

ABOUT SEVERAL ISSUES OF PRODUCTION EVOLUTION (PRODUCTIVE PRACTICAL KNOWLEDGE) IN TERMS OF MODERN SOCIOGENETICS

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Annotation:-

Subject. Commonly the economy determine how the science that studies socio - economic relations arising in the sphere of production. However, these relationships are formed and developed in the process of joint practical knowledge underlying the production carried out by actors who, in turn, belong to a particular socio – economic genotype, formed and functioning in the framework of the given public organization and to meet specific needs.

Goals. These circumstances require the need to clarify the key factor: the new productive practical cognition, the free exchange and social-economic selection in the production evolution. This work is devoted to it. Searching for this justification, we make the following conclusions: in the process of our daily economic behavior, the process of “productive” cognition and social economic variability is developing in the same manner as in the specialized corporate divisions carrying out R&D and engineering development at the professional level. From year to year, social agents form and test all the “new” “productive” cognitions (social-economic genovariations), or “unequivocal” in contrast to the previous ones (in terms of the traditionally implemented production method), or absolutely “new” which are always “absorbed” by the current production process being visually unchanged. This “heterogeneity” of the cognition process “penetrates into” the whole production in all directions and forms of their existence, combining and distributing itself according to the randomness laws and transforms the whole social-economic genotypic environment of their functioning. Localization (segregation) together with the continuous social-economic genotypic variability is the key factor of intraspecies (and interspecies) differentiation of the production and cognition. Usually, such localization takes place in space, but sometimes it occurs in time and, probably, in the existence conditions as such (social localization).

Methodology:

The main methods used in the study are of analytical methods and comparative analysis of the studied naturally and social processes.

Results:

The obtained results can serve as a basis of are formed the effective social organization.

Conclutions. *The bases and developed of production - the result of the action of the laws inherent in the cognition process.*

Keywords:-*Sociogenetic; the new practical knowledge; socio – economic variability.*

Si vera nostra sunt tuta falsa, erunt talia,
Licet, nostra per vitam defendimus. Post fata
Nostra pueri, qui nunc ludunt, nostril iudices
erunt¹.

INTRODUCTION

Problems of the development of production inevitably caused and cause interest of researchers. J. Schumpeter (Schumpeter, 1935), Mises (Mises, 2005), Menger (Menger, 2007), Bohm – Bawerk (Bohm – Bawerk, 1909), Rothbard (Rothbard, 1995), Hayek (Hayek, 2003), Kirzner (Kirzner, 2007), etc. devoted their works to the analysis of the key factors of this process.

However, when the achievements of modern genetics and sociogenetics became available to us, some points, which, in my opinion, are especially important for the correct assessment of the role of our ideas in the general construction of the theory of production evolution, need to be supplemented and clarified. I have three such moments:

1. the emergence of new practical knowledge with typical genetically defined boundaries of its definition and modification (or, as I will call it in the future, socio-economic genovariations) in the production;
2. the role of free exchange in industrial evolution;
3. Importance of socio-economic selection under these conditions.

¹Either true or false, one way or another, we will protect it the whole life. After our death, the children who are playing now will be our judges.

I. The emergence of socio – economic genovariations² in the economic practice

²I prefer to use the term socio – economic genovariation (productive practical knowledge), meaning any newly emerging genetic change in production (practical knowledge), the variation of the socio – economic genotype: (gene is an information code (bit of knowledge) that is generated through the socio – economic genotypically determined characteristics of fulfillment by acting subjects of the production functions in the society in the form of acquired knowledge, abilities and skills; variation is a transformation, modification of the production in the process of exchange-inheritance of a bit of knowledge (socio – economic gene), the basis for obtaining new knowledge).

Let's also specify, based on the proposed views, in the basis for the development of production there is the emergence of a socio – economic genovariations, i.e., the production evolution has its own genotypic patterns of implementation. Therefore, production (practical experience) is a regular nature in relation to socio-economic genotypically determined preferences and opportunities of the subjects, the manifestation of which, in its turn, at the level of a separate social agent occurs according to the scheme: genotype → neurotype → psychotype → socio-economic genotype; on the level of social production: genefund → neurofund → psychofund → socio-economic genefund and according to the principle of "feedback" there is a reciprocal interaction.

