-arbitrary in its epistemological structure, as also in *priced value* for instance at least for the economic dimension of society, there is a direct continuum between the fundamental epistemological measures like pure intuitions and the *moral* implication of this epistemic feature. This feature most basically and *behaviorally* overrules even the deliberately nit-picking *glitches to phænomenon*. For instance, Badiou [32] essentially challenges *phenomenon* when he contests the Axiom of Choice; more on this below. Most lucidly, the said *moral* implication is this: if the Kantian intuition posits phenomenon eventually to be non-*constructivistically* real - by separating *intuition* from the *concept*, the *first separation* given above - it immediately and collinearly follows that the *reality* of phenomena headlong posits the *personhood* of the phenomenal *subject* [20] [41]. And this is the most fundamental moral argument that must be held true, though obviously as being *normative*, but also as an epistemological *root* of what the moral most basically *is*, namely, the possibility of personhood. The overarching feature of it is that a phenomenal *possibility* of the external world (which material idealism denies) just makes a *person* itself *possible* and is therefore also the method of Economic theory in a completely non-normative sense, nonetheless, through the transcendental magnitudes of intuitions. That is, if intuitive magnitudes yield phenomenon and personhood simultaneously then the same magnitudes and their syntheses while mathematically conforming to their own constitutive *rules* - the rules of *intuitions* like linearity (or implied and *constructive* completeness [33]) - must also be as *true* as the *psychics* of *phenomenon* and those of *personhood*.

[18] That in essential terms a true self-interest must be *truly subjective* and therefore must stay *unpriced*. So among a set of *priced preferences* with equally priced and therefore loosely preferred *alternatives* an exercise of a *strict preference* represents true subjectivity. Such a *true gift* could be a usual *consumer surplus*.

[19] That pure and a priori intuition, however subjective it may be, being a pure magnitude measure is *universally* linear and quantitative magnitude on which any mathematical-like synthetic a priori manipulation is *valid* while the universality of pure magnitude measure implies its *soundness* too.

[20] "Accordingly we conceive knowing as a free possibility of human existence".

TRANSCENDENTAL MAGNITUDES; ADDITIVITY AND INDEPENDENCE FOR INTER-SUBJECTIVE VALUE

The law of large numbers, *Lebesgue measure zero* condition for a single agent or firm in [4] (implying their inability to subvert the equilibrium) and null aggregate profit as the equilibrium condition in [3] compensate for the case of any inter-subjectivity or inter-dependence in preferences or production technologies by implication. Suppose the stated conditions do not hold and a set of preferences is allowed to be influenced by the consumption and therefore prices of other agents and goods respectively. But once the equilibrium linearizes into Walras law where excess demand, aggregate profit and firms' abnormal profits are zero then this equilibrium already represents a cost minimizing equilibrium that cannot be priced or consumed up or down by some case of preference interdependence. The only deviations remaining out of this equilibrium completeness are due to the empirical analysis of a given market that is only possible because of the Kantian kind of conceptual synthesis of this equilibrium. And this is why [5]'s objection to the Euclidean space formulation of value is not warranted. This linearity of transcendental magnitudes is mathematically plausible given the underlying nature of the assumption of large number of buyers and sellers - implying a law of large numbers[21] [7] -, and the above mentioned *Lebesgue measure* conception [4]; and this puts [6]'s objection in perspective to fads and fashions *seeming* to make aggregate market demand curve of a product, which is more elastic than the individual demand curve, as non-independent and therefore non-additive [8].[22] This objection is answered this way: tastes, fads and fashions are not extraneous to demand and prices per se even if it is ceteris paribus assumed that they be kept on hold while the price is assumed to act on a quantity demanded in a demand curve.

Because the price itself, as a measure of demand for a product, is made of desires for a good which may or may not stem from a need, a usefulness, a snobbery, a neighborly competition, or just as a function of income. "Preferences are almost always, to some extent, induced [2]."[23] Because the latter enumeration is a delving into the intrinsic notions of goods and their value which the Economic theory explicitly debars and that's why the essential method of value conception in Economic theory, through revealed preferences, is transcendental and Kantian [9].[24] The law of large numbers and asymptotics of

[21] "whereby convergence in distribution (denoted D→) for a functional defined on a sequence of finite probabilistic objects (in this case, rescaled marked point processes) is established by showing that these probabilistic objects themselves converge in distribution to an infinite probabilistic object (in this case, a homogeneous marked Poisson process) and that the functional of interest is continuous."

