
FROM BETWEEN MARX AND ARENDT TO EINSTEIN LABOUR THEORY OF VALUE REVIVED IN SCIENTISM

YueQian Liu^{1*} and HongYu Yao²

¹ *Academy of Overseas Chinese Studies, Jinan University, School of International Studies,
HuangPu Avenue West 601, Guangzhou, 510632, P.R. China*

² *Beijing Normal University, Faculty of Education, HaiDian District, Beijing, 100875, P.R. China*

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Abstract

This article presents a metaphysical revision of Marxian labour theory of value, enlightened by two great thinkers of the 20th century who were once colleagues in Princeton University: Einstein and Arendt. By exploring Einstein's potential impact upon Arendt with relativism, we open the concept of 'social relativistic spacetime' from a metaphysical point of view, which is inferred from Theory of Relativity. Thus metaphysical reinterpretations of value, labour, and labour theory of value are acquired in scientism. Finally, we record a private dialogue to discover the theoretical dilemma CCP is in.

Keywords: theory of relativity, metaphysics, social relativistic spacetime, labour theory of value

No one can sit at the bedside of a dying child and still believe in God.
(Bertrand Russell)

1. Introduction

In the era of post-Marxism, labour theory of value has been challenged repeatedly for its insufficiency in accounting the value of growing variety of non-material labour.

From historical studies, Decailot [1] criticized subjective value of labour, Park [2, 3] discovered the self-contradictions of the critics (e.g. Eugen von Bohm-Bawerk and John Roemer) of Marxian labour theory of value, Paul Kockelman [4] explained why two use-values can have the same exchange-value in terms of labor-power and personhood, and Arthur Diquattro [5] argued that in the early North American colonies, simple commodity production was actually a 'moral economy', in which the labour theory of value fails to explain the market prices at which commodities exchange economy, so the 'law of value' and the

*E-mail: y.q.liu.1974@gmail.com

labour theory are theoretically suited to explain exchange ratios only in capitalism and in no other mode.

Theories need to be patched: a number of authors [6-13] broadened the concepts of value and use-value illustrated by state, domestic, and women's labour, etc., moreover, Andrew Brown [14] answered why labour is the substance of value by discovering two philosophical threads in Marxian arguments: that value is the intrinsic 'content' making commodities exchangeable, and it employs the thread of realism, meanwhile, abstract labour is the emergent 'social substance' of value, and it employs the thread of dialectics.

Being logical positivists, Kahane [15] tried to measure the value of simple labour and skill labour respectively by mathematical method, Theodore Mariolis [16] constructed a measure of price-labour value deviation that leads to an algebraically simple expression and provides a transparent separation between the effects of income distribution and of the technical conditions of production, Cesar Sanchez and Maximilia Nieto Ferrandez [17] discussed a reformulation of the concept of labour value that aims to be more coherent with the very foundations of the labour theory of value through an empirical approach to the Spanish case, as well as Mariolis and Tsoulfidis [16] found prices of production coming out of labour values are not too sensitive to fit the type of measurement used for their evaluation of input-output data of the Japanese economy.

Jean Baudrillard reviewed the history of Marx's concept of 'use-value': "With the concept of labour, Adam Smith attacked the Physiocrats and the exchangists. In turn, Marx deconstructed labour into a double concept of labour power commodity: abstract social labour (exchange value) and concrete labour (use value)." [18]

Clearly, Baudrillard had confused the concepts of value and exchange value: the latter is the access from value to use-value, and is neither of them. Such a misreading is interesting and inspiring: why Baudrillard erred? After reading this whole article, the readers, who have realized the unitarity of social events and natural entities, will get an answer of themselves.

The reason why Marx did not give 'value' a consistently precise definition in line with historical materialism, in our opinion, is one of the innate paradoxes in his theory. Marx himself did not realize his *value's* metaphysically reformative succession to Saint Augustine's *goodness* actually betrayed pure materialism he kept preaching. Both being invisible measure, *goodness* is created by almighty God while *value* is created by omnipotent labour.

Recently, Hardt and Negri [19] had built an enlarged definition of labour in their *empire*-struggling to restore the sovereign of labour theory of value, and did achieve success to some extent despite excessive emotional analysis. Their mending now has become the most important straw for the new left to grab at. But their methodology is mostly empiric

In this paper, by suggesting that all social activities generate their own spacetime, we challenge the traditional point of view that time and space, whether natural or social, are absolute respectively and has nothing to do with

each other. Labour, together with value of labour, will be reinterpreted according to our metaphysics inferred from Einstein's theory of relativity. In the appendix, we will go back to social reality by addressing a theoretical dilemma on Marxian labour theory of value in which Chinese Communist Party is.

2. Revisit labour theory of value

It is well known that Aristotle, together with Saint Thomas Aquinas hereafter, held that value was created by the expenditure of labour with pertinence to utility and skills. Such view takes into account the relatively subjective perspective and conforms to reality better, but soon later it was ignored.

In *An Inquiry into the Nature and Causes of the Wealth of Nations*, Adam Smith developed embryonic labour theory of value [20]:

“The ground expenses of the landlord, however, together with the original and the annual expenses of the farmer, are the only three sorts of expenses which in this system are considered as productive. All other expenses and all other orders of people, even those who in the common apprehensions of men are regarded as the most productive, are in this account of things represented as altogether barren and unproductive.

Mercantile stock is equally barren and unproductive with manufacturing stock. It only continues the existence of its own value, without producing any new value. Its profits are only the repayment of the maintenance which its employer advances to himself during the time that he employs it, or till he receives the returns of it. They are only the repayment of a part of the expense which must be laid out in employing it.

Artificers and manufacturers in particular, whose industry, in the common apprehensions of men, increases so much the value of the rude produce of land, are in this system represented as a class of people altogether barren and unproductive.....The expense, therefore, laid out in employing and maintaining artificers and manufacturers does no more than continue, if one may say so, the existence of its own value, and does not produce any new value. It is therefore altogether a barren and unproductive expense. The expense, on the contrary, laid out in employing farmers and country labourers, over and above continuing the existence of its own value, produces a new value, the rent of the landlord. It is therefore a productive expense.

The labour of artificers and manufacturers never adds anything to the value of the whole annual amount of the rude produce of the land. It adds, indeed, greatly to the value of some particular parts of it. But the consumption which in the meantime it occasions of other parts is precisely equal to the value which it adds to those parts; so that the value of the whole amount is not, at any one moment of time, in the least augmented by it.”

