

A "gung-ho"¹ Approach Towards Sophic Economy

Nikolay Bogatzky*

Summary

The object of this study has been the *Sophic Economy* of Sergei Bulgakov – an alternative and valuable philosophical-economic doctrine. At the beginning, facts-examples have been identified in a contemporary, social and purposely localized context (contemporary Italian society), demonstrating a certain potential sensibility towards the idea of *Sophic Economy*. Then, Bulgakov's thought has been expounded with a purposeful tone instead of the critical-purposeful frame originally used by Bulgakov himself in the volume *Philosophy of Economy: the world as household*. The quality of the examined content has raised the simple question, What about the dynamics of the diffusion of ideas like these? Employing what I call the "gung-ho" approach – the researcher's imagination as a historical technique method that does not integrate the facts of the past but places them in a sort of laboratory-simulative environment model – the idea of *Sophic Economy* has been inserted in NetLogo's *Spreading*

Utopian Ideas Model. The popularization of an alternative philosophical doctrine and the proposal-experiment of an original method of historical research in Economics have been the main results of the present study.

JEL Classification: A11, B19, B31, B59, D64, N01, Z12

Key words: Sergei Bulgakov, Sophic Economy, Spreading Utopian Ideas, Philosophy of Economy, NetLogo, Historical Method in Economics

Premises²

*Proemio*³: the Muse of History

As the Muse of "herstory", Clio is the perfect Goddess to invoke when you need a sense of history about what you are doing. This history might include ancestral roots as well as writing and making history. History is being made all the time. To record history is to influence what is being reported. When you look into the past, you also see into the present and future, because time is not linear, especially divine time.⁴

Saying something new and valid on the *Historical Method in Economics*, even

* Roma Tre University, nikolaybogatzky@gmail.com

¹ a) *gung-ho*, Oxford Dictionary of English: (adj.) unthinkingly enthusiastic and eager, especially about taking part in fighting or warfare.

b) *gung-ho*, www.urbandictionary.com: also mandarin *gōnghé*; derived from an Asian word; origin - Soldier Slang 1940's to be gung-ho; a mentality, thinking you are bullet-proof; you can't wait to rush in and attack with your fellow soldiers; to be really excited about something; to really want to do something; really insanely enthusiastic about a task; examples: *I like my work but I'm not too gung ho about putting in all that overtime. Eight hours a day is enough. After that my brain is toast; That marine is Gung Ho about his new assignment.*

² This paper was presented at an international conference entitled "New Approaches towards the Historical Method in Economics", which took place between the 15th-16th September, 2016, at Université de Picardie Jules Verne, in Amiens, France.

³ (author's note), The rhetorical structure of this work is a tribute to my mentors at "Roma Tre" University prof. P. Bini and prof. F. Masini.

⁴ Knight S. (2003), *Goddess Bless!: Divine Affirmations, Prayers, and Blessings*, Red Wheel, p. 78.

with Muse Clio's blessing, would be a very difficult task. Fortunately, today's historic moment is helpful –cultural relativism – where every research topic is allowed (where indeed the more multicultural equates to the more legitimate). Unfortunately, this does not mean it is always interesting for the audience. I believe that the present study however, does not run that risk. It is quite interesting, although it was conceived as a worthy product of cultural relativism and by means of a certain academic-instrumental stretch, pushed almost to recklessness. In this regard, the title of this paper – a "*gung-ho*" approach – evokes the arrival at an "unthinkingly enthusiastic and eager result".

***Captatio benevolentiae*: Three recent social examples**

***Le Confessioni*⁵ – a contemporary film**

Thanks to "good" cultural relativism – the continuous and exhausted confrontation with the variability and diversity of customs, cultures, languages, societies – our epoch is quite tolerant of different assemblages (sometimes quite unusual). A similar example, related to this paper, could be found in the recent film *Le Confessioni* by Roberto Andò. The film views financiers-ministers of economy, isolated in an inaccessible German hotel (where a G8 summit was really held), put in the awkward relationship with an "alien" invited visitor, a Carthusian monk. In an interview with the filmmaker, published by the Italian weekly magazine of

politics, culture and economics, *L'Espresso*, he reveals an interesting and critical point of view about today's world. "Economics has become interesting to talk about because it has lost its boldness. There was a time when it presented itself as a theological caste. After the crisis in 2008, it needed to revise its doctrinal structures. [...] Not by accident, the film begins with Keynes, with his example of an apple falling. It means that, unlike physics, interested in natural movement, economics has to ask itself what are the consequences of the fall of the apple, because it is a moral science. Instead, in the brutal simplification of the cynics, debt is a sin. If the only religion is money then there is no room for atonement, only the guilt of the indebted." ⁶ The original idea to place economists face-to-face with a monk is not only strange but also very surprising. In addition, the isolated environment (castle-hotel) seems to favor the monk, who knows better than anyone to use silence to awe the other players. The monk, only by the fact of his presence, challenges the world of the financiers around him. His life choice is peaceful and original, focused on the fact that life itself is a common good.

***From the outside. A philosophy for Europe*⁷ – an example of current literature**

In this line of thought, the last book of the philosopher Roberto Esposito⁸ deserves to be mentioned. It is a kind of "querying on the terrible crisis that Europe is going through today, [...] in a moment in which the Economy

⁵ *Le confessioni* (The Confessions, 2016) is a film directed by Roberto Andò with Toni Servillo, Daniel Auteuil, Connie Nielsen, Pierfrancesco Favino, Lambert Wilson, Marie-Josée Croze and Moritz Bleibtreu. The film was released April 21, 2016, Wikipedia, (URL=[https://it.wikipedia.org/wiki/Le_confessioni_\(film\)](https://it.wikipedia.org/wiki/Le_confessioni_(film))), (author's translation).

⁶ Riva G., *Se il banchiere si confessa*, "L'Espresso", n. 15, Aprile 2016, p. 53.

⁷ Esposito R. (2016), *Da fuori. Una filosofia per l'Europa*, Piccola Biblioteca Einaudi Ns.

⁸ Roberto Esposito (Napoli, 1950) is an Italian philosopher, who is important for his work in biopolitics. He was featured in the Summer 2006 and Fall 2009 issues of the journal *Diacritics* and the Fall 2013 special issue of *Angelaki*. He currently teaches Theoretical Philosophy at the "Scuola Normale Superiore" in Italy. He was Vice Director of the "Istituto Italiano di Scienze Umane", Full Professor of Theoretical Philosophy, and the coordinator of the doctoral programme in Philosophy until 2013. For five years he was the only Italian member of the "International Council of Scholars of the Collège International de Philosophie" in Paris., Wikipedia, (URL= https://en.wikipedia.org/wiki/Roberto_Esposito)

seems more a problem than a resource for Europe⁹, entitled *Da fuori. Una filosofia per l'Europa (From the outside. A philosophy for Europe)*. The principle thesis is that, to overcome the crisis, to be able to imagine, conceive, and even to begin building a more coherent world, compared to the fragmented universe we live in, requires an effort of will, a big project, a Grand Design. "So it has been in the history of Europe and so it could be today."¹⁰ According to the author, Europe is going through a very particular moment – a "schism" – not only geographic-territorial ("we no longer feel masters in our house", to put it in right-wing slogans), but also philosophical-linguistic. Today's crisis, therefore, should not be interpreted exclusively as humanitarian emergencies (immigration, terrorism, poverty and so on), but as something destined to change profoundly our *modus vivendi*. After all, Europe, just as "the [whole] world, is facing a fundamental political trilemma: we cannot simultaneously pursue democracy, national sovereignty and economic globalization".¹¹ Esposito suggests getting back to the foundations and looking critically at the last decades, because recent scientific thought has sought deconstruction, whereas now is the time to seriously start to rebuild. The very title *From the outside* indicates that the hypothetical, analytical-reconstructive tool, and even Europe itself, should transcend themselves. As is said many times in the

book, "the exterior always illuminates the interior" or as the author himself says in a presentation of the book "to overcome its internal crisis, European philosophy has had to pass outside"¹². The scholar also focuses on "thinking" and on "ways of thinking" understood as a dynamic reality, as opposed to "thought" defined as a closed and dogmatic system. "Today, Europe is facing a situation it has never experienced before. Its population must necessarily be equipped with tools for an anthropological change. It is not possible to give a negative answer of pure closure, [...but we must] interpret this terrible crisis with broad categories, concepts, paradigms implemented by European traditions, which were born through a constitutional relation with the outside. It is something that breaks with separate and specialized language and puts thought in relation to life, history, the problems of the contemporary world."¹³

Mutual Self-Management Associations and Ethical Purchasing Groups¹⁴ – Social and Solidarity Economy (*Economia Solidale*)

Social and Solidarity Economy is primarily based on the enhancement of relations between subjects, a fair distribution of resources, respect and protection of the environment, the pursuit of a social purpose.¹⁵

The experiences of Social and Solidarity Economy in Italy began in the '80s with

⁹ LechLechà, Youtube, *Esposito*, online video clip, (URL=<https://www.youtube.com/watch?v=ITzLpFsfGuU>), 15.05.2016.

¹⁰ *Ibid.*, (author's translation).

¹¹ Magliulo A., *The Trade-Off Between Capitalism and Democracy in a Historical Perspective*, Issue 4, 2014, UNWE Publishing Complex, p. 13.

¹² *Ibid.*, (author's translation).

¹³ *Ibid.*, (author's translation).

¹⁴ Ethical Purchasing Groups, (in Italian: Gruppi di Acquisto Solidale - GAS), are an Italian-based system of purchasing goods collectively. These groups are usually set up by a number of consumers who cooperate in order to buy food and other commonly used goods directly from producers or from big retailers at a price that is fair to both parties., *Wikipedia*, (URL=https://en.wikipedia.org/wiki/Gruppi_di_Acquisto_Solidale)

¹⁵ see Troisi R., Di Sisto M., *Spazi per un'economia liberata, dossier Sbilanciamo le città*, Sbilanciamoci, 2016, (author's translation).

equitable and solidarity trade and with Mutual Self-Management Associations (*Società di Mutua Autogestione - MAG*) in the field of ethical finance. Such experiences continued in the '90s with activities related to Ethical consumerism and Lifestyles, with the birth of Ethical Purchasing Groups (*Gruppi di Acquisto Solidale - GAS*) and the Equity Balance network (*Bilanci di Giustizia*¹⁶).

Mutual Self-Management Associations (*Le società di Mutua Autogestione-MAG*) are organizations of people based on a fiduciary relationship between members and financed realities. They take care of collecting money from the members in the form of share capital to finance self-managed economic initiatives; offer opportunities for ethical-solidarity finance, by providing loans with interest rates at favorable repayment conditions. Once the funds are repaid, they are immediately used to finance new projects or loans.¹⁷ Mutual Self-Management Associations are also active in the cultural field by sponsoring and hosting social-cultural projects at the local level.

