ECONOMIC DISCOURSE AND VISUAL CONFIGURATION

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Abstract: Economic discourse has always used different visual modes of shaping perception. For example, characteristic classical image in economic discourse is the "invisible hand". In doing so, economic discourse reaches for, concerning of its metaphors, for resources in physics, but also in literature. If big part of the visual figures of economic discourse (equilibrium, e.g.) was borrowed from physics in the twentieth century, mathematics is a significant, even dominant source of the formation of visual perception, based on different schemes, graphs and geometric figures. In this paper, we show the configuration dynamics of visual perceptions in economic discourse, starting from the fact that visualization of economic discourse has the following functions: a) demonstration of certain knowledge, b) the realization of a performative visual effect, that is the creation of certain forms of visibility, c) persuasion of the public regarding the fact that economic discourse has cognitive authority.

Key words: economic discourse, visuality, perfomativity, visual semantics, metaphors

1. INTRODUCTION

What is the purpose of "visual semantics" in economic discourse? Does it have to do with operationalization of economic propositions or something else? Why are visual dimensions of economics still present despite the evident changes? This paper focuses on two intersecting levels. The first level is conceptual and the second one is historical. Modalities of visual semantics of economic discourse are presented at the conceptual level. Wide economization, which is present in modern society, warns us about the ubiquity of economic visualisation in different segments of the society. Due to its late stabilization as a special discipline, economics reaches for metaphors, that is, visual aspects used for affirming its identity at historical level. The ambition regarding the rigorous economic categories shifts this discourse towards broader understanding of mathematically determined visualisation. Does this mean that visual formation of economic discourse is intact?

2. SOME HISTORICAL ASPECTS: COMPLEXITY OF VISUALITY

There are economic papers, even economic orientations that do not use visual symbols, charts, figures or graphics at all in their argumentation. This way, the most significant achievements of the Austrian movement systematically ignore the same visual expressions and continuously develop argumentation, but only at the level of textual effects. For example, in the books of Nobel memorial prize winner, Friedrich Hayek, there are no mathematical or geometric figures that present the derived material, the most important statements are expressed through verbal propositions without any quantification (Hayek, 1944). Actually, not a single number is written in the texts, no reliance on mathematical symbols is recorded and not a single table is identified. The spontaneity and uncontrollable dynamics of economic life cannot be represented by mathematical symbols that necessarily fix and stop processuality - this way, Hayek just expressed the 'general problem' of how to represent the 'processuality' of the market economy visually. The same problem is evident in the relevant texts of Joseph Schumpeter (who is not a Nobel Prize winner) who even rooted statistics at Harvard, but many of his reputable books (e.g. Theory of Economic Development on 400 pages) do not contain any visual expressions. For example, if we look at the book that represented a milestone in economic discourse in the 20th century written by John Maynard Keynes (The General Theory of Employment, Interest and Money) we can hardly find two or three mathematical formulas, and the rest of the text is only a text without any visual comments. Not a single one of them had the idea of confirming their claims with visual argumentation, or, for example, photo comments. At the same time, there is no unambiguous progress here, that is, the constellation does not change according to the rhythm of chronological order; e.g. Karl Marx, who is criticized for not using other mathematical

procedures besides differential equations, lived earlier than Schumpeter, but he still used more mathematical processes, that is, mathematical visuality in deriving his thoughts.

However, the visual dimensions of economic discourse must be analysed *broadly, that is, beyond what is indicated*. For example, although we have just mentioned Keynes who presented his 'revolutionary material' in an a-visual way, there are some facts about him that should not be forgotten. When he wants to show the performance modalities of 'money managers', he takes the image of a 'beauty contest', that is, he invokes a form of competition that apparently has no connection with economic discourse. The image of the 'beauty contest' has significant impact today: starting from textbooks to popular video presentations, the same image takes on its digital form and easily reaches the addressees. In addition, although Keynes did not use a lot of mathematical figures or performances, later interpretations of his work were largely based on explicit visual/diagram representations (such as the IS-LM model of John Hicks, a Nobel Prize winner).