Analysis of these cause-effect relations in practice formed the basis of the structuring of strategic motivation and, as a consequence, acquired by social agents in the production of experience. The results are presented by the following socio-economic genotypes: *vitalists* are social agents with the dominance of the energy of vital instincts (homozygotes, homogeneous in their intentions, management capabilities genotype z1z1); *socialists* are subjects with high energy of social instincts (homozygotes, genotype z2z2); *idealists* are agents with ideal motivation (homozygotes, genotype z3z3.); all possible combinations of them: *vital socialists*, *vital idealists*, *social idealists* (heterogeneous (mixed) genotypes) (Lumsden, Wilson, 1981). Their interaction in joint production (practical experience) forms the corresponding social and economic genotypic environment of functioning defining and limiting the whole process of its evolution.

At the same time, it is assumed that social agents (their socio – economic genotypes) implement the production of practical experience (inheritance of genovariation) at all stages of social reproduction (including consumption). In this connection, the category "production" here is identical to the "production of practical experience" and does not imply its reference exclusively to the traditionally allocated stage of production in social reproduction.

We often encounter the opinion that all the numerous socio – economic genovariations observed in production are initiated by exclusively professional rationally organized work activities. Therefore, as a result of such a targeted impact, most of these modifications are usually evaluated by us as the main and the only way of production evolution, which is far beyond the natural, spontaneous conditions of economic management. Therefore, those innovations that are formed in our freely implemented daily practice are habitually perceived by us as certain "deviations" that can't have any value in social development.

This view is not entirely correct. Because there are still a number of circumstantial considerations which logically lead us to the recognition of formation in a natural environment of genovariations, of absolutely the same order as they are found in our purposefully formed "laboratory" conditions. First of all, we have to acknowledge the fact that we are still unable to bring about the desired changes in a fully deliberate and timely manner. If the emergence of new genovariations depended solely on the environment of laboratory experience, changing this environment, we would have the opportunity to influence the process of their occurrence. But since the opportunities involved are limited, limited by the socio-economic genotypic nature of the subjects involved, there is obviously no absolute influence of the "laboratory" environment on the process of the emergence of new productive knowledge.

But the question still remains, why in this case with the existence of thousands of genovariations produced in rationally organized production, we know so little about their existence in everyday practice?

It is obvious that not every social agent, because of his genotypically determined intentions and capabilities, is able and fully prepared for work activities expected by his compatriots. And if we see very significant problems in obtaining such genovariations in the course of purposeful coordination, than in everyday practice, the process of their external detection is even more difficult because of its spontaneous and therefore very unpredictable nature.

Undoubtedly, one of the reasons for rare presence in our lives of this kind of genovariations is their lower competitiveness in comparison with the innovations produced in the traditional manner. However, some of these new formations can still play and play a very important role in the evolution of production.

In day-to-day practice, we have to see a wide variety of transitions in the assessments of the new knowledge tested by existing agents: from those that are of quite normal value to those through which it will be reduced, to those that are of very little importance, up to the testing of unacceptable innovations that question the very possibility of carrying out this production.

It is obvious that in a spontaneous environment, with the existing fierce struggle for the existence, most of these less popular (recessive, based on existing assessments in society) single new formations that occur among the normally functioning social agents, should "die" very quickly and do not have any significant value in the production evolution.

It goes without saying that it is extremely difficult to stumble upon such a genovariation, and in general we can say that the number of tested innovations with reduced ability to subsequent reproduction is much greater than the number of those where this demand is not affected.

Here we come close to the other side of the question of the origin of genovariations in natural practices and their importance in industrial evolution. Often we have to encounter the opinion that such new formations are transient, random. Once tested genovariations are evaluated by most social agents, only as unfortunate deviations from the traditionally performed economic functions and can have no value in the process of progressive evolution.

Indeed, the number of unsuccessful and even harmful natural changes, as a rule, is incomparably greater than the number of harmless, familiar, not to mention useful. But this ratio is quite natural, stemming from the essence of the perfect adaptation of subjects to social conditions.

Social agent in its normal economic environment is an extremely sophisticated, complex and perfect organism, adapted to all the various requirements imposed on it by this environment. To "spoil" such an organism is much easier than to "fix" it.