Some readers might argue that the main point of the quote above cannot be ascribed to Smith himself, because it is in fact one in which Smith is criticizing the views of Jean-Baptiste Colbert and the mercantilists. They do

have reason, but the topic here is not economically historical, we are more interested in something ontological. Then view on the value of labour in the extract above is nothing but developed trichotomy (i.e. les propriétaires, les steriles, et les paysans qui est la seule productive) in ‘tableau économique’ founded by François Quesnay, a representative figure of the French Physiocrat [21]. Actually it is a profound logical schema that influenced the historical process of some nations. In the appendix we will use a dialogue to illustrate why most agricultural countries such as Russia and China had chosen Communist Manifesto as their political Bible in first half of the 20th century, and, why China still persists in Marxian labor theory of value that is obviously unsuitable for the knowledge economy in the early 21st century.

At the beginning of *On the Principles of Political Economy and Taxation*, David Ricardo wrote: “*The value of a commodity, or the quantity of any other commodity for which it will exchange, depends on the relative quantity of labour which is necessary for its production, and not on the greater or less compensation which is paid for that labour.*” [22]

Please pay great attention to the word ‘relative’ in the phrase “the relative quantity of labour”, which is ignored or misread by Karl Marx [23]:

“A use value, or useful article, therefore, has value only because human labour in the abstract has been embodied or materialised in it. How, then, is the magnitude of this value to be measured? Plainly, by the quantity of the value-creating substance, the labour, contained in the article. The quantity of labour, however, is measured by its duration, and labour time in its turn finds its standard in weeks, days, and hours.

.....The labour, however, that forms the substance of value, is homogeneous human labour, expenditure of one uniform labour power.....The labour time socially necessary is that required to produce an article under the normal conditions of production, and with the average degree of skill and intensity prevalent at the time.....

We see then that that which determines the magnitude of the value of any article is the amount of labour socially necessary, or the labour time socially necessary for its production. Each individual commodity, in this connexion, is to be considered as an average sample of its class. Commodities, therefore, in which equal quantities of labour are embodied, or which can be produced in the same time, have the same value. The value of one commodity is to the value of any other, as the labour time necessary for the production of the one is to that necessary for the production of the other. “As values, all commodities are only definite masses of congealed labour time.”

Clearly Marx gave the value of labour a deterministic definition that can be measured by duration of labour time. Some may argue that Marx’s lengthy discussion of market exchange in notes collected as *Theories of Surplus Value* had actually already taken social space into consideration. Ignorantly this point of view has no idea of what time really is.

Is time absolute? Indeed it is the case in Newtonian mechanics, but not the case in Einstein's relativistic mechanics. As the theory of relativity describes the nature more accurately, also similar approach may reveal some cardinal principles of human social activity.

We argue that since every social activity including labour is an event inside Minkowskian 4-dimensional spacetime continuum, 'the labour time socially necessary' should not be counted alone without considering the variation of other social spatial dimensions. That is Achilles' heel of Marxian labour theory of value.

3. Revisit space, time, and Theory of Relativity

Recently at the cosmological and psychological levels, Peter Baofu [24] declared 'floating consciousness' and 'hyper-spatial consciousness' as a climax in the revolution of consciousness, and then extended his relativistic views to several branches of social sciences. Baofu's discourse has sparked our interest to revisit space, time, and theory of relativity because of its thick colour of theology.

Based on Euclidean geometry, Isaac Newton [25] developed *Scholium* of time, space, place and motion:

I. *Tempus Absolutum, verum, et mathematicum, in se et naturâ suâ sine relatione ad externum quodvis, æquabiliter fluit, alioque nomine dicitur Duratio: Relativum, apparens, et vulgare est sensibilis et externa quævis Durationis per motum mensura (seu accurata seu in æquabilis) quâ vulgus vice veri temporis utitur; ut Hora, Dies, Mensis, Annus.*

(Absolute, true, and mathematical time, of itself, and from its own nature, flows equably without relation to anything external, and by another name is called duration: relative, apparent, and common time, is some sensible and external (whether accurate or unequable) measure of duration by the means of motion, which is commonly used instead of true time; such as an hour, a day, a month, a year.)

II. *Spatium Absolutum, naturâ suâ sine relatione ad externum quodvis, semper manet simile & immobile: Relativum est spatii hujus mensura seu dimensio quælibet mobilis, quæ a sensibus nostris per situm suum ad corpora definitur, et à vulgo pro spatio immobili usurpatur.....*

(Absolute space, in its own nature, without relation to anything external, remains always similar and immovable. Relative space is some movable dimension or measure of the absolute spaces; which our senses determine by its position to bodies; and which is commonly taken for immovable space.....)

III. *Locus est pars spatii quam corpus occupat, estque pro ratione spatii vel Absolutus vel Relativus.....*

(Place is a part of space which a body takes up, and is according to the space, either absolute or relative.....)

IV. *Motus Absolutus est translatio corporis de loco absoluto in locum absolutum, Relativus de relativo in relativum.....*

(Absolute motion is the translation of a body from one absolute place into another; and relative motion, the translation from one relative place into another.....)

.....*Possibile est, ut nullus sit motus æquabilis quo Tempus accuratè mensuretur. Accclerari et retardari possunt motus omnes, sed fluxus temporis absoluti mutari nequit.....*

(.....It may be, that there is no such thing as an equable motion, whereby time may be accurately measured. All motions may be accelerated and retarded, but the flowing of absolute time is not liable to any change.....)

.....*Nam tempora et spatia sunt sui ipsorum et rerum omnium quasi Loca. In Tempore quoad ordinem successionis; in Spatio quoad ordinem situs locantur universa.....*

(.....For times and spaces are, as it were, the places as well of themselves as of all other things. All things are placed in time as to order of succession; and in space as to order of situation.....)

Considering the scientific level of the 17th century, we can easily understand such ideas of absolute time and absolute space. Nevertheless, even Newton himself perceived the twoness of time and space: absolute and relative, or in other words to some extent, objective and subjective. Being a rebellious overture of Euclidean geometry, dichotomy of time, space, and motion is the starting point of this article.

Since absolute time is the natural corollary of absolute space that Euclid first postulated, it is good to review the rising of non-Euclidean geometry (Figure 1). In 1820, Nikolas Ivanovich Lobachevsky successfully challenged the fifth postulate, i.e. Parallel Postulate, in Euclid's *Elements* with the proof that there exists hyperbolic geometry, a completely different description of space to human common sense. Later, Georg Friedrich Bernhard Riemann developed elliptic geometry in 1854, and then in 1907 Hermann Minkowski developed a united 4-dimensional (3 real coordinates representing space and 1 imaginary coordinate representing time) entity being called 'Minkowski spacetime'. It is a really profound discovery because it provides mathematical foundation for Einstein's theory of relativity, so we must brief it in advance.