[22] The idiosyncrasies of tastes and fads do not make the demand space into a case of a *tastes' friction*.

"A sufficient condition for market demand to satisfy the Law of Demand is that the mean of all households' income effect matrices be positive definite. We show how this mean income effect matrix can be estimated from cross section data under metonymy, an assumption about the distribution of households' characteristics. The estimation procedure uses the nonparametric method of average derivatives. Income effect matrices estimated this way from U.K. family expenditure data are in fact positive definite. "

[23] "Consider , for example, preferences for lotteries over amounts of money available tomorrow. Unless the individual's preferences over consumption today and tomorrow are additively separable, his decision of how much to consume today—a decision that must be made before the resolution of the uncertainty concerning tomorrow's wealth—affects his preferences over these lotteries in a manner that conflicts with the fulfillment of the independence axiom."

[24] Austrian school economists starkly object to the Marshallian explanation of the long run being a case of costs determining prices instead of the current

large samples imply, likewise, divisibility, additivity, convexity; and therefore continuity.[10]-[11]

Emphasizing the Kantian element in the Economic equilibrium construction it is remarked that the pure intuitions taken as preferences are raw additive magnitudes that can go inter-dependent unless an aggregate synthetic a priori conception of equilibrium is taken into account. Fortunately, in working markets this stipulation is found to be always already fulfilled. For instance, the goods corresponding to specific sets of preferences are mutually exclusive thus independent in their consumption experience, so a table cannot serve as a computer nor the same table bought by consumer i can be bought by a consumer j. The transcendental synthesis of aggregate equilibrium turns the seemingly disaggregated and allegedly *uncoordinated* functioning of different markets into a tractable set of transcendental magnitudes in the form of prices corresponding to specific goods and their utilities.

THE CODA

For just a passing digression consider this ultra mathematical formulation in which economic aggregates become additive and probabilistic random/stochastic processes. The so-called rigorous micro-foundations in macroeconomic modeling, in this stochastic formulation, are seen to be just *micro-perturbations* (as *stochastic jump Markov processes* in an econo-physicist formulation) of multiple equilibria as statistical distributions in yet another *new* "micro-foundations" approach [23]. If this be granted then the demand for mathematical rigor [2] on *continuity*, nonemptiness and Axiom of Choice are overridden in just this newly micro-founded macro-stochastic additivity/linearity. Now, given the elaborate tools of mathematical statistics, this statistical-distribution perception of the economic aggregates is more directly plausible as an *intuition* instead of trying to *explicitly* extend the microeconomic rationality up to macro-levels. That is, an aggregate data set or its micro-subsets both have to be *transcendentally* treated for a mathematical solution. And for this what is most essentially needed is not the constitutive character of that data but its transcendental magnitude intuitions. This insinuation will make a very intuitive sense through the following over-simplification that will conclude the paper.

Quentin Meillassoux [27; 43[25]; 44] implies the following in a simplified conception of what we are concerned here with:

'In the dinosaurs' fossil discovery the empirical *precedes* the concept. It turns the Kantian method on its head, does it not?'

The following is the answer. Error or dispersion as a diffused framework in, let's say, a rough intuitive outline, like in synthetic a priori, is as important as the magnitudes taken transcendentally and then applied to the object of the concept. This concept makes that object and its experience possible.

prices always determining costs such that the long run never actually exists. The prices adjust so much preserving the equilibrium that the realized transactions only reveal the impersonal, non-intrinsic and in-the-market thus Kantian magnitudes.

[25]" The “Paradox of the Arche-fossil” is the contradiction that Meillassoux infers from two propositions (“W” alludes to World, “A” to Arche-fossil): (W)Without subjects, there is no world. (A)Subjects have come into being in the world." Compare this *paradox* with objections to transcendental idealism, which for Meillassoux's *speculative materialism* [27; 43; 44] is Correlationism, from the view of what Kant terms as material idealism. Correlationism simply implies the cliche of 'correlation is no causation' and this again implies the difference between what is transcendental in phenomenon as per Kant and what is the thing in itself as the noumenon. If the *objection* to transcendental phenomenon, by branding it as Correlationism, is valid then a true epistemology must know the the thing in itself which just proves this *objection* to be yet another material idealism.