Ethical Purchasing Groups (*Gruppi di Acquisto Solidale - GAS*) are purchasing groups, organized spontaneously according to an ethical-purchasing approach, to apply the principles of equity, solidarity and sustainability to their consumption and purchases. The ethical aspect and solidarity of such groups is therefore considered the most important aspect, being configured as experiences in the field of Critical Consumerism. Secondary, but equally fundamental, is the awareness of the importance of social and human relations, the genuine contact with the surrounding

environment and agricultural-gastronomic traditions.¹⁸

The Italian experience is developing on a par with other international experiences. In 2013, the United Nations launched the *Inter-Agency Task Force on Social and Solidarity Economy* (TFSSE). In 2014, TFSSE published the *First Task Force Position Paper*, proposing to recognize and promote the role of Social and Solidarity Economy in achieving the objectives of sustainable development.¹⁹

Partitio: Why Sergei Bulgakov and the "gung-ho" approach?

The three recent social phenomena mentioned above have served to prepare the ground for the present study. The purpose was also to show that a certain type of reflection-assemblage is not entirely alien to Western society.

Roberto Andò's film throws together a monk and economists, which is very disconcerting at first. The connection between religion and economics, however, is nothing new. Indeed, one of the most cited works in the academic world is Max Weber's *The Protestant Ethic and the Spirit of Capitalism*. In this perspective, even such an eclectic figure as the protagonist of this study, Sergei Bulgakov – first a Marxist, then a convinced opponent of Marxism, and in the end a theologian-priest – would seem rather ordinary.

Roberto Esposito's book instead suggests a reexamination – by transcending ourselves, "from outside" – of historic ethical-philosophical paradigms in order to develop-

¹⁶ It is an informal network of families with a horizontal structure made up of local groups and a national secretariat that coordinates and facilitates communication among members. The families support the organizational structure with voluntary contributions. (URL=<http://www.bilancidigiustizia.it/chi-siamo/>).

¹⁷ see Zani F., Eusebi G., *Solidarietà. Il manuale indispensabile per passare dalla speculazione alla solidarietà*, Macro Edizioni, Diegaro di Cesena 2000

¹⁸ see Saroldi A., *Gruppi di acquisto solidali*, Bologna, Edizioni EMI, 2001.

¹⁹ The *UN Inter-Agency Task Force on Social and Solidarity Economy* (TFSSE) aims to raise the visibility of debates about Social and Solidarity Economy (SSE) within the UN system and beyond. TFSSE was established to raise the visibility of the SSE in international knowledge and policy circles. We believe that SSE holds considerable promise for addressing the economic, social and environmental integrated approaches of sustainable development. (URL= <http://unsse.org/>).

build a new Grand Design for Europe. Even though the concrete solution proposed by Esposito is, rather oriented towards the *Italian Thought* elaborated "outside" in the US, it seems that in general his reasoning could also apply to the legacy of Sergei Bulgakov – the scholar who fully reflects the great European traditions, formulating a new socio-economic doctrine.

The experiences of Social and Solidarity Economy are not only Italian but a global, contemporary and real phenomenon. An *Intercontinental Network for the Promotion of Social Solidarity Economy (RIPESS)*²⁰ connects continental networks – Latin America and the Caribbean, (RIPESS LAC); Europe (RIPESS EU); North America (RIPESS NA); Africa (RAESS) and Asia (ASEC) – which in turn include national and sectorial networks. RIPESS believes in the importance of a "globalization" of solidarity with the aim of building and strengthening an economy centered on people and nature. Although considered rather fragile, the very existence of such a phenomenon says much about the real presence of some current social sensitivities and the possibility of movement-implementation of ideas, like those of Sergei Bulgakov.

Therefore, my first cognitive question was: Could Bulgakov's ideas be interesting to a Western audience? The answer has already been provided by calling into question the concept of cultural relativism and three recent Italian social examples. Such examples of affinity were sought among the most conventional historical sources (literature, cinema, public organizations). They have also been purposely extrapolated from the Italian context for reasons of significance (three phenomena on a supranational scale would have carried less weight). In this manner the researcher's

background has also been shown, because "the researcher should always render clearly his own cultural origins"²¹.

My second cognitive question is: What are Sergei Bulgakov's main economic ideas, expounded in his volume *Philosophy of Economy: the world as household*? The answer will be provided below in the first part of *Narratio*. The cognitive purpose will be exploratory and oriented to discovery; the approach will be descriptive-hermeneutic, while the empirical material will come from the volume in question and other related secondary sources. These are typical elements of qualitative research strategy.

My third cognitive question is: Are Sergei Bulgakov's economic ideas, expounded in his volume *Philosophy of Economy: the world as household* applicable? – and especially – How could such ideas be spread-implemented through society? The answer will be provided in the second part of *Narratio*.

Returning to the question of "assemblages" in our time, an example (like "everything is allowed, everything is possible, just follow a serious formal-methodological approach") might be found in the convergence – already sought "at all costs" – between qualitative and quantitative social research approaches. Actually, the mixed-convergent research strategy is no longer new, having already become an established practice. In perfect harmony with these trends, I will try to implement my "gung-ho" approach, being aware of the risk of also achieving a "gung-ho" result.

My bridge between the qualitative research of the first part and the quantitative research of the second part of the *Narratio* will be the hermeneutic technique of elaborating *models* through *imagination*. According to the Positivist paradigm, the Historian had to limit him/herself exclusively to critical analysis of documents,

²⁰ URL= <http://www.ripess.org/about-us/?lang=en>

²¹ Cipriani R., *Introduzione al Master in Sociologia: Teoria, Metodologia, Ricerca*, Appunti Master So.Te.Me.Ri., 4 Marzo 2016, (author's translation).

leaving them to speak for themselves with no further intervention. Instead, one of the most fascinating tools available to the Interpretive Historian is the *Imagination*. It often happens that combined sources give birth to a rich but incomplete picture. At that point, the Historian is left with the *Imagination*, which intervenes within the *model*, as the only option to fill gaps of the Past and to develop *models* (see Figure 1 in Appendix). The *models* are intellectual constructions for the simplification of reality and should never be extremes to the point of replacing reality completely. Although such a simplification is presented as a kind of falsification of reality, the *model* would be still a valid interpretive tool of great importance, also because it can always be elaborated to advance research. The property of potential elaboration is also one of the most important heuristic features of the *system-model*. Being a theoretical construct that represents reality in a simplified-approximate way, the latest model is constantly tested and questioned.²² In my research, however, the *system-model* will not be used to fill gaps in Bulgakov's concepts, but to project them outside in a simulated environment. This will be achieved through the researcher's *imagination*, which operates from the outside, by creating the same *model* (see Figure 2 in Appendix). I will try to develop a hypothetical simulation of Bulgakov's ideas, or of any other utopian idea in general, through the intermediary of *NetLogo*'s multi-agent simulation models²³. Therefore, my "*gung-ho*" approach would be the elaboration of a hypothetical, general multi-agent programmable modeling environment, using a revised historical methodological interpretative technique (imagination-simulation). This model will be brought outside

of the original empirical material (concrete ideas), creating new empirical material. It will be a simulation phenomenon implemented through experiment and variables according to the logic of quantitative research. The investigation's approach will be *reactive*, namely "aimed at seizing reactions to stress, in the form of questions posed 'artificially' outside"²⁴, while the empirical material will consist of the same *simulation model*.

The *Conclusions* will put into relief the salient features of the *Narratio*'s two parts, returning to the descriptive-interpretative technique about the results of the research.

Therefore, the object of this paper will be the economic ideas – the doctrine *Sophic Economy* – of Sergei Bulgakov. It is, then, a paper on the History of Economic Thought and Philosophy of Economics. My attention will focus mainly on Bulgakov's volume *Philosophy of Economy: the world as household*²⁵. The general intent is to popularize a scholar, almost unknown as an economist to the Western scientific community, by researching and discussing the originality of his thought. Meanwhile, the goal will be to demonstrate how Bulgakov's ideas are even more timely today and how they could spread into reality.

Narratio: Sergei Bulgakov's Philosophy of Economy and Spreading Utopian Ideas Model

1. Main ideas in Bulgakov's *Philosophy of Economy: the world as household*

1.1. *The other Bulgakov*²⁶

Opening to the chapter on Sergei Bulgakov, some preliminary considerations

²² Cfr. Freda V., *Questioni di metodo nella ricerca storica*, (URL=http://www.vincenzofreda.it/primo_livello/chi_sono/saggi/Questioni_di_metodo_nella_ricerca_storica.html), 2008.

²³ *NetLogo* is a multi-agent programmable modeling environment. It is used by tens of thousands of students, teachers and researchers worldwide. It also powers HubNet participatory simulations. It is authored by Uri Wilensky and developed at the CCL (Center for Connected Learning and Computer-Based Modeling). (URL=<http://ccl.northwestern.edu/netlogo/index.shtml>).

²⁴ Agnoli S., *Strategie di Ricerca Sociale*, Appunti Master So.Te.Me.Ri., 13 Maggio 2016, (author's translation).

²⁵ Bulgakov S., *The Philosophy of Economy [Filosofia khoziaistva]* (1912), Istituto di Civiltà Russa, Moscow, 2009.

²⁶ (author's note), My intellectual honesty should start by thanking Professor Nikolay Nenovsky, for having shown me Sergei Bulgakov as an interesting scholar, original and valid.

must be made, especially for those who know only his namesake – Mikhaïl Bulgakov²⁷ – the great Russian writer-novelist and playwright. Above all, I feel obliged to point out that Sergei Bulgakov's portrait might appear distorted in my work at first glance. The previously mentioned doctrinal positions taken by him during his life – "legal Marxist", opponent of Marxism, theologian-priest – are already very perplexing. In addition, a hasty reading and the same conventional terminology – Bulgakov's "ideas" or "utopian idea" – used in this work, would be unforgivable reductions-simplifications of the serious philosophical beliefs of such a complex and multifaceted scholar as Sergei Bulgakov. The use of such terminology might be justified by the fact that at the roots of Bugakov's doctrine lies much of the thought of Thomas More and Tommaso Campanella who "did not use the term socialism to characterize of the new social order."²⁸

Sergei Bulgakov was an eclectic figure, in search of Truth, and only a few biographical traits of his rich life would be convincing of that. He was born in 1871 in Livny (Orel Region). After he lost his faith, he left the seminary and attended the secular gymnasium to complete his studies. Evtuhov writes, "Bulgakov's biography reiterates the trajectory of the preceding generation of radical intelligentsia – Dobroliubov, Chernyshevsky, Shchapov were all seminarians from clerical families who rejected their childhood faith in favor of radical politics."²⁹ He graduated in Political Economy and Law from Moscow University as a student of Alexander Chuprov. After

graduation he taught Statistics and Political Economy at the Moscow Technical Institute. He became a "legal Marxist" – "an awkward label [...] referring to believers in Marxism who did nothing illegal and hence were not subject to police persecution"³⁰. He began a doctoral dissertation and traveled in Western Europe. Then Bulgakov renounced Marxism and turned to Kantian idealism, drawing closer to his own roots and the Church. During his life, he worked in the fields of Economics, Philosophy, Journalism, Politics, and Publishing. Bulgakov was the founder of a Christian Socialist party, a member of the Moscow Religious-Philosophical Society, and a delegate to the *All-Russian Council of the Orthodox Church*; exiled from the Soviet Union, "he became, arguably, the twentieth century's foremost Orthodox theologian in Paris"³¹, where he was a professor of dogmatic theology at the Institute of Theology.