Formally as Figure 2 shows, being the simplest example of a pseudo-Riemannian manifold, Minkowski space, denoted as $R^{1,3}$, is a four-dimensional real vector space being equipped with a non-degenerate, symmetric bilinear form signified as $\{-, +, +, +\}$, and clearly, is a pseudo-Euclidean space. Notably because a Minkowski space has one timelike dimension, the symmetry group of a Minkowski space is the Poincaré group.

Above all, elements of Minkowski space are called 'events'. It is the basic unit of the world we live in, and the spacetime interval between two events in Minkowski space is space-like, time-like or light-like (null to the material world we live in). To simplify our discussion, we consider such 3 kinds of intervals as one: measure of spacetime.

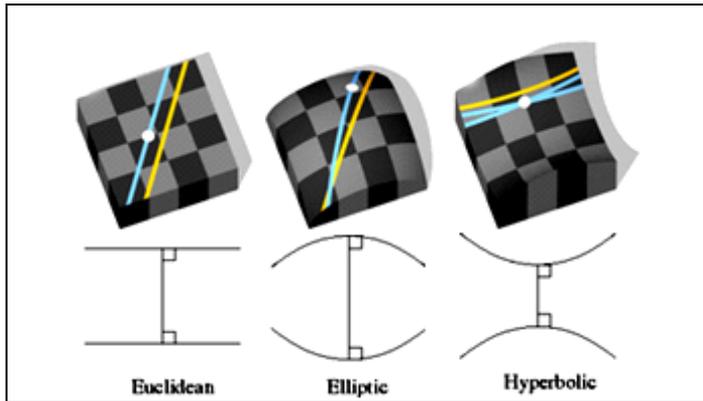


Figure 1. Euclidean, elliptic and hyperbolic geometry.

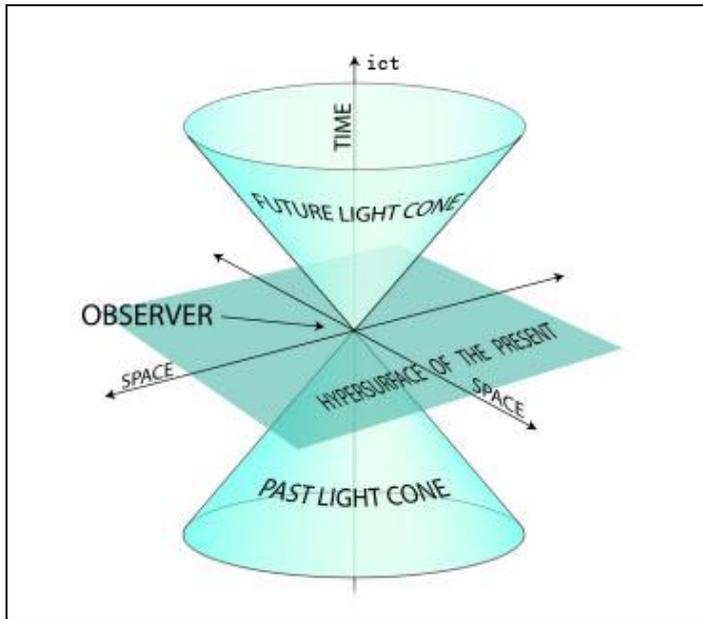


Figure 2. Time dimension and 2 of the 3 spacelike dimensions of Minkowski space.

Because Minkowski space is the most suitable for human habitation, our attention was paid to it instead of higher-dimensional space based on modern science, such as String theory or M-theory.

It is worth mentioning that Franz Clemens Honoratus Hermann Brentano had a very brilliant comment, which we would like to share with readers in demonstrating the original inspiration of this article, on the relationship between time and space:

“Briefly: a temporal continuum is a continuum of such a kind that it exists according to a single boundary which belongs to the continuum even though the two remaining parts thereof do not exist and supplies for these two parts the boundary in opposite directions..... The boundary according to which the

temporal continuum exists can be punctual, but it can also be extended, indeed in several dimensions. In the case of bodies, which do after all exist also as temporal, the boundary is three-dimensional and a boundary of a four-dimensional continuum of which it bounds one part as final boundary, another part as initial boundary, while other boundaries of the same four-dimensional continuum which are equally to be thought of as three-dimensional have likewise bounded one part of the continuum as final boundary and have constituted the initial boundary in relation to another. Yet other, also three-dimensional boundaries will bound one part of the four-dimensional continuum as final boundary, another part as initial boundary. This four-dimensional temporal continuum can manifest itself as materially different in every one of its three-dimensional boundaries (each of which is such as to exist at the same time in all its parts), for example when a body moves from one place to another. But it can also manifest itself as materially completely undifferentiated in its various three-dimensional boundaries which are at the same time or were at the same time or will be at the same time in all their parts. Things are then such that, in so far as matters are revealed to our presentations, the same thing which has come to an end in any given past temporal point also begins again anew, so that it has renewed itself, something we express by saying that it has continued to exist, it has maintained itself in being, it has remained the same.....The distances which come to appearance therefore manifest themselves in relation to the measure of their boundary as being determined not by differences of material attributes but rather by the magnitude of the continuous amount of endings and beginnings. This is the case no matter whether a material variation is also given, or whether it is one and the same thing (so far as appearance is concerned) that has executed, executes and will execute this process of self-renewal in simultaneously ending and beginning with the given measure of frequency of iteration.” [26]

Clearly, despite his equivocal epistemological standpoint, Brentano has an explicit explanation of the flow of sensations within 4-dimensional, ‘*quasi-spatial*’ and ‘*quasi-temporal*’ [27] world. In this way, the measure, together with the plausible separation, of absolute space and absolute time was challenged.

Nevertheless, meditations on time and space are neither scientists’ nor philosophers’ patent. We can find out similar explorations more intuitive in works of fine arts.

In 1907’s *Les Femmes d’Alger (O. J. Version O)*, Pablo Picasso had abandoned perspective in 2-dimensional plane and had given birth to Cubism that depicts the subject in a greater context from a multitude of viewpoints in 3-dimensional space. In 1912’s *Nu Descendant un Escalier N°2*, Marcel Duchamp tried to project a 4-dimensional space-time scene onto an oil painting within 2-dimensional space.

In 1953’s *Relativity*, Maurits Cornelis Escher depicted one world, in which 3 sources of gravity impossibly appear in the same spacetime $R^{1,3}$ and each is orthogonal to the other two, onto the lithograph print. This paint, interestingly, together with 1943’s *Reptiles* and 1961’s *Waterfall*, reveals one

supposition: any interpretation in 3-dimensional spacetime $R^{1,2}$ cannot fully interpret the truth of 4-and-above-dimensional $R^{1,k}$, ($k \geq 3$) scene. Similar inductive inference is that through the rationality in low-dimensional spacetime we cannot imagine the rationality in high-dimensional spacetime, but can vice versa.

Such conclusion sounds self-evident despite lack of logical evidence.