If someone were to come up with unforeseen changes in the subject's performance of rationally organized activities to which he, for any reason, would have to react and then would classify them, taking as a basis the assessment of the acting subject himself, it is likely that the result would be very ambiguous: from a group of "erroneous" through "not having significant value" ("indifferent"), to very "useful". At the same time, it is safe to say that the first group of acquisitions would be many times larger than the other two combined, and the latter would most likely be insignificant. Approximately in the same proportions, these three groups are realized in our natural environment and this only serves as an additional confirmation of the randomness of the emergence of new knowledge.

But, next to undesirable genovariations there is a number of "indifferent" (habitual), anyone, who has ever in their lives paid attention to the acquisition of their own economic experience, can verify this.

At the same time, some of these minor changes (of a supporting, service nature) are sometimes quite appropriate for acting subjects specializing in their implementation.

Hardly anyone will come to mind to see in such forms of experiences "deviations" from the generally accepted norm, and therefore there is no reason to consider them as "mistakes" in the case when they appear suddenly, as genovariations of social agents, usually not having them. On the contrary, such facts can only strengthen our belief that these changes occur in professional activities in the same way as they occur in natural conditions, i.e. genovariationally.

However, it would be absolutely wrong to think that the demand for such genovariations depends solely on the force of changes on the basis of their current production method. Very often we see that inherited genovariations with at first sight absolutely "indifferent" (by force of habit) value actually have significant impact on production, ensuring the viability of the subjects implementing them.

For example, there is often a case when an economic subject is forced to perform certain work, while having a tendency to carry out other production activities, but which are not so popular in society. And, so he, in the case of testing a new genovariation within the current production, will evaluate it only as a necessary means of his livelihood.

It is also possible to observe when the very radical innovations tested in joint production by dominant subjects for some of its participants will be very neutral until a certain time, without affecting their intentions and capabilities, at the same time, being for others, not just unclaimed, but hindering its further implementation in this form.

Thus, the direct relationship between the degree of novelty of a newly tested genovariation and the strength of its demand does not exist.

In the few examples we already can see that the socio – economic genovariational variability affects various aspects and stages of production and has a very different meaning for the implementing agents.

It is necessary to clarify two concepts that characterize the process under study: *the variety* of constantly emerging new formations and *the scope* of variability, *the amplitude of their deviation* from the generally accepted norms of economic management. In this connection, although the socio – economic variability is intermittent, abrupt, but its jumps, of course, cannot be infinitely large, *the amplitude of the deviation is limited (socio-economically genotypically determined)*. Sharp deep transformations in the structure of production (the process of cognition) are possible only by *long-term accumulation* of genovariational changes by social agents, long term "stratification" of some "deviations" to others.

So, we have as yet no reason to see the emergence of socio-economic genovariation as the result of an exclusively purposefully coordinated outside influence. On the contrary, the available evidence shows that in the spontaneous conditions of economic management this process proceeds naturally as well as in the laboratory, but there is a number of compelling reasons that remove from our observation a very large number of cases of such genovariations in our daily practice.

II. Socio – economic genovariations under the conditions of free exchange

From the list of works presented in the introduction, for a correct understanding of the role of socio – economic genotypic variability in the evolution of production only those are important that explore the fate of individual changes under the conditions of complete freedom of exchange, as it is *the freedom* of knowledge (including productive) that is the most natural and demanded by social agents.

It is clear that the very freedom of exchange in a number of cases depends on a number of, both internal and external reasons, strengthening and weakening its importance. But, *potentially, all acting subjects representing heterogeneous socio-economic genotypes* can *freely* interact with each other, without encountering obstacles neither in the process of transformation of forms of value, nor in the possibilities of their subsequent modification.

This definition of production, of course, is not to be understood in the sense that suddenly appeared genovariation is the starting point of its disagreement, formation.

Thus, free exchange is a characteristic state of production implemented by the vast majority of acting subjects.

In this regard, when the laws of genetics and sociogenetics are available to us, there is a need to revise the conclusions that modern researchers adhere to regarding the importance of this factor in the evolution of production.

Let's start with the fact that we will try to apply *constructive models* on the basis of the model of exact natural science to the study of the foundations of industrial evolution. The study of patterns of development of all living organisms, presented in the works of K. Pearson and G. Hardy³ will be of interest to us.