In trying to synthesize the "river" of Bulgakov's thought in *Philosophy of Economy: the world as household*, some broad conceptual streams can be found. These fundamental concepts are: Criticism, Dualism, Pluralism, Relativism, Organism, Wholeness, Practicality and Action.

The main conceptual strand of the volume *Philosophy of Economy: the world as household* is focused on Criticism. This aspect, in my opinion, would also be somewhat problematic, because it "lacks a point of arrival". Indeed, at the end, after an endless critical examination by the despised category of so-called "armchair philosophers", the contemporary reader

²⁷ Mikhaïl Afanasyevich Bulgakov, Russian: Михаи́л Афанáсьевич Булга́ков, May 15 [O.S. May 3] 1891 – March 10, 1940, was a Russian writer and playwright active in the first half of the 20th century. He is best known for his novel *The Master and Margarita*, which has been called one of the masterpieces of the 20th century, *Wikipedia*, (URL=https://en.wikipedia.org/wiki/Mikhail_Bulgakov).

²⁸ Penchev P., *The "Alternative" Socialism of Professor Alexander Tsankov*, "Economic Alternatives", Issue 2, 2014, UNWE Publishing Complex, p.62.

²⁹ Bulgakov S., *Philosophy of Economy - Introduction*, translated into English by Catherine Evtuhov, Yale University Press, 1999, p. 3.

³⁰ *Ivi*, p. 4.

³¹ *Ivi*, p. 2.

(certainly without Bulgakov's background) would expect at least a brief, conclusive and purposeful sub-chapter on Bulgakov's philosophical doctrine in general. The missing Conclusion could even have been made by the typical winged-poetic phrases *alla Bulgakov*. Instead, the philosopher ends his work with nothing less than *The Contradictions of Economic Materialism*, leaving the reader with "a bad taste in the mouth". The best justification for all this is provided by Bulgakov himself in the *Preface*. "For the author, the present study also has special significance, for it draws up the balance of an entire period of life influenced by economic materialism, and it is the debt of the author's philosophical conscience in relation to his own past."³² Hence, the book follows, every time and on every topic, the pattern of an initial critical examination of the prevailing doctrines and subsequent exposition of Bulgakov's convictions. However, it must be pointed out that for Bulgakov, there is a substantial difference between "true philosophical criticism" and mere criticism affected by dogmatism. "Thought and knowledge cannot be based on or justified by criticism, for they themselves are facts, existing before any criticism and independent of it. Criticism engages in the analysis and description of givens of knowledge, but it is not its legislator."³³

In my exposition of the book's main ideas, I will try to emphasize the propositional logic (where possible) rather than the critical-propositional logic employed by Bulgakov. In addition, I am not going to skimp on quotes, in order to describe not only the conceptual originality but also the richness of the author's philosophical thought.

1.2. "...our epoch loves wealth [...] and believes in wealth even more than it believes in the individual."³⁴

Bulgakov describes the epoch of *homo oeconomicus* as "Economism", which equals "economic materialism" in correspondence with Political Economy ("In practice, economists are Marxists, even if they hate Marxism"³⁵). Such a pervasive and ubiquitous doctrine would be in a deep crisis, because it has no philosophical basis, dogmatizing mere scientific practice. According to Bulgakov, "that particular, undeniable life truth" cannot be simply denied and rejected, but understood, interpreted and "overcome from within".

1.3. "Creation from nothing is given to man neither in the field of philosophy nor in other things."³⁶

For Bulgakov, philosophical doctrine in general cannot be absolute, independent and self-sufficient (such as that of Fichte and Hegel) but is always "oriented toward something outside itself", related to life, because "there is no being *in abstracto*; there is only concrete being for itself, self-determining life."³⁷ Life has a dualistic "supra-logical" nature, which consists of the concrete indivisible unity of the logical and the "alogical" being. Life could not be exclusively "logical" or "alogical" as interpreted by the general philosophical mainstreams of "intellectualism" and "anti-intellectualism". "And this living and mysterious synthesis of two different yet not contradictory principles – the logical and the alogical – takes place in every act of thought."³⁸ If there is not a total and

³² *Ivi*, p. 35.

³³ *Ivi*, p. 65.

³⁴ *Ivi*, p. 40.

³⁵ *Ivi*, p. 41.

³⁶ *Ivi*, p. 47.

³⁷ *Ibid.*

³⁸ *Ivi*, p. 54.

unique philosophical system, there cannot be only one way of thinking. The discursive thought called Philosophy "is pluralistic by nature". "Therefore philosophical systems can *justifiably* differ among themselves depending on their initial orientation or, in other words, one can construct different scientific and philosophical systems by proceeding from different points of orientation to arrive at equally valid assessments of a particular object."³⁹ Philosophy is general and abstract, it is creativity as art, and explores the relationship between phenomena and the whole. Science conversely is concrete and divides the whole into fragments, which are put in different mechanisms eventually. Regarding Economics as philosophy and science, Bulgakov writes, "political economy and Philosophy of Economy, for example, both study economic process, but one engages in detailed analysis, whereas the other looks for its general meaning. The first asks, *what?*, the second asks, *how?*"⁴⁰

1.4. "Economy is the activity of labor [...] a certain fusion of subject and object."⁴¹

Bulgakov calls "economy" man's struggle to tame the forces of nature, "becoming their *master*, or *proprietor* [...] conquering and humanizing nature, transforming it into a potential human organism"⁴². "The actual state of being is an unfinished, transitional stage, a precarious balance, which seeks to acquire stability in the very process of struggle. Economy is the expression of the struggle of these two metaphysical principles – life and death, freedom and necessity, mechanism and organism."⁴³

Therefore, Economy is labor in the most general sense of the phrase "from the worker to Kant, from the sower to the astronomer"⁴⁴ and this is the *subject of economy*. The *subject of economy* (individual or collective) exerts activity on the object reaching "a certain fusion of subject and object, the penetration of the subject into the object, the subjectification of the object or the [...] objectification of the subject"⁴⁵. That is the "economic act" according to Bulgakov and it is real fact, real action, real experience as opposed to the Kantian contemplative, "armchair philosophy", where the subject only observes without acting.

1.5. "...the possibility of consumption is in principle based on the metaphysical communism of the universe, [...] on the unity of living and nonliving, on the universality of life.." ⁴⁶

For Bulgakov, the economic cycle is based on the process of *consumption* and *production*. These processes are realized in a space-universe where a continuous connectivity exists among all the parties (both living and nonliving matter). "The unity of the universe, the physical communism of being, means that, physically, everything finds itself in everything else, every atom is connected with the entire universe; or, if we compare the universe to an organism, we can say that everything enters into the makeup of the world body."⁴⁷ It is quite interesting, the scholar's explanation about the unity of organic and non-organic material. Life presents itself already as a body and through the universe's connection supersedes "anorganic matter", and "penetrates the entire

³⁹ *Ivi*, p. 59.

⁴⁰ *Ivi*, p. 62.

⁴¹ *Ivi*, pp. 74-77.

⁴² *Ivi*, p. 72.

⁴³ *Ivi*, p. 73.

⁴⁴ *Ivi*, p. 75.

⁴⁵ *Ivi*, p. 77.

⁴⁶ *Ivi*, p. 105.

⁴⁷ *Ivi*, p. 96.

cosmos". "The cosmos is in this sense the potential body of a living being, an organism *in potentia*. This potential, of course, may never be realized, or may be realized only in part. It exists in a dual sense."⁴⁸ Then, in the last instance, if the universe is the union between *natura naturans* and *natura naturata*, *consumption* will be the universe in action.

1.6. "In analyzing economy as production, we have [...] the inevitable identity of subject and object, I and non-I, consciousness and nature, which in reality become identical in the economic process."⁴⁹

In Bulgakov's thought, *production* and *labor* have similar connotations. *Production* is an "objective action where the subject becomes objectified" through action. The Economy *in actu*, with its dynamism, is the true connection between subject and object in their interaction and unity. For Bulgakov's tight dualism of subject-object, both the Marxist "object alone" in itself and the "abstractly reasoning subject alone" of the Kantian or neo-Kantian epistemology are myths, fictions, denials of reality and "armchair philosophy". In this logic, there is no distinction between material and immaterial *production*, because even *knowledge* is perceived as economic action. "Labor, as the basis of epistemology, thus removes the problem of the existence of the external world (and also the other I), showing it to be an idealistic invention, a phantom of abstract thought."⁵⁰

1.7. "...just as an organism is not merely the sum of all of the substances of which it is made up, so also economy (and, again, knowledge) is an organic, synthesizing activity that exists..."⁵¹

Economy's norms cannot be determined inductively as a manifestation of separate acts, but only *a priori* as a transcendental entity. Then, this transcendental entity should be verified with concrete economic experience. Economic activity is a socio-historical process. It develops by assimilating-reproducing organically some of the past's phenomena with the constant introduction of new elements. Thus, history is a unique, rather than a typical, process and does not respond to universal laws even though the internal cause-effect logic is quite common. The center of the economic process – being carried out not by the individual but by all of humanity – in general-historical perspective is collectivity. "The single true transcendental subject of economic activity, the personification of *pure economy*, is not any given individual but *humanity as a whole*."⁵² To possible criticism raised by historians and economists about the presence of stable causal mechanisms, Bulgakov answers that causality provides a response only about *how*, ignoring the question of *what*, losing the sense of the whole and focusing on the details.

1.8. "Is there a transcendental subject of knowledge who imparts unity to separate acts of cognition?"⁵³

The problem about Economy as a whole is very important for Bulgakov. This problem is equivalent to the general question of the existence of universal-transcendental knowledge. A general theory of *knowledge*, however, would be possible only in the presence of a *general transcendental subject*. The universal subject of knowledge would be a potential epistemological and scientific unit, based on the multiplicity of

⁴⁸ Ivi, p. 98.