We will make it reasonable by postulating that rationality comes from the sufficient information exchanges within one community. In a community within 3-dimensional spacetime $R^{1,2}$, as graph theory proves, the number of individuals that have established the injective interactions of information between any 2, cannot exceed 4, compared with infinite in communities within 4-and-above-dimensional spacetime $R^{1,k}$, ($k \geq 3$). So we can see little rationality in 3-or-below-dimensional spacetime $R^{1,k}$, ($k \leq 2$).

More interestingly, by such reasoning, we could infer that the rationality within high-dimensional spacetime is much more than the rationality within low-dimensional spacetime. All creatures living in high-dimensional spacetime $R^\alpha = R^{i,j}$, ($\alpha = i+j$), if exist with whatever forms, are much wiser and much abler, to the extent that all creatures living in low-dimensional spacetime $R^\beta = R^{i',j'}$, ($\beta = i'+j'$, $i' \leq i, j' < j$) could not imagine, than all creatures living in R^β . When $\alpha \rightarrow \infty$, the creatures living in R^α are no longer creatures, for they cannot be created, so they could be nothing else but the creator of, and thus the Other to, every creature living in any definite-dimensional spacetime. Naturally, we name such creator the Other.

Many may wonder the necessity of the prolix discussion in this section, but it worth devoting a lot to explain why laws in the natural Minkowski-Einstein geometry, are still operative in the social domain. There is no essential difference between matter and mind for they are created by the Other with a single law.

4. Vita activa disposed by the other

It must be noted that the word ‘the Other’ we had chosen does not mean exactly the same as Emmanuel Levinas rendered: “*The absolutely other is the Other*” [28], or in his original words: “*L’absolument Autre, c’est Autrui*” [29].

In Renée D.N. van Riessen’s view, Levinas’ kenosis was based on his hermeneutic argument that due to his ethical experience’s playing the decisive role in the being’s coming into being, man should be seen as a place of ‘God’, a place where the infinite attains to finite existence [30].

Be van Riessen’s conclusion tenable, we, somewhat ardent devotees of Platonism, could hardly agree Levinas’ vulgarization of the Other. We must confess that ‘the Other’ in this article was stolen from Levinas, but its true

meaning is closer, not equal, to Platonic 'idea'. Primarily, there are 4 postulates about 'the Other':

1. Everything we know is not the Other;
2. Anywhere to the Other is here;
3. Anytime to the Other is now;
4. Neither being nor non-being, not to mention material or ideal, can the Other be judged as.

Therefore, the Other in our theory is not that we know, but that we do not know. The Other is never-observable but inferable. The Other creates, but cannot be created.

Logically, if we adhere to the blindly worship of 'science', the Other must reside in the infinite-dimensional spacetime created by itself because of its freely access to any definite-dimensional spacetime in which it acts as 'the Other' to any beings and any non-beings. Inappropriately speaking in scientism, the Other can be understood as, in part, the singular point accessible to any definite-dimensional spacetime.

Notably, even though her analytic trichotomy of *Vita Activa* does lend us a powerful microscope to inspect human active life, "her conclusion that Marx had fatally misconceived political action in terms of a mixture of the other human activities she calls work and labour" [31] indicates that Arendt still could not really understand that Einstein's theory of relativity is much more than just an epoch-making discovery in natural sciences, but also a recall of the original effort made by Protagoras of Abdera in combining ethic, epistemology and ontology for the first time in the recorded history of Philosophy.

Inevitably, our belief in logic leads us to scholasticism based on modern science without any suspense. Logically we cannot disprove the 4-and-above dimensional space in which some beings exist as well as the universal laws that Scenes in natural relativistic spacetime and Scenes in social relativistic spacetime share.

Unlike Arendt's overly optimistic view, we insist that no 'Vita', belonging to being with substance (a container is needed to load it and hence boundary emerged), could be fully 'Activa', because all kinds of labour (including men's labour, work, and action in Arendt's words) started by subject's intentionality following the Other's will on human's destiny and are disposed by the Other.

By stating "man is the measure of all things" [32], Protagoras elevated the power of subject to the ultimate force of all knowledge we might achieve and of all judgments we probably make. So compelling is the argument that Theaetetus put forward his doctrine that "perception is knowledge" [32], which had given rise to both empiricism and idealism that finally, in part, spawned Marxism and existentialism.

Interestingly, a seeming paradox arose that Protagoras believed that virtue, however, "can be taught, both by individuals and by the State" [33], but it could be, in fact, removed by carrying relativistic agnosticism out through to the end of his philosophy. Hume, an outstanding disciple of Protagoras spanning a huge span of space and time, might be a very right illustration, so did Einstein.

In general, labour, in our opinion, is neither the only creator of value that “manifests itself by making its product a use-value” [23, p. 48] nor “the activity which corresponds to the biological process of the human body” i.e. “life itself” [31, p. 7], but motions within events in accordance with the Other’s will.

5. The dogmatism of Marx and Arendt

In our opinion, Aristotle is not only a rebel to Plato, but a red herring leading human astray from the real truth. Aristotle could not believe there are some truths beyond human experiences and comprehension. Unfortunately, we deem Marx is an Aristotelian in essence because of his incapability of understanding the unity of time and space as well as the common features of matter and mind.

This may be attributed to Marx’s epistemological preferences. As a case in point, in his later years around 1880s, Marx [34] focused on differential calculus thus implying his own *Weltanschauung*: being the most independent variable, time is likely to be the most objective tool to measure every event in the static space we live in. Probably this point of view did construct his implicit intuitionism and his unique historical materialism which had laid the foundation of his whole theory, and, which could not withstand logically strict scrutiny.

Frankly, Marx is far from an expert in Mathematics and other natural sciences, so that his theory stands few inspections of the rapid development of productive forces, of production relations, of economic base and of superstructure motivated by breakthroughs in Science and technology.

Overall, maybe due to the poverty throughout his life and his preference to the micro perspective (e.g. too figurative understanding of infinitesimal as well as surplus value), Marx is more like a radical warrior of proletariat than a rigorous philosopher for all mankind.

Hannah Arendt recognized the complexity of human’s active life that Marx refused to acknowledge, so that she addressed her innovative analytic trichotomy to which political space can apply: private realm, social realm and political realm. It goes without saying that the discovery of three types of realm, i.e. the spacial dimension of ‘*Vita Activa*’, is Arendt’s most outstanding contribution to political philosophy. Later, we will show that in our relative theory of human’s life, all kinds of *Vita Activa* are no longer isolated categories, and that will integrate into ‘labour’ as one political continuum following the Other’s will. Philosophically the division of labour is helpless in discovering the nature of human will, not to mention the Other’s will.