Nobody has seen dinosaurs so there is no prior experience from which a priori a concept of dinosaurs could be synthesized. Apparently, it is only the empirical recourse here on fossils leading to the concept of dinosaurs such that the Kantian method *seems* not to stand in the face of it because the chain of consequences has been reversed.

Let's say somebody or say a robot is searching for a guy named *Quentin* for example and the only data, the singularly *only* data the robot has is one picture of Quentin. Only if it is hundred percent a match with that picture, Quentin is said to be found. How likely is the outcome, one can wonder! An analytical identity like a = a seems to be a simpler judgment than a synthetic one but it is not. For example, at first it seems that for instance, Pinker's *regular* verb forms are simpler self-identified analyticals as opposed to the contextualized and *memorized irregular* forms with idiosyncrasies [24]. But given the contextual memory associated with irregular forms that makes them synthetic, contextuality *mediates* memorization while the same being absent for the regular forms makes the identicals of the regular forms quite all-or-none[26]. The analogy formally concludes in the Appendix but the point of it all for the stochastic (econophysicist and macroscopic) and behavioral (of market price and microeconomies) continuities is that the intuitions as behavioral magnitudes extend the *priced* information to perceptible levels through revealed preferences without the formal and explicitly microeconomic choice formulations in a domain involving *large numbers* at both levels.

The general Kantian corollary we gather from [3][27] and [13] is that the synthetic a priori from transcendental magnitudes and the quality of continuity (as the closest possibility to the otherwise and still unreachable thing in itself for the psychic of utility) is either an only possible *phenomenal* magnitude, or we cannot know anything about things in phenomena at all. But the synthetic proposition itself cannot move beyond magnitude intuitions and conceptions which then, put in mathematical formulations, are as sound as the mathematical synthetic a priori truths [12; 33; 2].

The assumption of continuity in the mathematical sense is necessary for the axiomatic consistency of Economic theory with the everyday experience of economic value. Yet this mathematical need is fulfilled through a stylized application of *Axiom of Choice* which again is subject to many similar epistemological, and therefore in the economic sense, behavioral objections as leveled against the assumption of mathematical continuity. This criticism is important to account for precisely because this *continuity* is implied for many axiomatic ideas pervading Economic theory namely, *convexity*, *additivity*, *subadditivity*, *linearity*, *transitivity* and *completeness* [2] [3]. The Kantian solution to this problem, as given in this paper, at the same time implies a vindication of the *Axiom of Choice*. That solution is recapitulated as follows which proves the hypothesis of, and concludes, this paper. If preferences are taken as intuitions in the Kantian sense for the structure of economic phenomenon then the magnitude nature of these intuitions implies continuity and therefore completeness inherently and a priori.

APPENDIX

In Approximation theory for instance, if a simple least squares line is being constructed, the straight

[26] Consider native language acquisition and compare it with learning a new foreign language through its formal rules. The all-or-none represents the latter.

[27] "Constant returns to scale (g) together with additivity (e) implies that Y, is a convex cone with vertex 0. In the case of constant returns to scale, convexity is therefore easily justified. Note that, conversely, "convexity (f), additivity (e), and possibility of inaction (h)" implies "constant returns to scale (g)." Also, this is of less interest, "convexity (f) and constant returns to scale (g)" implies "additivity (e)."