⁴⁹ Ivi, p. 113.

⁵⁰ Ivi, p. 118.

⁵¹ Ivi, p. 124.

⁵² Ivi, p. 126.

⁵³ Ivi, p. 127.

individual cognitive acts that converge into one whole. "*Only one truly knows, but many engage in the process of cognition.* This one, this transcendental subject of knowledge, is not the human individual but humanity as a whole, the world's soul, the divine Sophia, the Pleroma, *natura naturans* – it appears under various names and in various incarnations in the history of ideas."⁵⁴ Summarizing, one transcendental subject exists and is the same for knowledge, economy and history; "it founds and objectivizes all of these processes, transforming the subjective into the trans-subjective, synthesizing the fragmented actions and events that make up economy, knowledge, and history into a living whole"⁵⁵. On the one hand, Humanity – being the soul of the world – transcends the physical world; on the other hand, Humanity belongs to empirical reality, to the "cosmic illness", to the "division between *natura naturans* and *natura naturata*". The spirit of the world operates through separate individuals, but it is realized only in their multiplicity. "The goal of economic activity is to overcome this division, to restore the primordial unity of living nature."⁵⁶ Man is "an expression of the world's soul", "the perfect center of the world". Each individual is placed in both the spiritual part of the world (*natura naturans*) and in the empirical part (*natura naturata*). In this light, each individual economic act becomes the act of the subject (of economic activity) on the object, which is the same interaction between *natura naturans* and *natura naturata*. Bulgakov states, "Truth is not an object of cognition, for all knowable truths are multiple and contingent. *Truth is a state of being* [...] Knowledge itself as a division of subject and object, alien to each other,

will ultimately disappear in the supreme synthesis of consciousness and being, the ideal and the real. The path of knowledge leads to the elimination of knowledge; all of its partial truths will dissolve in the immediate experience of Truth, being in Truth."⁵⁷

1.9. "*...the whole world is really the artistic re-creation of the eternal ideas that together make up the ideal organism, the divine Sophia, the Wisdom that existed with God before the Creation and whose joy is 'with the sons of man'.*"⁵⁸

Therefore, Bulgakov's Truth as a state of being is called *Sophia*. That is a dynamic process, which is expressed in History, Knowledge and Economy. The existence of individual human minds and wills does not contradict the wholeness of *Sophia*, because the parts of this unified multiplicity may express themselves freely. Even more, the various expressions become completed in the wholeness where free development is more than desirable as a path towards love, harmony and happiness. In the present reality however, such unity and harmony are rather absent. "Selfness throws its heavy veil over all of life, transforming it into a vale of tears and sorrow, implanting deep melancholy, sadness, and dissatisfaction."⁵⁹ Bulgakov calls this current state of the world the "Fall". The "Fall", however, is balanced somewhat by the continuous search for love, solidarity and the ideal social order.

1.10. "*Sophia and humanity maintain a living interaction.*"⁶⁰

Bulgakov defines economic activity as a struggle between life and death, a connection between *natura naturans* and

⁵⁴ Ivi, p. 130.

⁵⁵ Ivi, p. 132.

⁵⁶ Ivi, p. 135.

⁵⁷ Ivi, p. 136.

⁵⁸ Ivi, p. 137.

⁵⁹ Ivi, p. 141.

⁶⁰ Ivi, p. 145.

natura naturata and an expression of human creative will. Then Bulgakov asks, From what does human creative energy spring? According to him, although the empirical world proves to be imperfect, humanity has never lost the connection with the divine *Sophia*. "*Natura naturata* with its mask of death still remains a creation of the *natura naturans* and, though they are *in actu* separate, they remain eternally linked *in potentia*."⁶¹ Human creativity – knowledge, economy, science, culture, art – is *sophic*; it is a process of re-creation; it cannot be a creation from nothing, because only God creates from nothing, and if man – as an Absolute Instance – creates from nothing, it will be "Satanism". Therefore, Economy is potentially *Sophic*, because man belongs both to *Sophia* and to the empirical world.

1.11. "*Why does our empirical reality remain alienated from Sophia and resist its influence passively or even actively?*"⁶²

"Originally, economic activity was the harmonious interaction of man with nature; this was the Edenic economy."⁶³ Although the current empirical reality is certainly far away from *Sophia*, the world is still in her soul. "*Sophia* – primordial humanity – as the soul of the world is the center of all creation insofar as it rejects its own selfness, but it is also essentially free and therefore may realize the dark side of its being in exercising a blind and chaotic will."⁶⁴ The current empirical world is characterized by the "Fall" of man – the struggle of individuals, groups, classes, nations for survival as a general rule and disharmony – and the immediacy of *Sophia* has been lost. Pure reason has

replaced *Sophia* and the world has become "soulless" and material. "The purpose of economic activity is to defend and to sow the seeds of life, to resurrect nature. This is the action of *Sophia* on the universe in an effort to restore it to being in Truth."⁶⁵ For Bulgakov, *Sophia* is *Truth*, "a state of being", it "cannot be understood through science", but only as a revelation. This revelation could be religious, philosophical (as a "brilliant intuition") or artistic. In other words, *Sophia* cannot be understood by discursive knowledge and "armchair" mentality.

1.12. "*The single Truth is inaccessible or transcendent to discursive knowledge.*"⁶⁶

Contemporary science lacks a unified design; it gets stronger but becomes more and more specialized and fragmented. Modern science is so fragmented that it can be illustrated as a multitude of sciences, each of them with its own truths related to particular objectives and utilities. Thus from an empirical point of view, there cannot be a synthesized and unique picture of science's world of *relativity*. The focal point of the sciences for Bulgakov is different. "Sciences are united in the oneness of their (transcendental) subject – man as universal humanity – and in their substratum – the single all-penetrating and all-creating life, which generates them from its womb, from mysterious and immeasurable depths."⁶⁷

1.13. "*Man stands in an economic relation to nature, holding a tool in one hand and the flaming torch of knowledge in the other.*"⁶⁸

For Bulgakov, economic activity is nothing less than man's struggle for life, and science

⁶¹ Ibid.

⁶² Ivi, p. 149.

⁶³ Ivi, p. 154.

⁶⁴ Ivi, p. 150.

⁶⁵ Ivi, p. 153.

⁶⁶ Ivi, p. 157.

⁶⁷ Ivi, p. 162.

⁶⁸ Ivi, p. 166.

is an instrument and the result of that fight. Thus, if life is a continuous economic process, *knowledge* is also economic, because it consists of *labor* and produces ideal values. Scientific labor serves "to broaden experience or accumulate knowledge". Science is "a sort of condenser" experience; "the principle of conservation of energy really holds in science, and why it strives to achieve a goal with a minimum expenditure of effort [...] is the fundamental principle of economic activity"⁶⁹. Mathematical, natural, social, humanistic sciences, even art are all economic, because "man does not live by bread alone" and "the makeup of the sciences reflects the needs of man, who creates them according to his needs, both practical-economic and ideal"⁷⁰. To understand science we need to understand man, because he created it and the opposite would be absurd. As has already been said, man is "an expression of the world's soul", "the perfect center of the world". So, everything created by man is "an expression of the world's soul". If there is "a primordial sophic nature of the world" than there will be "a secondary sophic nature of science". Thus, "Science is Sophic". "It is removed from Truth, for it is a child of this world, which exists in a state of untruth, but it is also a child of Sophia, the organizing force that leads this world to Truth, and it therefore bears the mark of *truthfulness*, Truth as a process, as becoming."⁷¹ In this way, Bulgakov justifies the unity of Science – "not as unified knowledge but as unified action". Being action, *knowledge* cannot be understood by a theory of cognition but only by a theory of action – "a praxeology rather than an epistemology". Knowledge

or science, however, cannot be constituted as the supreme legislator of life, because in this manner scientific methodology will assume ontological significance, "the false assumption that a scientific relation to reality is in fact the deepest and most authentic takes root and flourishes, and the intentional limitations of science are forgotten."⁷² *Scientia est ancilla vitae*. Life is "continuously realized subject-objectness, the subject and object in their polarity and their living unity, expressed not in scientific cognition but in economic action, whereas science is only objective."⁷³

1.14. "There is no movement, said the bearded elder, The other was silent and began to walk before him..." Alexander Pushkin

As already mentioned, my exposition rather prefers the originality of Bulgakov's thought in the volume in question. The critical aspect, certainly very serious and original, is not the object of my research. In my view, the ending of the book, focused on the critical side, may seem ineffective for the contemporary reader. It was Bulgakov's personal choice, already stated in the *Preface*: "a debt of the author's philosophical conscience in relation to his own past."⁷⁴ In my opinion, "the lack of a point of arrival" in the book could be quite problematic for its diffusion, because "the easy label habit" (used more today than ever), would dismiss Bulgakov's volume as only a critic of Marx, without putting due emphasis on the originality of his thought.

Therefore, from the Chapter *The Nature of Science*, Bulgakov's doctrine remains unchanged in substance and focuses on the

⁶⁹ *Ivi*, p. 170.

⁷⁰ *Ivi*, p. 172.

⁷¹ *Ivi*, p. 176.

⁷² *Ivi*, p. 182.

⁷³ *Ibid.*

⁷⁴ *Ivi*, p. 35.

rich critical-decomposition analysis of some philosophical paradigms and categories. The main critical points examined are: "positivism's naively dogmatic view" (see p. 164); Kant-Cohen's "kinship of idealism and pragmatism as forms of relativism in science" (see p. 165), the "utilitarian nature of knowledge" (see p. 167) and "Bentham's moral arithmetic" (see p. 174); radical pragmatism (see p. 174); Kant's epistemology (see p. 178); Schelling's "breakthrough to reality" (see p. 180); the scientific-mechanical worldview (see p. 183) and scientific rationalism (see p. 187); Enlightenment thinking (see p. 187); the "mirror-like and passive nature of knowledge" (see p. 193); scientific reason (see p. 194); the "theory of man's ideal preexistence in God as Sophia" (see p. 204); Determinism (see p. 213) and Social Determinism (see p. 223); methodological schemas and the Method of abstraction (see p. 232); History and historical pragmatism (see p. 236); "socially utilitarian rationalism" (see p. 240) and "scientific socialism" (see p. 242); "false empiricism" and contemporary historicism (see p. 259); economic pragmatism and economic materialism (from p. 262 to the end); Hegelianism (see p. 265); Benthamism (see p. 270); the dialectical method and "historical economism" (see p. 272).