Many noted the decisive role of Martin Heidegger and Karl Jaspers in breeding Arendt’s political philosophy, but we audaciously give our arbitrary assumption that it was Albert Einstein, not anyone else, acting as the midwife ultimately giving birth to the spatial perspective of Arendt’s practical philosophy for “men, not Man, live on the Earth and inhabit the world”.

To reveal this, let us recall the philosophy of Hume, Kant and Mach.

As a strong empiricist, David Hume pioneered that if causality is in doubt, we could no longer still believe in the seemingly objective truths of the events seen to demonstrate inside our world. Hence, “*reason is, and ought only to be the slave of the passions.....A passion is an original existence, or, if you will, modification of existence, and contains not any representative quality, which renders it a copy of any other existence or modification.*” [35].

Hume’s greatest contribution, the meaningful revival of scepticism founded by Pyrrho of Elis, did flash Immanuel Kant going into the transcendental idealism as inevitable deduction of the first antinomy about space and time. All these suspicions of previous vanguards encouraged Ernst Mach developed a philosophy of science based on logical positivism. Mach argued that we should completely eschew absolute space and time in favour of relative motion in understanding his principle: local physical laws, such as inertia and gravity, are determined by the large-scale structure of the Universe.

Einstein indulged in Humean and Kantian philosophies when he was a teenager and soon became a proponent (an opponent later) of Machism. Another thinker must be outlined in understanding Einstein is Henri Poincaré. In 1902, Poincaré wrote:

1. *There is no absolute space, and we only conceive of relative motion; and yet in most cases mechanical facts are enunciated as if there is an absolute space to which they can be referred.*
2. *There is no absolute time. When we say that two periods are equal, the statement has no meaning, and can only acquire a meaning by a convention.*
3. *Not only have we no direct intuition of the equality of two periods, but we have not even direct intuition of the simultaneity of two events occurring in two different places.....* [36]

Clearly, it was in his following the critical approaches of German classical philosophy when Einstein had realized there is no substantial difference between gravity and space-time’s warping. Scientifically, that is the core of relativity and the first light of modern relativism. For instance, while flying and overlooking at high altitude, we used to feel things in a vast basin seem to be attracted by the centre point and are moving in line with some certain circular, elliptic or Archimedes spiral orbit approximately.

There are three turning points within Arendt’s mental life: the first is the disillusion of mortal love after her leaving Heidegger for Jaspers pursuing her Ph.D. on *Der Liebesbegriff bei Augustin*; the second is her critiques on totalitarianism after her refuging from continental Europe to U.S.; the third is the rebellion against *Karl Marx and the Tradition of Western Political Thought* through ousting the dictatorial dimension of time and disinterring the obscured dimension of space. Indeed, the formation process of Arendt’s political philosophy had witnessed a never-ending addition of critical thinking, human will and moral philosophy credited to Kant’s Three Critiques. We contend that Hannah Arendt benefited more from Kantian critical philosophy than the conventionally considered existentialism.

Interestingly, as identified above, Saint Augustine is Arendt's first pilot onto her philosophical route. Augustine argued that time has no meaning apart from the mind in that it is created by God living in never-ending present, and also for the sake of it, human measure of time is no more than a subjective impression in the interior life. It might be the starting point of Augustine's sense in relativism on morality that had given Arendt the initial inspiration of relativistic perspective on 'Vita Activa'.

Being critics in their respective academic arenas, both Einstein and Arendt are disciples of scepticism needless to argue. Another fact must be noted: Einstein announced his groundbreaking discovery in the early 20th century while Arendt published her innovative works in the middle of 20th century, plus, Einstein had emigrated to the U.S. and became a professor at Princeton University in 1933 while Arendt had fled to U.S. in 1941 and had won the equal position at Princeton University in 1959. Considering relativity's tremendous influence on the whole intellectual climate, it is dubious that Einstein had no effect on Arendt. On the contrary, in her representative books (1951's *The Origins of Totalitarianism*, 1958's *Human Condition*, 1963's *Eichmann in Jerusalem: A Report on the Banality of Evil* and *On Revolution*, and 1978's posthumous *The Life of the Mind*), Arendt's growing interest on spatial dimension of social life can easily be detected. Despite spirit of phenomenology in Arendt's thoughts, we contend that she was deeply affected by Einstein's Theory of Relativity, which may not be realized by others even herself.

Disappointingly, for all dogmatism of Marxism she had criticized, Arendt set up her own dogmatism, which dissevers the unity of natural relativistic spacetime and social relativistic spacetime, after she had abandoned the arbitrariness of time and welcomed the democracy of space. Eventually Arendt's dogmatism of social space, by rejecting science and technology into human social realm in part, harmed and harms human more than Marxian dogmatism of natural time did and does.

Being a sweeping revolution in political philosophy, Arendt's theory based on social space still needs rigorous justification. Henri Lefèbvre [37], together with Jürgen Habermas [38], is the most representative figure who had intended to perfect her theory. Yet each had failed to notice the shadow of social time and the relativism within social event.

Some might argue that Marx's repeated use of the phrase 'socially necessary' in the definition of the value of labour already implies the spatial consideration thus undermines our argumentation. Such banal misconception merits no refutation because it disregards that social action is essentially psychomotor and obeys the law, probably in accordance with relativity within social spacetime, of particular social dynamics. Therefore, it is beneficial to apply relativism to political philosophy and to evolve the concept of social relativistic spacetime from Arendt's perspective on social space.

6. Extension of scene in social relativistic spacetime as value of labour

Ground is essential to us human being. In proving the transformation of surplus profit into ground-rent, Marx argued: “*We assume, then, that agriculture is dominated by the capitalist mode of production, just as manufacture is, in other words, that agriculture is carried on by capitalists, who differ primarily from the other capitalists only through the element, in which their capital and the wage-labor set in motion by this capital are invested.*” [39] “*The purely industrial character of labor on the one side is offset by the purely agricultural one on the other. This purely agricultural labor is by no means natural, but is rather a product, and a very modern one at that, which has not yet been acquired everywhere, of social development, and it corresponds to a very definite stage of development.*” [39, p. 742]

From his purely materialist point of view, Marx accounted industrial labour as mechanical expansion of agricultural labour, because both products are material use-values, or usually commodities with exchange-value, and he thought that capitalist mode of production is driven by capital only so that ground-rent can be measured and paid by money. What is more, actually Marx obscured the concept of ground-rent by its unnecessary division into absolute part and differential part, plus dividing the latter part into Form No. I and Form No. II.