In other words, Keynes's texts are presented today mostly through digitized images or prepared models, or mathematical formulas, that is, visually, most often on appropriate screens where numbers and figures are converted into digital impulses. This applies not only to students but to the scientists as well who often do not even read the original text, but only receive a model presentation and formulas in which causal determinations are expressed, such as the one between investments and income

The assessment of the relationship between the text and the visual figures according to which the latter has a more significant role has slowly been stabilized: accordingly, the text is more accompanied by transparent visual presentations that enable rigor. Not a lot of people have read the original version of the famous article written by Phillips-curve (although some say that it is the "most significant curve" in the history of economics), but they have recognized the connections that were launched with the article in question. Undoubtedly, the expansion of visuality in the 20th century also contributed to this: today technology enables great visual presentations of typical economic figures (e.g. Robinson's figure was once considered to be a prototype of a basic economic figure; today it can easily be evoked through "screening"). The same technology allows both figures and graphs to be disassembled and reassembled all over again.

There is no difference with the Schumpeter who has already been mentioned here. His most mentioned metaphor is 'creative destruction' which has been quoted countless times. The same metaphor suggests that investments create something new in capitalism, but they destroy something old. Actually, the price of the new is the inevitable demolition of the old, the decomposition of tradition. This is a metaphor that has its roots in various cultures (among others, in Indian mythology), but, in case of Schumpeter, it represents such a dynamic of entrepreneurs that has been attracting a lot of attention for several decades, and is marked by cultic fame. Originally, Schumpeter did not find it necessary to present this figure visually; today, however, this figure is expressed visually to a significant extent. There are different cycles in the history of technology that lead to a fluctuating intensification of innovations, and this way, the history that represents the impact of technology on the dynamics of the economy is presented. Schumpeter even has one very important visual figure that places visuality at the absolute beginning of any economic reasoning that tries to understand the dynamics of economics: it is a 'pre-analytical vision' that directs the analytical work of an economist. The ocularcentrism by Schumpeter suggests that one must first get a comprehensive¹ perspective in order to approach the analysis at all. This means that there must first be one preceding comprehensive visual perspective, that is, one visual prospect so that the analysis can be carried out. Today, the 'vision' (which can be found in business disciplines or management theories) is projected in different ways. According to this, we suggest that the visual specificity of economic discourse also depends on this 'pre-analytical vision'.

Therefore, it can be concluded that visual projections in economics are presented in *both* direct *and* indirect figures. This means that visual configuration does not only imply mathematical analytics, demonstrative geometric figures, symbols in algebra, statistical presentations of various correlations, screening of tendencies, etc. but also *metaphors* which *visual definitions* are well known to science (Lakoff and Johnson, 1980). The metaphorical nature of language, and the possibility of defining the objects using metaphors, has been repeatedly confirmed in various interpretations. Moreover, in recent times, economic discourse has noticeably focused on treating the metaphorical nature of economic speech and written expression. Deconstruction of duality between conceptual and metaphorical expression has had effect on economic discourse as well (McCloskey, 1980), which inspires appropriate efforts to respect the metaphorical nature of economics. Consequently, today the traditional view that metaphors cannot stand the test of scientific

¹ This does not mean that it was only Schumpeter who insisted on the significance of visuality as a primary category, see Ötsch (2020).