1.15. *"The individual as a living synthesis of subject and object therefore represents a completely inextricable conglomeration of freedom and necessity, of I and non-I."*⁷⁵

The Chapter *Economy as a Synthesis of Freedom and Necessity* requires special attention, not because there is anything fundamentally new in Bulgakov's thought, but because it is very relevant to the present study. According to the scholar, the synthesis between *freedom* and *necessity* is both

constituent and an aim for the economic process. Generally, *freedom* is understood as the absence of causality. For Bulgakov, however, "Freedom is not non-causality but *self-causality*, the capacity to act of oneself (*a se*, hence the unmelodious but convenient expression *aseism*) [...] Causality has a dual nature: it can be causality through freedom or through mechanism, thus in fact becoming a union of freedom and necessity."⁷⁶ Man is constituted as a "formal limitlessness of his consciousness and his freedom", but at the same time each individual is limited. The limit of the formal limitlessness of each individual's free will is *necessity*. Bulgakov agrees with Schelling's definition of absolute free will as *holy will* and the highest freedom as a capitulation to a certain *holy necessity*. "Only free creatures, that is, people, possess the capacity for conscious, planned, creative labor."⁷⁷ Human labor intended as a whole is actually human history. Then, Economy is creativity and union between *freedom* and also *necessity*. Although Economy's representation as *necessity* is much more evident, *freedom* – as man's creative relation to labor – is also a fundamental constituent of Economy. As evidence for that, Bulgakov calls into question Political Economy, which begins to acknowledge that economy is also creativity, a psychological phenomenon and even a phenomenon of spiritual life. The spirit of Economy or man himself cannot be defined as a mere "reflection" of economic relations. "Each economic age has its spirit and is in turn the product of this spirit; each economic age has its particular type of "economic man" generated by the spirit of economy. [...] The concept of economy as a creative process with room for freedom also leads us to questions of the ethics and eschatology of economy and in fact makes these questions possible."⁷⁸

⁷⁵ Ivi, p. 210.

⁷⁶ Ivi, p. 199.

⁷⁷ Ivi, p. 215.

⁷⁸ Ivi, p. 218.

1.16. "How is social science possible if its basic premises are obviously hypothetical?"⁷⁹

The section *Sociologism and Historicism* also remains within the same doctrinal scheme, but it is in a certain relationship with the scientific framework of this paper. After all, Bulgakov recalls the fact that the social sciences operate through abstraction, logical isolation, synthesis, stylization of reality. Each social science (as with Science in general) focuses on a particularly problematic aspect of social life, arriving at a singular pattern of laws. "The living whole of social life does not willingly submit to the scalpel of scientific analysis, just as living nature slips away from science; hence social science's every claim fully to penetrate social life in its utmost depths, to determine its currents and its 'creative evolution' scientifically, must be rejected as illegitimate."⁸⁰ Therefore, the role of the social sciences cannot be overstated by using notions like "social physics" or "natural-scientific method", because otherwise "sociology lapses into illegitimate claims". "Human freedom as creativity brings something entirely *new and individual* to social life, undermining the uniformity and the typicality of social life postulated by sociology."⁸¹ The *raison d'être* of the social sciences is only in their practical use, in their "action on collectivities", on the social body (and even this must not be exaggerated by arriving at a "sociological love for the distant"⁸²). Knowledge is always discursive and "contingent on its particular tasks". "It makes possible the cognition of

interconnections among things, and this interconnection constitutes the objective basis of scientific cognition, [...] it can only guarantee that essences are truly apprehended through science, [...] science partakes of truthfulness if not of Truth."⁸³

1.17. "...political economy by nature is an art, though a scientific art"⁸⁴

The Chapter *The Phenomenology of Economy* does not add anything substantially new to Bulgakov's philosophical doctrine, but provides analysis of some important critical points. Only Philosophy of Economy could see Economy as unitary through the transcendental subject's unifying action. Economy possesses its own phenomenology, which can be subject to conjectural scientific research. "Economy as phenomenology – as it exists in immediate empirical reality – is a voluntarily or involuntarily acknowledged necessity, imposed on us from outside."⁸⁵ Economy's dimension as necessity, struggle for life and scourge of poverty is directly tangible, while Economy's image as a synthesis of *freedom* and *necessity*, and creative labor is much clouded and distant. "If collective humanity is the transcendental subject of economy, then economy, whatever form it may take, is a social phenomenon for the individual, empirical man as well. Nonetheless he may not be aware of the transcendently collective nature of labor, or that he himself belongs to the collective economic subject; on the contrary, any given socioeconomic structure seems to him a limitation on his will, a violent necessity imposed on him from outside."⁸⁶ Each individual interacts with nature,

⁷⁹ Ivi, p. 237.

⁸⁰ Ivi, p. 234.

⁸¹ Ivi, p. 235.

⁸² (author's note), Bulgakov refers to the continuous expansion of the social sciences and especially of social policies, with a "sociological mechanization-rationalization of human relations", a loss of immediacy and a contemporary society where true feelings are replaced by an abstract community (see p. 241);.

⁸³ Ivi, p. 238.

⁸⁴ Ivi, p. 260.

⁸⁵ Ivi, p. 245.

⁸⁶ Ivi, p. 247.

as a member of Humanity, but quite prevalent among the same individuals is competition rather than the *sophic*-universal sense of Economy as unified action. "Political economy – the scientific phenomenology of economy – is oriented precisely on this fact: wealth (and its opposite, poverty) as the lot of the individual, even if socially contingent; the individual urge to acquire wealth and the resulting competition among individuals, groups, classes, and nations."⁸⁷ Performing a short historical review-analysis of Economy's doctrines, Bulgakov concludes that the same economic concepts (wealth, productive and unproductive labor, forces of production, production) are rather vague and changeable. That is intrinsic for Political Economy, because it provides the necessary dynamism and possibility of adaptation according to particular historical tasks. It seems that our scholar's problem is not the vague object of Political Economy, but rather its progressive convergence to sociological sciences. "Ultimately, political economy (even when it is historically inclined) is a sociological science in its desire to establish *laws* of economic life; its contribution is a set of particular, *a priori* methodological premises and, above all, a characteristic sociological determinism."⁸⁸ Political Economy focuses mainly on "collectivities", regularities, types and stylizations. In this way individuality, freedom and creativity are missing completely. "The infamous "economic man – that crucially instrumental concept of political economy [...] is precisely such a stylized collective type (reminiscent of the image we get if we photograph many faces on the same film)."⁸⁹ According to Bulgakov, Political Economy's

methodological premise of economic regularities based on typical and repetitive phenomena excludes both particularities and changes in economic life. "*Nothing* new – the denial of anything historical or individual – thus becomes the war cry of the eldest daughter, political economy, as well as of the mother, sociology."⁹⁰ In any case, Bulgakov is not totally opposed to historical generalizations, because they possess some scientific usefulness within such limits. These limits are the view of the past from the perspective of current concepts, the static nature, and the inability to understand individual and creative elements. For Bulgakov, all construction of "economic man", the immutable and inevitable laws of economic development, "class psychology and economic egoism", are products of "modern proselytizers of economic Islam". Therefore, Political Economy must focus primarily on resolving practical issues, concrete reality, and should seek to comprehend individual personality and creativity. "It must really be directly or indirectly useful rather than being a mere logical toy."⁹¹ "The possibilities for abstract theorizing in science in general and in political economy in particular are endless, which is why it should always be under the control of conscious *critical pragmatism* which asks, *cui prodest?*"⁹²

2. Spreading Utopian Ideas Model based on NetLogo Virus Model⁹³

2.1. General notions

The universe of utopian ideas is quite fascinating. The effort of excellent minds to conceive a better world, albeit ideal, is always worthy of admiration and stimulus.

⁸⁷ *Ibid.*

⁸⁸ *Ivi*, p. 250.

⁸⁹ *Ivi*, p. 253.

⁹⁰ *Ivi*, p. 254.

⁹¹ *Ivi*, p. 258.

⁹² *Ivi*, p. 259.

⁹³ Wilensky U., *NetLogo Virus Model*, (URL=<http://ccl.northwestern.edu/netlogo/models/Virus>), Center for Connected Learning and Computer-Based Modeling, Northwestern University, Evanston, IL, (1998).

There are however, two questions that arise spontaneously in this regard: Why do some ideas persist over time while others fade away? and What are the mechanisms according to which some ideas are implemented in reality while others remain only "monuments of paper"? I will try to answer these questions using a simulation model – based on *NetLogo Virus Model* – which I call *Spreading Utopian Ideas Model*.

Generally, simulation techniques are used when other models (statistical-mathematical) prove insufficient. Simulation models allow a rapid and flexible experimentation of different situations-concepts, which would be very difficult in the real world. It always remains implicit that the models do not replace reality, but seek to simplify and approximate it. Multi-agent simulation is not only a powerful theorizing tool, but also allows connection to empirical data. The more simulation is constrained by empirical data, the more it presents a high degree of realism. Empirical calibration of a model, however, must be pursued very carefully, since it could lead the researcher to select the aspects to be modeled as a function of the available data, implying a kind of theoretically "conservative" tendency of calibration. Models also provide opportunity to observe-examine basic dynamics of a situation or circumstance. Experimenting with the simulation many times, it could happen that many prejudices about various phenomena are challenged. New so-called "emergent" phenomena may also appear, that is to say, new schemes produced by the interaction of agents.

"*NetLogo* is a programmable modeling environment for simulating natural and social phenomena. It was authored by Uri Wilensky in 1999 and has been in continuous development ever since at the *Center for Connected Learning and Computer-Based*

Modeling. *NetLogo* is particularly well suited for modeling complex systems developing over time. Modelers can give instructions to hundreds or thousands of 'agents' all operating independently. This makes it possible to explore the connection between the micro-level behavior of individuals and the macro-level patterns that emerge from their interaction."⁹⁴

2.2. *Spreading Utopian Ideas Model based on NetLogo Virus Model*

"At the top of each *NetLogo* main window are three tabs labeled *Interface*, *Info* and *Code* (see Figure 3 in Appendix). [...] The *Interface* tab is where you watch your model run. It also has tools you can use to inspect and alter what's going on inside the model. [...] The *Code* tab is where the code for the model is stored. [...] The *Info* tab provides an introduction to the model. It explains what system is being modeled, how the model was created, and how to use it. It may also suggest things to explore and ways to extend the model, or call your attention to particular *NetLogo* features the model uses."⁹⁵ It would be appropriate to propose some *Info* tab elements for a synthetic overview of the model.