line on itself will never be found as straight as our intuition creates lines of transcendental magnitude: the embodied correction of the error of a less-than-straight-line lies in our intuition of additive-linear-straight line as a transcendental magnitude - and here Brouwer is mentioned to imply that *relativity* is linearity of intuitive continuity with one set of segments competing with the other in a paradigmatically linear game of presence and absence [18][28]. Let's generalize the line further such that the line or linearity of the line is additivity (asymptotic continuity of a stochastic additivity is implied too): the line is additive: let $y = x$ but then it is also additively possible that $y = cx_1 + (1\text{-}c)x_2$, and this additivity implies 'additive separability': $y = cx_1 + (1\text{-}c)x_5$, for x_i , $i = 1 \ldots N$. The additive separability generalizes the line on the whole underlying space: it embodies the sprawl of the space components from which the additivity is possible. In the Kantian sense: the linearity or transcendental magnitude is a 'synthesis' which is possible because of the a priori intuition of space which makes a conception of magnitude possible. The empirical sprawl of data which never rectifies itself into a truly straight line or a perfect synthesis is because of the missing transcendental magnitudes or proportions, or the missing additivity: this missing transcendental magnitude denies phenomenon or complete synthesis of it because of a class of thinking which denies what is generally known as Axiom of Choice (which is equivalent to Zorn's lemma and Well-ordering theorem). For instance, Badiou in *Being and Event* [32] calls everything from a point to a line to a space as "multiples of multiples" with nothing self-evident as the underlying (Badiou formally thus denies phenomenon by implication through objections to the Axiom of Choice). Let's see how, among other examples like *nonnegative price* in Economics, the Kantian transcendental synthesis, through magnitudes and their having the inherent 'quality' of continuity, eats into the objections to the Axiom of Choice (AoC):

Let's take AoC in the form of the equivalent Well-Ordering theorem for simplicity's sake: the theorem states that a set X having a partial order is well-ordered if every chain or sequence in X has a least element:

The proof from the Kantian view: transcendental magnitudes, let's say, about a synthesis a priori[29] [33] of the *'tableness'* of a table is bounded by a least element in every magnitude in the tableness (even though there is somewhere a table of the form of a ball for ludicrousness's sake, but even so it is only *ludicrous* because there is a well-ordered tableness of a table already). Through Zorn's Lemma now: a set X has at least one maximal element if every chain in X has an upper bound: Proof: let's take the tableness of a table again:

There is at least as a whole a tableness of a table that preserves the tableness of a table if every magnitude in the tableness has an upper bound. Completes the proof.

Corollary: Phenomenon as a synthesis a priori always guarantees AoC. Now, a scalar effect in let's

[28] It is certainly facetious to think that *land can move!* The perfect land mobility assumption in Economics is such a transcendental notion and what this assumption actually means is this: a resource like land, for instance, is efficiently utilized if it is employed in its most *economical* use. A perfect land mobility then implies that a tract of land should be employed in agriculture if cultivation offers highest possible return from it, instead of let's say using it for warehousing.

In another sense, continuous price functions imply that it is perfectly *economical* that a raw material produced in and exported from Peru to Australia should be exported as a manufactured good all the way to Brazil. What matters is not the geographical neighborhood but economic *neighborhood* which being transcendental can be unobservant of the geographical distance. So in terms of economic distance it is *Euclidean distance* (continuous price functions implied) that matters instead of the physical or spatial one.

[29] "Thus it [the Axiom of Choice] is a synthetic a priori judgment without which the “theory of cardinals” would be impossible, for finite as well as infinite numbers.”

say a Euclidean space has no meaning unless the synthesis (which means proportions and ratios) of magnitudes is affected by that scale effect. Take a general class of reptiles and amphibians without a scale effect and then just phenomenally increase the scale: we have something like a conception of a dinosaur: actually this same conception made the empirical view on the dino possible instead of the other way around. Comparably, consider Zizek's similar answer to the "dinosaur" question [44]:

"So, to repeat Meillassoux's fossil question in the most direct way: is a dinosaur fossil proof that dinosaurs existed on Earth independently of any human observer, whether empirical or transcendental? If we can imagine transposing ourselves into the pre-historical past, would we encounter dinosaurs the way we reconstruct them today? Before rushing to an answer, we should remember how relative "external reality" is with regard to our point of view, which does not mean that we "created" it, but that out of the infinite complexity of the Real-in-itself a part or slice of reality was selected as correlative to our perceptual apparatus. (Žižek 2012: 647)".

REFERENCES

1.Meiklejohn, J. M. D. (1890). Translated from the German OTI Kant's "Critique of Pure Reason"(Immanuel Kant). P. 132, 23, 26, 166, 78,

Mas-Colell, A. (1995). Michael. D. Whinston, and Jerry. R. Green. *Microeconomic theory*, 1182-1194. p. 12, 943, 182.

3.Debreu, G. (1959). *Theory of value: An axiomatic analysis of economic equilibrium* (Vol. 17). Yale University Press. p. 45, 25.

Starr, R. M. (2011). *General equilibrium theory: An introduction*. Cambridge University Press. p. 207, 325.