rigor is criticized; metaphors are also part of the vocabulary that has the ambition to capture economic relations. The visual configuration of economic discourse is, therefore, very complex, and in the following considerations we take into account both the metaphorical nature and the mentioned figures. It is only with two-way movement that we can report about the visual configuration of economics. The dependence of economic discourse on visuality, that is, on visual demonstration, has become more and more significant over time. Mere discussion of the subject matter is insufficient for a comprehensive presentation of visual aspects, it is not just a visual application of certain propositions but much more, as we shall see. Namely, the visualization of economic argumentation has both pedagogical and demonstrative components, but also the component of persuasion. It convinces its addressees, so it is its persuasive role that is as important. The path of economic discourse to an authoritative position in modern reflexivity cannot be imagined without visuality. In order for us to understand this constellation, we must return to the very genesis of economics and, based on that, we can, in brief details, gain the understanding of today's full authority of economic discourse. Namely, economics is a relatively young discipline, despite its appearance. It took a long time for economic rationality to become hegemonic rationality. More precisely, despite the fact that there were significant economic reflections in premodernity (for example, in theology), an autonomous economic discourse with autonomous economic laws emerged gradually in the 18th and 19th century. In other words, economics is a modern scientific discipline, which suggests that its visual configuration is characterized by aspects of modernity, or dimensions of modern rationality. In the indicated sense, the economic discourse arises when other disciplines have already existed, or at least have had certain forms. In our perspective, this actually means the following: numerous economic metaphors, as well as mathematical and geometric figures in economics are the result of various transfers, and the visual specificity of the emerging economic discourse is borrowed, that is, it represents mimetic visuality. This has never meant that economic discourse only passively takes over the visual figures of other disciplines; it does not imply that the same discourse is just a 'container' that only absorbs 'foreign' discourses. The point here is that economic discourse always articulates or converts knowledge and visuality of other disciplines. Let us take a look at one of the most famous metaphors in the history of economics! It is an 'invisible hand' that is traditionally associated with the Scottish theorist Adam Smith and, of course, is related to the functioning of the market. The importance of the metaphor is still evident today in scientific discourse and in widely accepted idea about economics despite the fact that the Scottish economist used the same metaphor incidentally only a few times (Rotschild, 1994); in fact, it visually informs us that the market does not reflect only the intentions and motives of economic entities, but it also converts them into a general system of coordination. An interesting pedagogical and general issue of economic presentation is how to visually present a market that is 'invisible'; the aforementioned Austrian economists have also confronted the visualization of 'invisibility', for example, how to visualize 'business cycles' (Slobodian, 2018). When the 'invisible hand' wants to show itself, then it is confrontational, namely, against the 'visible hand' of the corporation or state. According to that, the 'invisible hand' is still a polemical visual figure that evokes criticism of all those entities that have a 'visible hand' and want to navigate the economy in this way. It evokes freedom, as well as the complexity, which tells us that despite the multitude of individual motivations, the market is a meta-individual system that enables benefits for individuals. In any case, we can notice that the metaphor of the 'invisible hand' has its origins in theology (Smith himself developed a deistic system; economics was part of it), it is its place of origin; this is the way in which the metaphor appeared in economic consideration. Actually, this extremely important metaphor was created by a transfer from theology proving the receptivity of economic discourse and necessity to borrow from others. Furthermore, when physiocrats (18th century, even before Smith) developed argumentation within the framework of the emerging economic discourse, then they already used certain visual schemes to present the general connection of economic flows. Thus, 'tableau économique" of François Quesnay is considered by many to be the first successful attempt to model economic relations, that is, to promote models as paradigmatic visual sequences. Here, the economics is already presented in the form of a strong visual figure that enables considering connectivity as a modality of the existence of economic entities. In other words, they create an image of the economics as a whole, as a structure which elements are connected by certain relations. It is not a coincidence that the holistic visual scheme in question still plays a role today and experiences different variations, which is why it can be seen in different forms, now in configured forms for digital screening. This way, the model as a certain kind of a 'grid' of economic reality becomes a significant moment in the visual representation of economics and many influential achievements in economics are associated with setting the model with appropriate parameters.

Physiocrats were actually related to agricultural reflexivity, to 'naturalness' of economizing, and to one more famous figure of economic discourse, that is, to 'circulation' that was associated with the 'basis',

namely, with constant productivity of a country. Later trends have criticized physiocrats in a different way and this is why it can be understood why categorizing the 'industry' as 'non-natural' could not be proved later when the industry progressed. However, naturalness remains deeply rooted as a source of visuality for economic discourse. Economists have many times been fascinated by 'natural images', namely, nature was once presented as 'perfect economy'², and once it was mentioned that 'nature does nothing in vain' (Schabas, 2008), which could be a perfect economic principle, that is, optimum for economic reflection. It can be said that nature is an extraordinary source of different forms of 'images' in economic discourse (Mirowski, 1994). In the end, economization really represents a method of expressing 'metabolism' between a man and nature.

We could say in general that the horizon of nature plays a crucial role in economic discourse: economics is often presented as an expression of natural order, as a manifestation of natural laws. Consequently, there are many significant metaphors in economic discourse that are directly or indirectly related to 'images' of nature. The choice of metaphors is endless , so we here quote just a few, selected examples: 'organism' (Hodgson, 1993) as a visual expression of economic vitality, that is, 'organism' as a supremely-adequate visual expression of economic vitality, as well as visual presentation of totality in economization, that is, connection between the whole and its parts; 'circulation' of capital and goods has been presented many times based on the 'blood flow' (this introduces physiological metaphors); a well-known 'circular flow diagram' of Nobel prize winner Paul Samuelson is presented based on "water pumping" and alludes to the pump logic; "hydraulic-logic" of one influential orientation of Keynesianism also indicates to the nature. Alfred Marshall, an author of famous Principles of economics, emphasized the importance of biological metaphors for economic discourse; institutionalists of different colours in their heterodox rush (this particularly relates to classic institutionalists such as Thorsten Veblen) insisted on figures of evolution based on a different a type of causality, that is, a type of causality promoted in neoclassical economics. The same institutionalists made it possible to 'paint' changes on the basis of the logic of evolution, which led to 'cumulative causation'. It is nature and understanding of nature that are everywhere presented as the source of visual power of economics; the perception of nature is an inexhaustible source of visuality of economizing.