2.3. *The Info tab*

The *Spreading Utopian Ideas Model* simulates the transmission and perpetuation of utopian ideas in human society. It is an adaptation of the classic *Virus Model*. The model is initialized with 50 people, 10 of whom are contaminated by a utopian idea. People move randomly about the world in one of three states: not affected by the utopian idea but susceptible to contamination (green), affected and contagious (red), and not affected by the utopian idea and immune (gray). People may die of old age (or infection in the *Virus Model*). In the *Spreading*

⁹⁴ The *NetLogo* 5.3.1, User Manual - What is *NetLogo*?, p. 22, 2016.

⁹⁵ *Ivi*, pp. 86, 98, 102.

Utopian Ideas Model it is preferable not to die from contamination by a utopian idea, or without opening an interminable discussion; contamination and peaceful perseverance in following Bulgakov's utopian idea (*Sophic Economy* in our case) should not lead to death in the Western world. When the population dips below the environment's "carrying capacity" (set at 300 in this model) people not affected by the idea may produce offspring not affected by the idea (but susceptible). Population density affects how often contaminated, immune and susceptible individuals come into contact with each other. The size of the initial population could be changed using the "number-people" slider. As individuals die, some will be contaminated, some will be susceptible and some will be immune. All the new individuals who are born, replacing those who die, will be susceptible. People may die of old age (or infection in the *Virus Model*).

In the *Spreading Utopian Ideas Model*, people die of old age only at the age of 50. Reproduction rate is constant in this model. If a person has been contaminated and has recovered, how immune are they to the virus? It is often assumed that immunity lasts a lifetime and is assured, but in some cases immunity wears off in time and immunity might not be absolutely secure. In this model, immunity is secure, but it only lasts for a year. What degree of "strength" or forceful leaders the utopian idea may have in human society is determined by the "strength-leadership" slider. How long is a person contaminated by a utopian idea before they recover (or die in the *Virus Model*)? This length of time is essentially the idea's window of opportunity for transmission to new hosts (when "idea fervor" is greater). In this model, that is the duration of "enthusiasm" and it is determined by the duration of the "enthusiasm" slider. Four important parameters of this model are set as constants in the code (see "setup-

constants" procedure). They can be shown as sliders if desired. The turtles' lifespan is set to 50 years, the carrying capacity of the world is set to 300, the duration of immunity is set to 52 weeks, and the birth-rate is set to a 1-in-100 chance of reproducing per tick when the number of people is less than the carrying capacity. Each "tick" represents a week in the time scale of this model. The "strength-leadership" slider determines how great the chance is that idea transmission will occur when a contaminated person and a susceptible person occupy the same patch. For instance, when the slider is set to 50, the idea will spread roughly once every two chance encounters. The "enthusiasm" duration slider determines the number of weeks before a contaminated person recovers (or dies in the *Virus Model*). The degree of "obtuseness-selfishness" (in society) slider controls the likelihood that a contamination will end in recovery or immunity. When this slider is set at zero, for instance, contamination is always totally effective. The "setup" button resets the graphics and plots and randomly distributes "number-people" in the view. All but 10 of the people are set to be green susceptible people and 10 red infected people (of randomly distributed ages). The "go" button starts the simulation and the plotting function. The "turtle-shape" chooser controls whether the people are visualized as person shapes or as circles. Three output monitors show the percent of the population that is "contaminated", the percent that is "immune", and the number of "years" that have passed. The plot shows (in their respective colors) the number of susceptible ("decontaminated"), contaminated ("affected"), and "immune" people. It also shows the number of individuals in the "total" population in blue. The factors controlled by the three sliders interact to influence how likely the utopian idea is to thrive in this population. Notice that, in all cases, these factors must create a balance in which an adequate number of potential

hosts remain available to the idea and in which the idea can adequately access those hosts. What ultimately happens to the idea is determined by the factors controlled by the sliders. It would be appropriate to think about how different slider values might approximate the dynamics of a real-life idea. It would be possible to extend the model by means of additional sliders, controlling the carrying capacity of the world (how many people can be in the world at one time), the average lifespan of the people and their birthrate, adding a slider to control how long immunity lasts. It could also be made immunity-imperfect, so that immune turtles still have a small chance of getting contaminated. This chance could increase over time.⁹⁶

2.4. Simulation 1

Simulation 1 was designed as a basis and hypothetically realistic. The parameters were set as: number-people 50; strength-leadership 25%; obtuseness-selfishness 75%; enthusiasm 52 weeks. The simulation was performed 100 times by recording the results with the cadences at 10 and 50 years. Only two patterns occurred: Type Alpha (idea spreading) – as the 1st turn of simulation (see Figure 4 and Figure 5 in Appendix) and Type Omega (end of idea spreading) – as the 3rd turn of simulation (see Figure 6 and Figure 7 in Appendix). The difference in each of the two patterns was irrelevant. In the Type Omega, the situation fell generally around the 2nd or 3rd year (see Figure 8 in Appendix).

The turns for Type Alpha were: 1st, 2nd, 4, 5, 6, 9, 10, 11, 13, 14, 15, 16, 18, 21, 22, 23, 24, 25, 28, 31, 32, 33, 34, 35, 36, 37, 38, 40, 42, 43, 44, 45, 46, 48, 49, 50, 52, 54, 56, 59, 60, 62, 63, 64, 65, 66, 68, 69, 70, 71, 73, 76, 77, 79, 82, 83, 84, 87, 95, 98, 100th turn.

The turns, which belonged to Type Omega were: 3rd, 7, 8, 12, 17, 19, 20, 26, 27,

29, 30, 39, 41, 47, 51, 53, 55, 57, 58, 61, 67, 72, 74, 75, 78, 80, 81, 85, 86, 88, 89, 90, 91, 92, 93, 94, 96, 97, 99th turn.

Overall, Type Alpha manifested itself 61/100 turns, while Type Omega manifested itself 39/100 turns. Therefore, in this simulation Type Alpha had 61% of manifestations as against 39% for Type Omega.

2.5. Simulation 2

Simulation 2 was set with the parameters: number-people 50; strength-leadership 25%; obtuseness-selfishness 75%; enthusiasm 26 weeks. Only the parameter duration of "enthusiasm" was changed, to "26 weeks", that is to say half a year instead of one year as in Simulation 1. The result around the 2nd year onwards aligned consistently with Type Omega of Simulation 1. Evidently, a half-year duration of "enthusiasm" is not enough to spread a utopian idea in this model.

2.6. Simulation 3

The Simulation 3 was set with the parameters: number-people 50; strength-leadership 25%; obtuseness-selfishness 50%; enthusiasm 26 weeks. Unlike Simulation 2, only the parameter "obtuseness-selfishness" was changed, to "50%". The result around the 2nd year onwards aligned consistently with Type Omega of Simulation 1. Evidently, the 50% degree of "obtuseness-selfishness" in society and half-year duration of "enthusiasm" are not enough to spread a utopian idea in this model.

2.7. Simulation 4

Simulation 4 was set with the parameters: number-people 50; strength-leadership 25%; obtuseness-selfishness 25%; enthusiasm 26 weeks. Unlike Simulation 3, only the parameter "obtuseness-selfishness" was changed, to "25%". The result around the 2nd year

⁹⁶ Bogatzky N., *NetLogo Spreading Utopian Ideas Model*, Info tab, 2016, based on Wilensky U., *NetLogo Virus model*, (URL=<http://ccl.northwestern.edu/netlogo/models/Virus>), *Center for Connected Learning and Computer-Based modeling*, Northwestern University, Evanston, IL., 1998.

onwards aligned consistently with Type Omega of Simulation 1. Evidently, the 25% degree of "obtuseness-selfishness" in society and half-year duration of "enthusiasm" are not enough to spread a utopian idea in this model.

2.8. Simulation 5

Simulation 5 was set with the parameters: number-people 50; strength-leadership 50%; obtuseness-selfishness 25%; enthusiasm 26 weeks. Unlike Simulation 4 only the parameter "strength-leadership" was changed, to "50%". Already the 1st turn presented some interesting results. At first glance the pattern was similar to Type Alpha of Simulation 1, but the sine waves ("affected", "immune" and "decontaminated") were definitely larger (see Figure 9 in Appendix). The pattern, however, becomes Type Omega over a period of 20 years, meaning the idea ceases to spread (see Figure 10 in Appendix). For convenience I call this pattern Type Alpha-Omega (the Greek alphabet's first and last letters provide a metaphorical guide to the outcomes of idea spreading). The initial amplitude of the sine waves assumed that eventually a good part of the Type Alpha pattern would become Type Alpha-Omega. For this reason, Simulation 5 was extended to a period of 1,000 years. Obviously, this span of time appears exaggerated even for a theoretical-exploratory model and therefore the simulation was not continued beyond the 1,000-year period.

Staying in a "realistic" framework, I preferred to group Simulation 5's results in three pattern groups: Type Alfa – the idea spreads steadily for 150 years and over; Type Omega – the idea ceases to

spread almost immediately; Type Alpha-Omega – initially the idea spreads steadily but ceases to spread in a time span of 150 years.

The turns for Type Alpha were: 10th (for 169.2 years), 43 (for 291 years), 53 (for 212.7 years), 73 (for 691.2 years), 79 (527.8 years), 80 (151.8 years), 86 (742.5 years), 97 (295.7 years), 83 (for 1,000.5 years and over, see Figure 11 in Appendix), 92nd (for 1,004.3 years and over) turn.

The turns for Type Omega were: 2nd, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 37, 38, 39, 40, 41, 42, 44, 45, 46, 47, 48, 49, 50, 51, 52, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 66, 67, 68, 69, 70, 71, 74, 75, 76, 77, 78, 81, 82, 84, 85, 87, 88, 89, 90, 91, 93, 94, 95, 96, 98, 99, 100th turn.

The turns for Type Alpha-Omega were: 1st (the idea spreads for 20 years and ceases to exist), 3 (for 99.9 years), 22 (for 86.9 years), 25 (for 105 years), 36 (for 100.4 years), 65 (for 98 years), 72nd (for 42.7 years) turn.

Overall, Type Alpha manifested itself in 10/100 turns, Type Omega manifested itself in 83/100 turns, while Type Alpha-Omega manifested itself in 7/100. In this simulation, Type Omega obtained 83%, Type Alpha 10% and Type Alpha-Omega 7% of manifestations.

Therefore, the spread of a utopian idea in an environment with Simulation 5 parameters presents itself as a fairly unstable and precarious phenomenology. Only 17% of the simulations saw a development of an idea's spreading, of which 7% did not last more than 150 years.

2.9. Some considerations

The experiment began with a fairly stable situation – Simulation 1 – for spreading a utopian idea, with 61% probability of a utopian idea's propagation. After lowering the slider duration of "enthusiasm" from one year (52 weeks) to half a year (26 weeks), it was necessary (keeping the "number-people" slider at 50), to raise the level of an idea's "strength-leadership" to 50% and to lower the level of "obtuseness-selfishness" in society to 25% – Simulation 5 – to have an albeit unstable 17% of a utopian idea's diffusion.