All these remarks uncover the consistent logical paradox in Marxism: Marx used to reject something, e.g. metaphysical cause of human history, but meanwhile demonstrated from other angles the inevitability of its existence - e.g. almighty ‘productivity’. Labour is another case: although being declared as the only productive source of value, it cannot finish the production without “*a definite interrelation in social production belonging to a definite historical formation of society*” [39, p. 948]: *Capital*. Hence it is not so much a critique of capitalism but a perfect defence of it, in that Marxian purely objective separation of social space and social time had built the capital market into the most deceptive political lie by autocratic using the exchangeability of social time to shield the non-commutativity of social space. As a result, vulgar economical determinism, the most effective moat for the bourgeois, becomes a certainty of common sense that should not have been accepted by the proletariat.

Indeed, the ground provides not only place for material, both agricultural and industrial, production, but also place for intellectual production and reproduction. Since we maintain that every activity is driven by intentionality, dependent or independent of substance, intellectual production and reproduction following the Other’s will, then, are prior to material production, and probably, do produce value, and produce no less, often much more, value than material production. So the enlargement of the concept of ‘labour’, as discussed previously, becomes inevitable if we renounce the recurrence of Kantian ‘value’ and hold the notion that value should be defined in terms of labour as Marx did.

Let us return to the topic on ground-rent.

It is easy to see that the ground-rents differ according to the measure of the labour-onto-ground's extension of Scene in social relativistic spacetime. For instance, differential rent No. I comes from fertility that can be interpreted as saving of plowing time, and location that can be interpreted as saving of shipping time, both can also be interpreted as enlargement of naturally formed extension of the Scene in social relativistic spacetime, i.e. labour stored by all ancestors including non-human. Likewise, differential rent No. II is artificially formed by additional stored labour of the investors and farmers in our time, rather than capital invested onto the ground as Marx misread. Absolute ground-rent, for the same token, can be treated as spatial D-value between the total diachronic, human and non-human, labour-onto-ground and the current synchronic, human, labour-onto-ground within one production cycle. The similar analysis can be applied to lot rent, mining rent, and price of land with few difficulties.

Consider John Langshaw Austin's famous 'words' with which 'things' were done: "*I name this ship the Queen Elizabeth*" [40].

In our opinion, given the same ship in the same location, there might be at least 2 kinds of labour in these 'words' according to various Scenes:

1. At a family party, Princess Margaret presents a ship to Queen Elizabeth II as a birthday gift. Then the queen utters above 'words'. The Scene remains in the private social relativistic spacetime.
2. President Obama visits London, and he bestows a ship on Queen Elizabeth II in the Victory Day of World War II. Then the queen utters above 'words'. The Scene extends into the public social relativistic spacetime.

Clearly, the value of the labour in Queen Elizabeth's uttering "*I name this ship the Queen Elizabeth*" in Scene 1 is much smaller than that in Scene 2.

Despite general acceptance of social space, many may question the existence of social time derived from the analogy between natural spacetime and social relativistic spacetime. To address this question, let us look at a daily conversation:

A: Do you have time?

B: Absolutely not! Do you have the time?

Both A and B have natural time, whether an unspecified period or a specific point it is. They all know about that, but still raise such preposterous questions. Why?

Logically, there is only one possibility: the 'time' in the conversation is not the time in the natural world. Since the conversation took place in social space, it would be reasonable to name this kind of 'time' social time. Clearly, social time, which provides capacity of intentionality towards social being, could not be isolated from social space, compared with natural time's nearly successful isolation from natural space in Newton's space and time absolutely static.

Here is an invented scene to reveal the discordance of natural spacetime and social spacetime:

I am the mayor of Guangzhou city.

I am woke up by my wife in the morning, and then get up. (I am in private social relativistic spacetime.)

After breakfast, my new driver picks me up to the municipal government. We chat in the car while he is driving. (My intentionality force me transfer my social relativistic spacetime from private to public.)

In the mayor's office, I begin to scrutinize the documents. Time flies unwittingly. (I am in public social relativistic spacetime.)

I receive a phone call from my daughter studying in Peking University. She keeps crying for being crossed in love. It takes me a long time to console her. (My intentionality force me transfer my social relativistic spacetime from public to private.)

After lunch, I met with several African leaders and sign a series of contracts. (I am in public, or political more accurately, social relativistic spacetime.)

After dinner, I go home. (My intentionality force me transfer my social relativistic spacetime from public to private.)

I tell my wife about daughter's broken romance. (I am in private social relativistic spacetime.)

Lying in bed, I watch evening news on TV. (My intentionality force me transfer my social relativistic spacetime from private to public.)

I turn off the light. I kiss my wife. I have desire, so does she..... Damn it! Erectile dysfunction reappears. (I am in private social relativistic spacetime.)

By recalling some scenes in Marc Dorcel's movies I erect. (My intentionality force me transfer my social relativistic spacetime from private to public.)

I finish the intercourse and fall asleep. (I am in private social relativistic spacetime.)

We must make it clear that value, in our opinion, refers no longer to the amount of labour. In human spacetime $R^{1,3}$, value refers to the extension of Scene in social relativistic spacetime set by the Other, which will be discussed later. Some values could be measured approximately while others could not because social space and social time fuse even more prominently than natural space and natural time do.

Clearly, the value of labour differs according to the reach of the extension of Scene within social relativistic spacetime. While the extension of Scene reaches to the public social relativistic spacetime, the value of labour within Scene is much bigger than the extension limited to private social relativistic spacetime. 'Action', in Arendt's words, naturally owns the biggest value, compared with 'labour' and 'work'.

In order to show the validity of our revision, 3 typical cases below, which is difficult to explain with existing labour theory of value, will be reinterpreted briefly.

Case 1: Prostitution

Prostitution, the oldest labour for human only, remains a mystery to social scientists. Because of its continuous heritage of communal marriage, we contend

that prostitution is a reaction to hierarchy and private property. It is better to regard prostitution as the last revolutionary base of public ownership instead of the evil of private ownership. Since prostitution never occurs within legal family, it is the labour of public spacetime. Occasionally, prostitution extends its extension of Scene in social relativistic spacetime to the political realm. Obviously the voluntary dedications of Cleopatra family in Ptolemaic Dynasty are not the only action that had changed human history. Another case in point is that female spy usually prostitutes herself to filch military information in war. Labour value of such prostitution is invaluable.