In its history, economics has positioned itself in "moral sciences" and "natural sciences" (we could trace this problem if we considered how economists treated the relationship between society and nature³). This also determines the dynamics of its visual metaphors. The presence of motives, intentions, generally speaking, subjectivity in economics directed economics towards 'moral sciences', i.e. towards social sciences that emerged in the 19th century. However, the ambition of some economists to create a science that develops strict determinations as natural sciences brings them closer to the models of the same sciences. During the 19th century, important (neoclassical) economists used physics that was in full swing. Physics was considered to be a model. In particular, the 'energetics metaphor' played a major role and represented a pattern for economic thinking in the same century, which means that the assessment that 'economics' became 'social physics' and that physics became 'nature of economics' (Mirowski, 1990) was valid. This way, we can recognize various appropriate visual figures that still play a significant role in economic thinking. The equilibrium figure represents such a situation; admittedly, it cannot be identified only in physics, but it is also important in the discipline in question. Balance is considered to be an expression of completeness. For example, the market-optimal relationship between the demand and supply, which is statically manifested as the equality between supply and demand, can be found in numerous textbooks. However, a visual figure of equilibrium that can always be effectively presented in a diagram and has a pedagogical effect is even more general for self-understanding of economic reflection: while some economists try to add certain meaning to equilibrium (e.g. 'punctuated equilibrium' or 'partial equilibrium') or save the figure in question, other economists explicitly reject equilibrium as a static metaphor that is visually deficient in terms of presenting a complex and ever-moving economic reality.

3. THE DISCURSIVE POSITION OF VISUALITY IN TRANSFORMING ECONOMIC DISCOURSE

Now we can ask the question: what is the role of visual projections in the economy? What is the purpose of visual figures in economics? Why has economics evolved towards a situation that implies an increasingly intense presence of visual representations? Has economic discourse been aestheticized by this? What does

² This is why Margaret Schabas (2005) develops argumentation based on which economics should be 'denaturalized'.

³ Something about that, Mirowski (1994b), p. 11.

it mean when we say that economic categories are actually 'visual artefacts'?⁴ Namely, today neither a textbook nor a book written within the framework of economic discourse can be imagined without the indicated visual elements. When doing the courses in microeconomics, it is inevitable to see curves of indifferences, achieved identity of supply and demand, or difference equations and on the courses in macroeconomics, inflation is represented in relation with income dynamics, in GDP dynamics graph, etc. In fact, if we look at some achievements of neoclassical economists in the 19th century (Stanley Jevons), we can see that there were already graphs, diagrams that became an immanent part of argumentation. Mapping the economy through diagrams or diagram presentation and visualization has been deeply accepted in economic discourse that it cannot be detached from such a form of "visual representation", or "mapping". It is not a coincidence that popular representations of economic flows, including the daily press, find it appropriate to use at least one diagram to represent economic trends. Many pop economics presentations on the Internet (for example on YouTube) act in the same way, for example the organic part of their performance uses some form of diagram presentation.

These issues became especially important when mathematical language started being used in economic discourse. If we say that physics used to be a 'pattern' (its presence has not disappeared, for example in ecological economics), then we can say today that the logic of mathematical procedures is followed. In addition, the mathematics, that is, mathematical means, was used for visualization of economic discourse during the 20th century. Nevertheless, in the context of the 2008 crisis, there is a debate today about the scope of mathematics for economic discourse. Some critical economists believe that excessive mathematization now represents an obstacle for gaining critical knowledge of modern trends, and that the neutrality proposed by mathematics is false. It is also claimed that there are less possibilities for the formation of the mentioned 'pre-analytic vision' by the unbalanced mathematical representation.

However, regardless of the outcome of this discussion, it seems that, for now, the strong presence of mathematics in economics is irreversible. Yet, it is interesting to note that there has always been a discussion about which modality of mathematical visualization is appropriate for economic discourse. This way, the other Nobel Prize winner (for whom "stabilization of mathematics" can be associated) Paul Samuelson⁵ actually had doubts in his well-known and many time published books. The books were written in a short period of time. In his book *Foundations of Economic Analysis*, his unwillingness to use diagram was obvious in comparison to the other book *Economics: An Introductory Analysis* (it can be interpreted as shifting to 'visual culture of engineering', Giraud). His critic, a well-known economist Kenneth Boulding, clarified the gap that may exist in mathematically inspired production of 'visual artefacts': 'geometric' or 'algebraic' visualisation, adhering to the first option because it is the only one that can present 'discontinuities' in economizing (Giraud, 2010).