The five simulations were not used for complete control-verification of the *Spreading Utopian Ideas Model*, because to achieve such a goal it is necessary to use an "armored" method and a quite different amount of time-work. My intention was rather to show the potential of the "gung-ho" approach and, respectively, of the model in question. Apart from hypothetical future verification-changes to the model, I believe that the *Spreading Utopian Ideas Model* presents some strengths as against conventional mathematical-statistical models. Above all, the possibility of dealing with, describing, understanding and predicting general phenomena – almost improbable (hence the name "gung-ho" approach) – elusive with common techniques. The overall simplicity, manageability and immediacy of the results must also be highlighted. Finally, I would like to emphasize not so much the possible heuristic effect of this approach-model, but rather its configuration as an experiment-proposal "towards the Historical Method in Economics".

Conclusions

Repetitio: Popularization of an alternative doctrine and a proposal for a research method in the History of Economics

The object of this study has been the *Sophic Economy* by Sergei Bulgakov – an alternative and valuable philosophical-economic doctrine. At the beginning, facts-examples have been identified in a contemporary, social and purposely localized context (contemporary Italian society), demonstrating a certain potential sensibility towards the idea of *Sophic Economy*. Then, the thought of Bulgakov has been expounded with a purposeful tone instead of the critical-purposeful frame originally used by Bulgakov himself in the volume *Philosophy of Economy: the world as household*. The quality of the examined content has raised the simple question, What about the dynamics of diffusion of ideas like these? Employing what I call a "gung-ho" approach – the researcher's imagination as the technique of a historical method that does not integrate the facts of the past but places them in a sort of laboratory-simulative environment model – the idea of *Sophic Economy* has been inserted in the NetLogo *Spreading Utopian Ideas Model*. The popularization of an alternative philosophical doctrine and the proposal-experiment of an original historical research method in Economics have been the main results of the present study.

Posita in affectibus: Is it possible there's something beyond homo oeconomicus?

In essence, Bulgakov's volume *Philosophy of Economy: the world as*

household affirms the existence of something beyond *homo oeconomicus*. This paper, as well as expounding-corroborating Bulgakov's philosophical doctrine in the book in question, seeks to describe a hypothetical diffusion.

Perhaps the "thorniest" issue of my work is to have associated the term "utopian idea" (in my model) to Bulgakov's philosophical thought. As has been mentioned above, this would be an unforgivable reduction-simplification, which deserves to be clarified.

According to Bulgakov, man could not live without creeds and religion. However, it is very interesting that Bulgakov's central idea – the theory of *Sophia*, the Divine Wisdom, or "Sophiology" – was conceived in a purely secular context. In his view, Positivism has been strengthened to the point of becoming a religion, while Marxism was merely a variant or its manifestation. Bulgakov provided an original and persuasive response to Marxism and Positivism, a real theory of society, especially with his *Philosophy of Economy: the world as household* (*Filosofiiia khoziaistva*, 1912), where the Russian word *khaziaistvo* itself meant a large household. Bulgakov's imaginary original state, "Edenic Economy", would have been the perfect harmony between man and nature. The modern world would be characterized by the "Fall of Man" – the harsh struggle for survival among man-prisoners of their material needs – which was the only real world according to Marx. The lost *Sophic Economy* for Bulgakov was a path to perfect labor, to restore harmony and to resurrect nature. Relationships between people were not established by consensus or contract, but based on solidarity and on

sharing common values. Therefore, the *Sophic Economy* was not a mere goal to be reached, nor was it a society seen in its external manifestations (forms of government, institutions etcetera), but it was above all a dynamic inspiring model, a different ethic in sharp contrast with other grim and narrow economic doctrines. The intention was to integrate philosophy and political economy into an organic theory of society, rejecting the simplistic rationalism, positivism and abstract scientific activities produced in the "comfortable armchair". Bulgakov could not stand the so-called "armchair philosophers", self-absorbed and protected by the walls of their offices, because according to him knowledge has to be active, has to deal with the real world, has to be able to comprehend, intervene and transform reality. Bulgakov's ideas of Russian-Orthodox derivation – wisdom, wholeness, sense of community (*sobornost'*) and "joyful labor in *Sophia*" – are an original alternative to the typical Western concepts concentrated on rationality, division, extreme individualism, external forms, parties, utilitarian interests, and so on. In contrast to classic liberalism, where everything is focused on individual rights, the real core of Bulgakov's philosophy was centered on human dignity, inspiration and creativity as the essential basis for any socio-economic experience.

Therefore, from a purely philological point of view, I would have had to use the word "alternative" in place of "utopian idea", or even better, I would have had to call the model "Spreading *Sophic Economy*" by connecting it directly to Bulgakov. My choice has focused on a "utopian idea" in order to make the

model more general. In addition, the term "alternative" does not provide information on the great originality and humanism of Bulgakov's doctrine. Moreover, without concealing some personal bitterness, I think that for present-day Western society (focused on the rule-principle of "immediate benefit"), *Sophic Economy* would be equivalent to a real utopia.

To spread and implement *Sophic Economy*, in my opinion, it is not sufficient to describe and understand it, but one must internalize it. In perfect coherence with the "unusual assemblages" of our epoch and Bulgakov's beliefs in Economy as art and creativity, I venture to propose an example. The scheme provided by Bulgakov in describing his philosophical doctrine resembles composing music in the style of Palestrina. Palestrina's compositions belong to a remote musical language but are still considered real masterpieces in music history, comparable to the works of Michelangelo in architecture. The first steps for composing in the style of Palestrina (mandatory for the study of classical music) with the obvious background of tonal music, collide with a raft of prohibitions. It seems there are more restrictions than freedoms. Even after much exercise and study, the results, although formally correct, cannot be called art. It is necessary above all to perform, become immersed in, and internalize the music of that epoch, in order to achieve a certain mastery of the language. Only in this way, the formal rules that seem to focus only on critical "Don'ts" become molded with a view to "Creating".

I think that spreading Bulgakov's *Sophic Economy* also requires immersion, conviction-internalization, a *revelation*, because "Sophia can be perceived only by means of revelation."⁹⁷ By whom?, is another problematic aspect about the hypothetical spreading of *Sophic Economy*. As Bulgakov himself writes, "The sense of economy as an interaction of collective humanity and nature, sophic in its foundations and endowed with cosmic meaning, is not of course present in the minds of particular economic actors as they go about their practical lives. [...] Economy as the unified action of the transcendental economic subjects breaks down into *phenomena* and has its own *phenomenology*; we can understand its principles only from the perspective of a Philosophy of Economy..."⁹⁸ It is obvious that the common person will have difficulty in internalizing Bulgakov's doctrine without a guide. I have tried to answer this problematic question with the first slider – degree of "strength-leadership" in society – in my model.

In conclusion, I would like to stress again that the present work does not make heuristic claims either to have discovered Sergei Bulgakov, or to have validated the so-called "*gung-ho*" approach. My work is focused on the future, as a proposal-experiment of a hypothetical-potential path – in my opinion worthy of further development – "towards the Historical Method in Economics" and to the continuity of the *many truths* in science. To put it in the words of Bulgakov: "Truth is not an immediate object for

⁹⁷ Bulgakov S., *Philosophy of Economy: the world as household*, translated into English by Catherine Evtuhov, Yale University Press, 1999, p. 155.

⁹⁸ *Ivi*, p. 245.

⁹⁹ *Ivi*, p. 157.

theoretical knowledge. The single Truth is inaccessible or transcendent to discursive knowledge; it therefore constitutes, to use Kantian language, but an "ideal" of knowledge. Because Truth is beyond history, only movement, rather than a clear goal, is evident in the latter; history stretches out in an endless series of discourses in knowledge and action. Truth as such doesn't fit into any one of these particular projects, with the result that, in practice, there is no one truth but only the many truths of various sciences and only particular historical goals." ⁹⁹

References

- Agnoli S., *Strategie di Ricerca Sociale*, Appunti Master So.Te.Me.Ri., 13 Maggio 2016
- Bulgakov S., 2009, *Philosophy of Economy: the world as household [Filosofia khoziaistva]* (1912), Istituto di Civiltà Russa, Moscow
- Bulgakov S., 1999, *Philosophy of Economy: the world as household*, translated into English by Catherine Evtuhov, Yale University Press
- Cipriani R., *Introduzione al Master in Sociologia: Teoria, Metodologia, Ricerca*, Appunti Master So.Te.Me.Ri., 4 Marzo 2016
- Esposito R., 2016, *Da fuori. Una filosofia per l'Europa*, Piccola Biblioteca Einaudi
- Freda V., 2008, *Questioni di metodo nella ricerca storica*, ([URL=http://www.vincenzofreda.it/primo_livello/chi_sono_saggi/Questioni_di_metodo_nella_ricerca_storica.html](http://www.vincenzofreda.it/primo_livello/chi_sono_saggi/Questioni_di_metodo_nella_ricerca_storica.html))
- Le confessioni (The Confessions, 2016)*, a film directed by Roberto Andò
- Pares B., Two Great Russian Liberals Peter Struve and Sergius Bulgakov, *The Slavonic and East European Review*, Vol. 23, No. 62, Jan., 1945, pp. 141-145
- Payne D. P., Marsh C., Sergei Bulgakov's "Sophic" Economy: An Eastern Orthodox Perspective on Christian Economics, *Faith & Economics*, Number 53, Spring 2009, pp. 35-51
- Riva G., *Se il banchiere si confessa*, "L'Espresso", No. 15, Aprile 2016, pp. 52-56
- Saroldi A., 2001, *Gruppi di acquisto solidali*, Bologna, Edizioni EMI
- The NetLogo 5.3.1, *User Manual - What is NetLogo?*, 2016
- Stanchev K., Sergey Bulgakov and the Spirit of Capitalism, *Journal of Markets & Morality*, Vol. 11, No. 1, Spring 2008, pp. 149-156
- Troisi R., Di Sisto M., 2016, *Spazi per un'economia liberata, dossier Sbilanciamo le città, Sbilanciamoci*
- Van Kessel J. H. J., 2012, *Bulgakov's sophiology: towards an Orthodox economic theological engagement with the modern world*, Springer Science+Business Media Dordrecht
- Zani F., Eusebi G., 2000, *Solidarietà. Il manuale indispensabile per passare dalla speculazione alla solidarietà*, Macro Edizioni, Diegaro di Cesena