Case 2: Education

Even though taking place in the private social relativistic spacetime at the very beginning, education is the most important labour in the public social relativistic spacetime. Since education can be regarded as the fundamental means of human intellectual reproduction, it probably has much larger extension of Scene in social relativistic spacetime. In other words, due to the dogmatism of natural spacetime, the labour value of education has been undervalued vastly. Assume two extreme questions: *Can we measure the labour value of Aristotle's educating Alexander the Great? Absolutely impossible, for such an education had changed human history and has a very long, more than imagined, extension in social relativistic spacetime. Can we say the labour value of Humean philosophical works was totally realized and paid by the publishers? Definitely not, in that Humean ghost still wandering over Hiroshima and Nagasaki and nuclear power supplies one-fifth of the total electricity consumption on the earth.*

Case 3: Communication

Many have criticized the excessively high income of artists and media staff through the perspective of Marxian labour theory of value. Moreover easily, Microsoft, Google, Apple, Cisco, and News Corporation etc. had won the huge surplus profit hard to explain. In fact, a closer examination could identify the common feature these entire examples share: communication. Communication can be regard as the critical condition of human intellectual production and which extends its reach to public, usually political, social relativistic spacetime. Thus their labour owns bigger value because it produces larger extension of the Scene in social relativistic spacetime than other industries do. So no wonder Michael Jackson and Madonna Louise Veronica Ciccone, with the conspiracies of publisher, radio, television and internet, had become the richest singers in our time, no, our social relativistic spacetime.

7. Scenes set by the other through gravity

Labour owns a position of supremacy in Marxism according to Frederick Engels [41]: *“Labour is the source of all wealth, the political economists assert. It is this ---- next to nature, which supplies it with the material that it converts into wealth. But it is also infinitely more than this. It is the primary basic*

condition for all human existence, and this to such an extent that, in a sense, we have to say: labour created man himself.”

Logically, there is a fallacy of begging the question, viz. *petitio principia*. Since labor is the activity of man, then, how could it create man or become ‘*the primary basic condition for all human existence*’ before man becomes man?

On the other hand, even though some experts may justify Marxian labour theory of value by stating Marx himself had explicitly rejected the view that labour alone is the creator of value in the beginning of *Critique of the Gotha Programme*, we believe they had confused two basic concepts: value and wealth. In this article, value instead of wealth is focused on.

Furthermore, it is well known that Marx regards ‘man’ as a ‘tool-making’ animal. Then what makes such animal make tool for ‘its’ ‘*Vita Activa*’? The answer should be intentionality indubitably. But can we groundlessly assert that intentionality arises from purely accidental biochemical reactions rather than the Other’s will? If the latter happened to be the right cause, by what means the Other issues its will?

First and foremost we contend 3 major logical suppositions about ‘the World’, part of which we live in and rest of which we cannot perceive and cannot even imagine, consists of Event as the only element:

1. The World was created by the Other;
2. The World consists of Event as the only element;
3. Space and time should not be considered separately for they are nothing but united extensions, within the comprehension of all creatures in $R^{1,3}$, of the same Event container.

Many might doubt our analogy between the event within natural spacetime and the event within social relativistic spacetime in that they seem to be completely different categories. In replying such query, besides the Other as the only reason and Event as only element, we need two more metaphysical concepts: Scene as only ends and Gravity as only means.

By far, 4 relationships among our 4 metaphysical concepts can be uttered:

1. One Scene contains at least one Event;
2. All Scenes are set by the Other through Gravity;
3. Gravity is the never-observable hand without trembling of the Other;
4. Space, time, gravity, force, and any fundamental means constructing Event in common sense are various projection of Gravity.

Labour, then, becomes a Scene with extensions of spacetime, whether natural or social, because material world and ideal world is the same world to the Other within infinite-dimensional spacetime rather than different worlds to human within 4-dimensional spacetime, hence follow the same law obeying the Other’s will. In short, labour is nothing but scene ruled by gravity from the Other.

Probably, realists e.g. Marxist and most scientists will assail our metaphysical standpoint. To refute such retort, Anjan Chakravartty has lent us a hand. He attributed ‘space and time’ to the category of ‘metaphysical issues’, and argued for scientific realism: “*The neglect of metaphysics in the context of*

realism, however, is a mistake. For there is a sense in which the metaphysics of science is a precursor to its epistemology. One cannot fully appreciate what it might mean to be a realist until one has a clear picture of what one is being invited to be a realist about.” [42] “With all this talk of properties and relations, one might wonder what has become of the objects, events, and processes one commonly associates with scientific theories. Is there no room for these things in the ontology of the realist? Certainly there is. One reason for not being wholly deflationary about particulars as an ontological category stems from the simple observation that causal properties are not merely distributed in a free-floating or random sort of way across spacetime.” [42, p. 63]

Recently Steven D. Hales [43] defended that philosophical propositions are relatively true: true in some perspectives and false in others by examining rational intuition as the method by which philosophers come to have the beliefs in that analytic rationalism has a foundational reliance on rational intuition as a method of acquiring basic beliefs. Since intuition is, to some extent, a kind of intentionality, which is the outcome of gravity from the Other, we partly agree Hales’ conclusion that intuition-driven philosophy does produce relative, not absolute, knowledge.

Finally, given the authors’ neither purely idealist nor purely materialist position, ending this article with the following citation is the only, at least for now, appropriate choice: “*Was sich überhaupt sagen lässt, lässt sich klar sagen; und wovon man nicht reden kann, darüber muss man schweigen.*” Or in English: “*What can be said at all can be said clearly; and whereof one cannot speak thereof one must be silent.*” [44]

Appendix: A dialogue back to social reality

This private dialogue between a notable Chinese scholar of Marxism and one of the authors was carried out in one Starbucks. Since the scholar is unwilling to reveal his true name - he is also a senior official in Chinese government, we name him M. And the author involved is named A.

Below is the main content of our dialogue:

A: *Good evening, M. Glad to see you.*

M: *Good evening, A. You are really a stubborn guy. I do not have much time, so the conversation must be succinct.*

A: *OK. In your opinion, what is the most pressing issue in China?*

M: *Lack of belief, not only to party members of CCP, but to the masses.*

A: *How about the religious believers? The past decades has witnessed a rapid growing number of Buddhists, Taoists, and Muslims.*

M: *Far as I see, except for Muslims living in the autonomous regions, there are no religious believers in China. Utilitarianism of the national spirits may account for this.*

A: *Then Socialism with Chinese Characteristics advocated by the government?*

M: *Frankly it is an innovation, but also brings forth some theoretical predicaments impossible to overcome. For example, the contradiction of*

efficiency and equity roots in the labour theory of value, which is the core of Marxism.