5.Fullbrook, E. (2002). An intersubjective theory of value. In *Intersubjectivity in economics* (pp. 287-313). Routledge.

6.Morgenstern, O. (1948). The Demand Theory Reconsidered. *The Quarterly Journal of Economics*, *62*(2), 165-201.

7.Penrose, M. D. (2007). Laws of large numbers in stochastic geometry with statistical applications. *Bernoulli*, *13*(4), 1124-1150

8.Härdle, W., Hildenbrand, W., & Jerison, M. (1991). Empirical evidence on the law of demand. *Econometrica: Journal of the Econometric Society*, 1525-1549.

Rothbard, M. N. (2004). *Man, Economy, and State with Power and Market-Scholar's Edition*. Ludwig von Mises Institute.

10.Terán, P. (2014). Laws of large numbers without additivity. *Transactions of the American Mathematical Society*, *366*(10), 5431-5451.

11.Bingham, N. H., & Ostaszewski, A. J. (2018). Additivity, subadditivity and linearity: automatic continuity and quantifier weakening. *Indagationes Mathematicae*, *29*(2), 687-713.

Bruder, M. (2005). Latent memory: An extrapolation of the structures of memory at work in Kant's" Critique of Pure Reason"(Immanuel Kant).

13.Vind, K., & Grodal, B. (2003). *Independence, additivity, uncertainty* (Vol. 14). Springer Science & Business Media. p. 95-98.

14.Martin, A. (1964). Empirical and a Priori in Economics. *The British Journal for the Philosophy of Science*, *15*(58), 123-136.

Prichard, H. A. (1909). *Kant's theory of knowledge* (Vol. 5). Clarendon Press. p. 115-116, 122.

Matthew O. Jackson and Evan C. Storms∗ (2022), Behavioral Communities and the Atomic Structure of Networks.

Kahneman, Daniel. Thinking, Fast and Slow, p. 368, Farrar, Straus and Giroux, New York.

L. E. J. BROUWER COLLECTED WORKS. pp. 71. Part 1PHILOSOPHY AND FOUNDATIONS OF MATHEMATICS EDITED BY A. HEYTING 1975 NORTH-HOLLAND PUBLISHING COMPANY - AMSTERDAM · OXFORD AMERICAN ELSEVIER PUBLISHING COMPANY, INC. - NEW YORK

Roger Frantz. 15 Jul 2006, Intuition in Behavioral Economics from: Handbook of

Contemporary Behavioral Economics, Foundations and Developments Routledge Accessed on: 01 Nov 2022
https://www.routledgehandbooks.com/doi/10.4324/9781315703879.ch3

Horowitz, Tamara. (1998) Philosophical Intuitions and Psychological Theory
Source: Ethics , Vol. 108, No. 2 (January 1998), pp. 367-385
Published by: The University of Chicago Press
Stable URL: https://www.jstor.org/stable/10.1086/233809

21. Gerard P. Hodgkinson1*, Janice Langan-Fox2 and Eugene Sadler-Smith3, (2008) Intuition: A fundamental bridging construct in the behavioural sciences DOI:10.1348/000712607X216666

23. MASANAO AOKI, HIROSHI YOSHIKAWA Reconstructing Macroeconomics A Perspective from Statistical Physics and Combinatorial Stochastic Processes University of California, Los Angeles, University of Tokyo, Cambridge University Press.

24. Steven Pinker, Words and Rules, the Ingredients of Language, pp. 7. Hardcover first published in 1999 by Basic Books, A Member of the Perseus Books Group Paperback published in 2015 by Basic Books, New York.

26. Deleuze, Gilles. Difference and Repetition Translated by Paul Patton. COLUMBIA UNIVERSITY PRESS. pp. 173. ISBN 0-231-08158-8.

27. Meillassoux, Quentin, AFTER FINITUDE, CHAPTER 1: ANCESTRALITY, https://seoulphilosophy.wordpress.com/2012/03/10/quentin-meillassouxs-after-finitude-part-1-ancestrality/

28. Per A. Anderssona,b , Arvid Erlandssonb, Daniel Västfjälla,b,c , Gustav Tinghöga,d,⁎ 2020, Prosocial and moral behavior under decision reveal in a public environment, Journal of Behavioral and Experimental Economics 87 (2020) 101561 https://doi.org/10.1016/j.socec.2020.101561221 4-8043/ © 2020 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/BY-NC-ND/4.0/).