Boulding's preference of 'geometric' over 'algebraic' was not accepted in economic discourse. There are different forms of mathematical visualization in today's economics despite, as we have already said, the anxiety caused by the crisis, including the crisis of self-understanding as well. When the economists used computers for the first time (fifth and sixth decade of the 20th century), that is, when they saw adequate algorithms for the first time, then they were driven by additional impulse towards the ideal of rigour. It can even be said that machines have become a 'pattern' for economists (Mirowski, 2002) who have intended to identify undeniable determinations of economic life. This way, visual projections adapted to deterministic 'pre analytical visions' and the triumphal victory of mathematics with its 'visual facts' is part of it.

If we can discuss about the influence of visual rhetorics in economic discourse, then it has to be related to persuausive potential of mathematics procedure. Mathematical economic discourse evokes the ideal of precision, that is, the rigour of respective procedures corresponds to the ideal of rigorous science. Economics that rely on mathematics is a certain type of 'parasitism' based on visual-rhetorical power of rigour. In the end, it is economics that many expect to measure proportions, to realize precise measurements by weighing the relationship between things as well, and above all, relationships between people, to contribute to transparent relations, that is, to create a type of 'social physics'. However, it means that visual expressions do not represent just demonstrations for economics, but they also represent what is in theory of speech acts called performative acts; the same act does not reflect but establishes certain relationships as well as relations important for economizing.

⁴ It can be discussed about whether the mathematics additionally enhances 'visualization' of economic discourse. We start from the point that mathematics *per se* is a 'visual artefact'. At the same time, we change the statement of Willard Gibbs: mathematics is visual language.

⁵ We have a detailed description by Giraud (2010). See, Samuelson (1947, 1948).

Performative visuality has contributed to the fact that today, economics, which appears on TV, Internet, press, even in cartoons, is respected and considered to be one of paradigmatic discourse of a modern man.

However, there are a few moments that shift the frameworks today. Reductive determinism is resisted by numerous movements in economic discourse (experimental economics, behaviourism, etc.) which notice uncertainties, affective appearances of economic subjects, 'bounded rationality'. Such phenomena emerge from old deterministic frameworks. The mentioned crisis practically concentrated the mentioned objections against the alliance of determinism and mathematical visualization. Digitization and aesthetic articulation of screening are certainly helpful in understanding the mentioned problems. This is actually the second moment. The explosion of 'financialization' in recent decades has been paired with digital screening; financial entities are interested in watching the volatile movement, fluidness and vibration of various 'options' on digital screens, and to make decisions based on that (Schinckus and Christiansen, 2012). The financial sphere with a diffusion of securities represents an expansive area of visuality in which the 'engineering approach' is amalgamed with aesthetic creations of different fictions. The issue of 'representing the identity of finance' (Stäheli, 2008) is of great importance today, so this problem also shows the general problem of representing the 'identity' of economic categories in general.

Frameworks are changing in terms of transformation of economic discourse, which had its deterministic forms according to which it adjusted its visuality. The same discourse today respects "indeterminate processes" much more than before. However, the intense presence of economic visuality is never called into question. On the contrary, we can say that there are traces of visualized economic discourse everywhere, which is a condition for its authority.

4. CONCLUSION

The visuality of economic discourse can be analysed at two levels: the first one is the level of (explicit) visual signs, visual semantics and the second level is metaphorically determined (implicit) articulation. The history and genesis of economic discourse show either the existence of just one level or interaction between them. The economic discourse was developed in modernity and this is why its metaphors are expressions of transferred content. This is particularly evident in theology and perception of nature which were considered to be the source of visuality for economics. The visuality of economic discourse expressed this situation. It was the same way in which it expressed the process of searching for a model for the same discourse (physics, machines). In terms of economic visualization in the 20th century, a crucial role was played by mathematics, which was used to demonstrate the "discursive power" of economics in forming modern rationality. At the same time, it can be called the "performative power" of this discourse. The same situation is changing today, because economic discourse is more sensitive to indeterminate processes that are faced with real explosion of visual presentation today.

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