Appendix

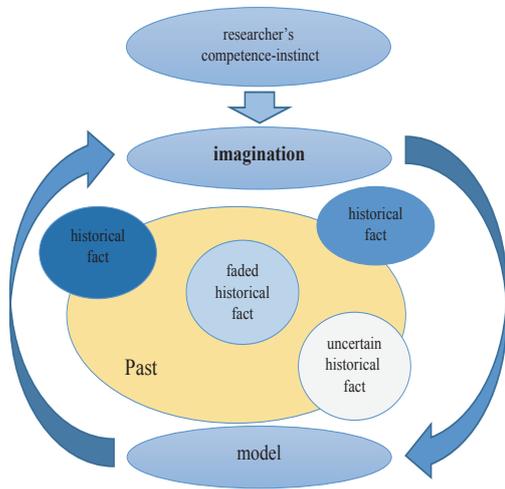


Fig.1. The Imagination as an internal integration technique of historical sources and as elaboration of models, projected into the Past

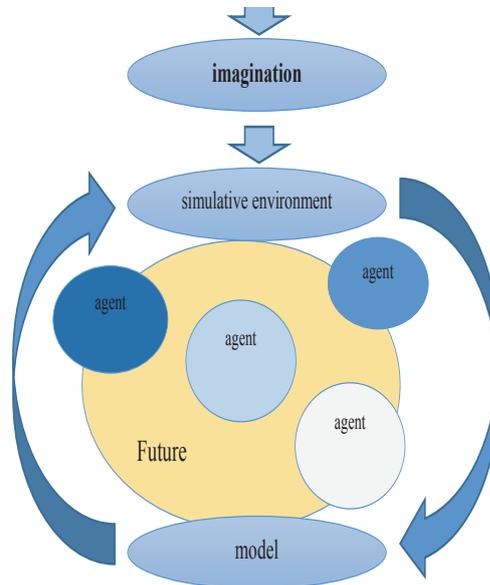


Fig.2. The Imagination as an external technique for ideating models – "gung-ho" approach – projected into the future

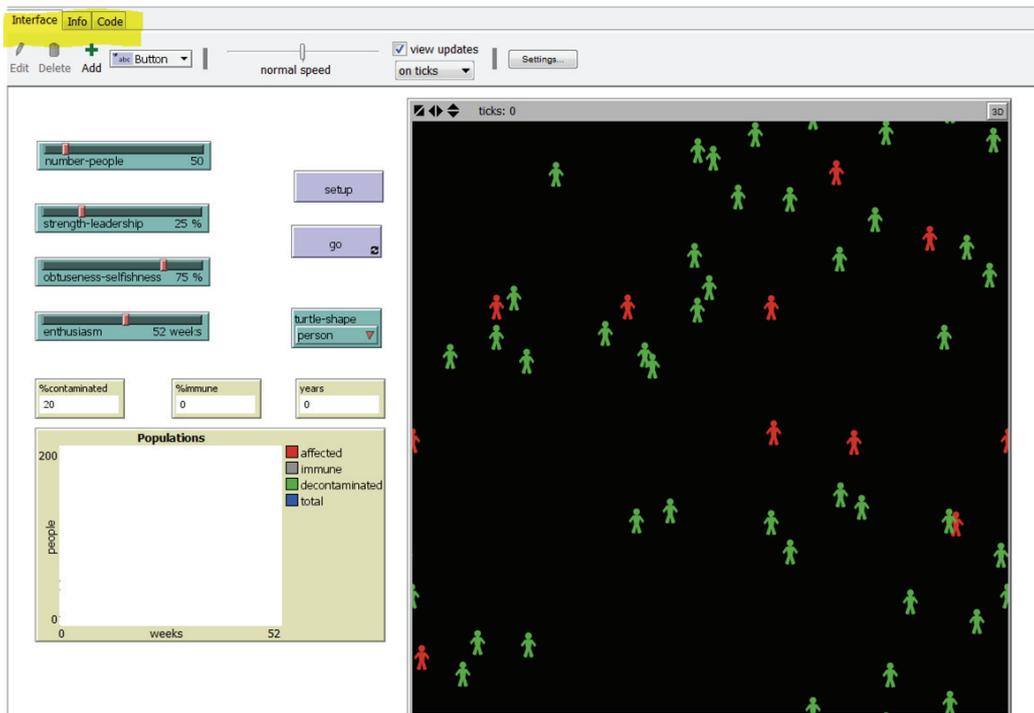


Fig.3. NetLogo main window - tab labeled Interface

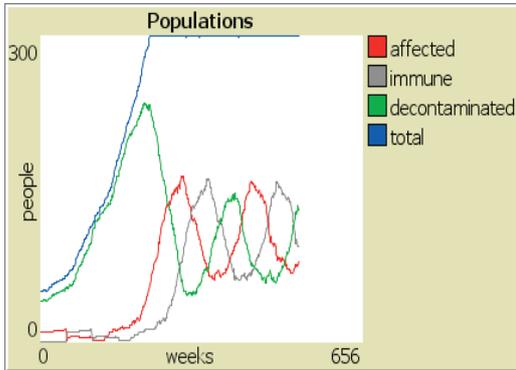


Fig. 4. 1st turn Simulation 1 – Type Alpha Pattern – sine waves
% contaminated 26, % immune 31
years 10.1

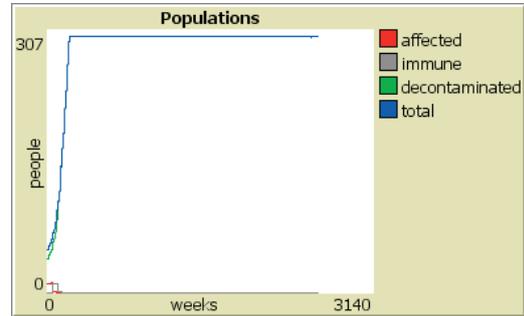


Fig. 7. 3rd turn Simulation 1 – Type Omega Pattern: lines "decontaminated" and "total" at the extremity of carrying capacity of the world 300
lines "affected" and "immune" at the other extremity 0
% contaminated 0, % immune 0
years 50.1

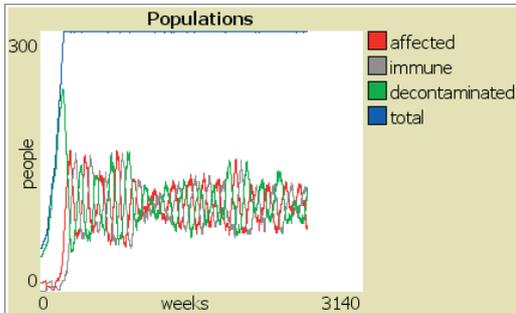


Fig. 5. 1st turn Simulation 1 – Type Alpha Pattern – dense sine waves
% contaminated 24.7, % immune 35.3
years 50.1

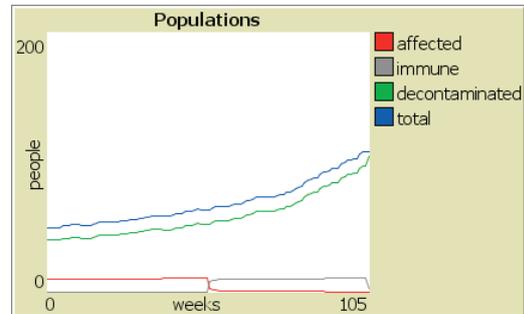


Fig. 8. 3rd turn Simulation 1 – Type Omega Pattern: lines "decontaminated" and "total" toward the carrying capacity of the world 300
lines "affected" and "immune" toward the other extremity 0
% contaminated 0, % immune 2.8
years 2

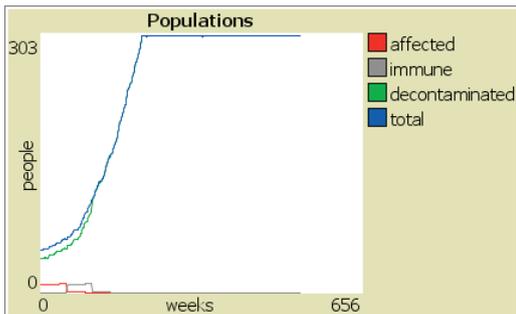


Fig. 6. 3rd turn Simulation 1 – Type Omega Pattern: lines "decontaminated" and "total" at the extremity of carrying capacity of the world 300
lines "affected" and "immune" at the other extremity 0
% contaminated 0, % immune 0,
years 10.2

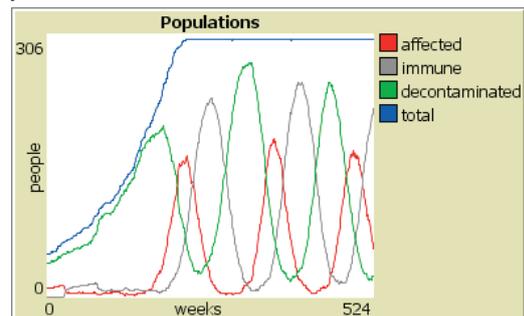


Fig. 9. 1st turn Simulation 5 – similar to Type Alpha Pattern – large sine waves
% contaminated 19, % immune 73
years 10.1

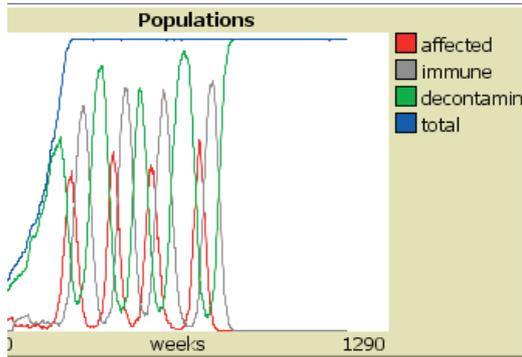


Fig. 10. 1st turn Simulation 5 –Type Omega
 Pattern: lines "decontaminated" and "total" toward
 the carrying capacity of the world 300
 lines "affected" and "immune" toward the other
 extremity 0
 % contaminated 0 , % immune 0
 years 22.1

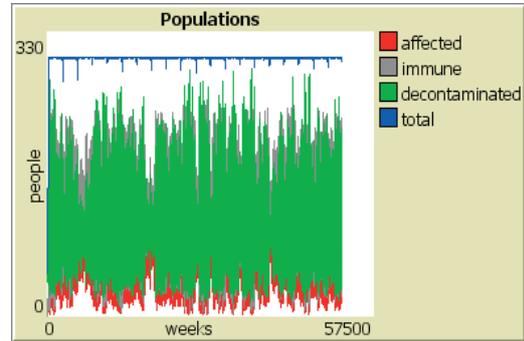


Fig. 11. 83^d turn Simulation 5 – Type Alpha
 Pattern – large sine waves
 % contaminated 16.1
 % immune 14.4
 years 1000.5