29. Mitra, Sovan 2009. A Review of Volatility and Option Pricing arXiv:0904.1292v1 [q-fin.PR] 8 Apr 2009.

30. Raymundo M. Campos-Vazquez⁎ Emilio Cuilty♦ 2013. THE ROLE OF EMOTIONS ON RISK AVERSION: A PROSPECT THEORY EXPERIMENT Online at https://mpra.ub.uni-muenchen.de/48280/ MPRA Paper No. 48280, posted 12 Jul 2013 23:27 UTC RM Campos-Vazquez, E Cuilty - Journal of Behavioral and Experimental Economics 2014.

31. Cueva, Carlos & Iturbe-Ormaetxe, Iñigo & Mata-Pérez, Esther & Ponti, Giovanni & Sartarelli, Marcello & Yu, Haihan & Zhukova, Vita, 2016. "Cognitive (ir)reflection: New experimental evidence," Journal of Behavioral and Experimental Economics (formerly The Journal of Socio-Economics), Elsevier, vol. 64(C), pages 81-93.

32. Badiou, Alain, 2005, *Being And Event*, ISBN 0-8264-5831-9, Continuum. p. 225.

33. Taskovic, R. Milan, 2004, Axiom of Choice – 100th Next, Mathematica Moravica. Vol. 8–1 (2004), 39–62.

34. https://www.britannica.com/topic/synthetic-a-priori-proposition

35. Färe, Primont & Weber, *Multiproduct Technologies*, Springer Nature Singapore Pte Ltd. 2022 S. C. Ray et al. (eds.), Handbook of Production Economics, https://doi.org/10.1007/978-981-10-3455-8_5. P. 203.

36. Guyer & Wood, 1998 IMMANUEL KANT Critique of pure reason TRANSLATED AND EDITED BY PAUL GUYER Untverslty of Pennsylvanta ALLEN W. WOOD Yale Untverslty CAMBRIDGE UNIVERSITY PRES. p. 6, 7,179-180, 11,

37. Kirman A P, Measure Theory with Applications to Economics, *Handbook of Mathematical Economics Volume I*. p. 193.

38. Constantinides & Duffie 1996, Asset Pricing with Heterogeneous Consumers, *Journal of Political Economy* 1996.

39. Heidegger, M. 2018, The Question Concerning the Thing On Kant's Doctrine of the Transcendental Principles Martin Heidegger Translated by James D. Reid and Benjamin D. Crowe. This translation copyright © 2018 Rowman & Littlefield International. p. 121-22, 135-36.

40. Hoffman D, The Case Against Reality Why Evolution Hid the Truth from Our Eyes DONALD HOFFMAN. W W Norton & Company, London, New York. p. 80-81.
41. Heidegger M, Phenomenological Interpretation of Kant's *Critique of Pure Reason*, Translated by Parvis Emad and Kenneth Maly, Indiana University Press, Bloomington & Indianapolis. p. 18, 13, 67.
42. Strawson P, The Bounds of Sense, An Essay on Kant's Critique of Pure Reason. Routledge, Taylor & Francis Group, London And New York. p. 38.
43. Muller 2020, The Paradox of the Arche-fossil An Analysis of Meillassoux's Challenge to Correlationism, Idealism included F.A. Muller doi:10.48106/dial.v74.i3.01 Online First F.A. Muller. forth. "The Paradox of the Arche-fossil." Dialectica. doi:10.48106/dial.v74.i3.01.
44. Moshe, Josef. ISSN 1751-8229 Volume Seven, Number Three The Night in which all Dinosaurs wear Nightcaps - A supplement to Žižek's critique of Meillassoux Josef Moshe, Independent, Scholar. International Journal of Zizek Studies.
45. Mughal, Adil Ahmad (2023) THE MORAL THEORY OF VALUE; A GIFT LEMMA & HYPOCRISY THEOREM Department of Economics, FCCU, Lahore
adilmogul@live.com Received: 03 November, 2023 Revised: 29 November, 2023 Accepted: 05 December, 2023 Published: 18 December, 2023 IJCISS, Vol 2, Issue 4, 2023.