A: *Since the labour theory of value is no longer suitable to the development of productive forces in the era of knowledge economy, why not abandon it?*

M: *Such an innocent kid! CCP will never abandon Marxism because it provides legitimacy of ruling China. The labour theory of value is the cornerstone of Marxism, without it, Marxism building, together with the party's regime, will topple. How could CCP abandon it?*

A: *But CCP did have abandoned some doctrines of Marxism, such as class struggle. Did not CCP?*

M: *Yes. But they are entirely different matters: class struggle can be replaced by the theory of the omnipotence of productive forces, while labour theory of value cannot. Besides, labour theory of value is in line with physiocratic tradition of China.*

A: *Physiocratic tradition? It is a sound interpretation of Chinese history. Chinese peasants, to my knowledge, used to believe that only land is productive thus only farming is reliable. Such believes had given birth to their yearning for equity rather than efficiency.*

M: *Quite right! That may explain why CCP could defeat KMT during War of Liberation and why Chinese agriculture develops so slow even nowadays.*

A: *According to game theory, shall we presume that physiocratic tradition of China derives from national belief in zero-sum game?*

M: *Aha! I have not thought about it. This presumption is likely to be correct. Prove it by yourself.*

A: *If it is correct, I dare to conjecture that Russia and Eastern Europe chose Marxism as their political Bible primarily because citizens of them are mainly farmers who believe in physiocracy and zero-sum game.*

M: *And.....*

A: *And they all had abandoned the socialist road because they are no longer farmers due to the fast industrial development, in other words, they had given up believes in physiocracy and zero-sum game.*

M: *Well, even though it might make sense to some extent, I must warn you, it is dangerous. CCP is watching. CCP is everywhere. You can think about it, but you better do not talk about it, and the most important, you must do nothing to prove your dangerous thoughts!*

A: *I know what you mean. Sincere thanks for your kindness. See you!*

M: *Good night.*

References

- [1] M. Decailot, *Pensee*, **325** (2001) 113.
- [2] C.S. Park, *Science & Society*, **67(2)** (2003) 160-172.
- [3] C.S. Park, *Science & Society*, **70(3)** (2006) 379-380.
- [4] P. Kockelman, *Journal of the Royal Anthropological Institute*, **13(2)** (2007) 401-417.
- [5] A. Diquattro, *Science & Society*, **71(4)** (2007) 455-483.

- [6] R. Durr, *Zeitschrift Fur Historische Forschung*, **28(2)** (2001) 325-326.
- [7] U. Liebeskind, *Kolner Zeitschrift Fur Soziologie Und Sozialpsychologie*, **56(4)** (2004) 630.
- [8] V. Tyazhelnikova, *Continuity and Change*, **21** (2006) 159-193.
- [9] J. Clay, *Science & Society*, **70(3)** (2006) 375-378.
- [10] B. Fine, *Historical Materialism-Research in Critical Marxist Theory*, **16(3)** (2008) 105-114.
- [11] M. Z. Varul, *Journal of Social Philosophy*, **41(1)** (2010) 50-72.
- [12] E. Connolly, *Radical Philosophy*, **170** (2011) 62-64.
- [13] B. Dunn, *Review of Radical Political Economics*, **43(4)** (2011) 488-505.
- [14] A. Brown, *Cambridge Journal of Economics*, **32(1)** (2008) 125-146.
- [15] J. P. Kahane, *Pensee*, **325** (2001) 160-161.
- [16] T. Mariolis and L. Tsoulfidis, *Metroeconomica*, **61(4)** (2010) 701-710.
- [17] C. Sanchez and M. N. Ferrandez, *Investigacion Economica*, **69(274)** (2010) 87.
- [18] J. Baudrillard, *The Mirror of Production*, English translation, Telos Press, Saint Louis, 1975, 23.
- [19] M. Hardt and A. Negri, *Empire*, Harvard University Press, Cambridge, MA, 2000.
- [20] A. Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations*, P.F. Collier & Son, New York, 1909, 884.
- [21] H. W. Spiegel, *The Growth of Economic Thought*, Duke University Press, Durham, 1991, 189.
- [22] D. Ricardo, *On the Principles of Political Economy and Taxation*, John Murray, London, 1821, 8.
- [23] K. Marx, *Capital. A Critique of Political Economy. Volume I: The Process of Capitalist Production*, Translated from the 3rd German edition, Charles H. Kerr & Company, Chicago, 1906, 26.
- [24] P. Baofu, *The Future of Post-Human Space-Time: Conceiving a better Way to Understand Space and Time*, Peter Lang Publishing, New York, 2006.
- [25] I. Newton, *Philosophiæ Naturalis Principia Mathematica*, Ex Prelo Academico, Glasguæ, 1822, 8-10.
- [26] F.C.H.H. Brentano, *Philosophical Investigations on Space, Time and the Continuum*, English translation, University of California Press Berkeley, 1975, 81.
- [27] F.C.H.H. Brentano, *Psychology from an Empirical Standpoint*, English translation, Routledge, Oxon, 1995, 312.
- [28] E. Levinas, *Totality and Infinity: An Essay on Exteriority*, translated by Alphonso Lingis, Martinus Nijhoff Publishers, Hague, 1979, 39.
- [29] E. Levinas, *Totalité et Infini: Essai sur l'extériorité*, Kluwer Academic Publishers, Dordrecht, 1996, 28.
- [30] R.D.N. van Riessen, *Man as a Place of God: Levinas' Hermeneutics of Kenosis*, Dordrecht, Springer, 2007.
- [31] H. Arendt, *The Human Condition*, 2nd edn., University of Chicago Press, Chicago, 1998, XI.
- [32] Plato, *Plato. II: Theaetetus Sophist*, English translation, William Heinemann, London, 1921, 73.
- [33] Plato, *Plato. IV: Laches Protagoras Meno Euthydemus*, English translation, Harvard University Press, Cambridge, MA, 1952, 90.
- [34] K. Marx, *Mathematical Manuscripts of KARL MARX*, New Park Publications Ltd, London, 1983.
- [35] D. Hume, *A Treatise of Human Nature*, Clarendon Press, London, 1896, 415.

- [36] H. Poincaré, *Science and Hypothesis*, The Walter Scott Publishing Co., London, 1905, 90.
- [37] H. Lefèbvre, *La Production de l'espace*, Anthropos, Paris, 1974.
- [38] J. Habermas, *Strukturwandel der Öffentlichkeit: Untersuchungen zu einer Kategorie der bürgerlichen Gesellschaft*, Suhrkamp, Frankfurt am Main, 1990.
- [39] K. Marx, *Capital. A Critique of Political Economy. Volume III: The Process of Capitalist Production as a Whole*, Translated from the 1st German edition, Charles H. Kerr & Company, Chicago, 1909, 720.
- [40] J.L. Austin, *How to Do Things with Words*, Oxford University Press, London, 1962, 5.
- [41] F. Engels, *Dialectics of Nature*, translated by Clemens Dutt, Foreign Languages Publishing House, Moscow, 1954, 228.
- [42] A. Chakravartty, *A Metaphysics for Scientific Realism: Knowing the Unobservable*, Cambridge University Press, Cambridge, 2007, 26.
- [43] S. D. Hales, *Relativism and the Foundations of Philosophy*, The MIT Press, Cambridge, MA, 2009.
- [44] L. Wittgenstein, *Tractatus Logico-Philosophicus*, English translation, Barnes & Noble Publishing, New York, 2003, 2-3.