³G. Hardy established a law characterizing the state of equilibrium in the existence of Mendeleev's laws of heredity and the presence of free crossing of organisms: **the relative number of homozygous (dominant and recessive) and heterozygous individuals in the conditions of free crossing and in the absence of any kind of selection remains constant, provided that the multiplication of homozygous individuals (dominant to recessive) is equal to the square of half the number of heterozygous forms.**

Expressing this law by the genetic formula and denoting the analyzed structure of the community by the expression $pAA + 2gAa + raa$, where p , $2g$ and r denote the numbers of the corresponding groups of homozygous and heterozygous individuals, the equilibrium state of such a freely crossing community is determined by the condition: $pr = g^2$.

Applying a formal structural analogy between gene inheritance in genetics and the exchange of socio – economic genovariations in production, let's consider a special case (later it can be modified and complicated in any way), which is of theoretical interest to us.

Let's start with the fact that we'll assume methodological simplification, eliminate the effect of the credit system, conditionally assuming that it does not exist and all the processes analyzed by us in all its parts are under the control of real demand. We will accept the following: in the market in the conditions of free exchange (*in the absence of selection pressure (in our case - competition)*) or any other external factor) by the relevant pairs of acting subjects (producers/sellers

and buyers) belonging to certain socio-economic genotypes, there is the production/sale of a certain product represented by both traditional and modified in the process of cognition form. The number of producers / sellers of a particular form of product (form of experience) corresponds to the number of buyers and remains unchanged throughout the process. Production / consumption of these forms occurs in each, consistently reproducing production and trading period and is implemented by all social agents.

Next, we determine that both forms of the product (genovariations) at the beginning of each economic period is completely absent and appear in the market immediately after the appearance of demand for them and in quantity sufficient for its satisfaction. As a result, at a certain point in time, we will have the following socio – economic genotypic structure of the studied market process (process of experience), represented by a set of acting subjects: the production/consumption of the modified form of the product (genovariation) by a group of agents representing the dominant socio – economic genotype; testing a new form of the product (knowledge) by a group of subjects belonging to a homogeneous recessive genotype, who aim to reproduce its traditional form; production/consumption, depending on the circumstances, both modified and traditional forms of goods (genovariations) by a group of agents representing heterogeneous genotypes.

Also, we must attach the following five prerequisites for each group of subjects: for homogeneous genotypes (both dominant and recessive), we define: 1) the product (form of knowledge) released on the market is irreplaceable for any other, similar; 2) its selling price does not change throughout the process; 3) each manufacturer/consumer produces/acquires during each production and trading period only one piece of goods (tests only one genovariation); 4) the use value of goods is stable; 5) only direct producers/consumers act as sellers/buyers. For a group of heterogeneous genotypes, we will take the same assumptions, specifying that the traditional product produced/consumed by them on the market will be replaced only by its modified form and vice versa.

Since we are dealing with a spontaneous mass process, the initially tested, according to its socio – economic genotypic structure, one or another form of product (genovariation) a pair of agents (producer/consumer) will pass it on to the next pair, capable and ready for its distribution in the future.

We also assume that this or that realized form of goods (form of knowledge) immediately disappears in the sphere of consumption and cannot have any reverse effect on the subsequent production/consumption within the current period. The pair of acting subjects reproducing it will repeat its production / purchase (the process of cognition) only in the next period. Simplifying somewhat, let us assume that the production/purchase of appropriate forms of goods (inheritance of a particular genovariation) occurs whenever in need of the goods the buyer actually meets the product. Since we are dealing with a massive spontaneous process, actors belonging to heterogeneous genotypes can "rush" through the market in all directions and at different speeds. However, applying to such a case, the methods of statistical analysis Maxwell proved that whatever the initial speeds they possessed, after a very short period of time there will be a mobile equilibrium in which the individual deviation of their speeds from the average, determined by the operating conditions, will exactly follow the Gauss's law (the law of normal distribution). Because of this, each of them has the same chance to produce/acquire the necessary form of goods (form of knowledge).

It is obvious that the state of mobile equilibrium in the market will be achieved with an appropriate ratio of the number of production/acquisition of a particular form of goods (genovariations) represented by the existing genotypes. Denoting the analyzed structure of the market flow (the process of experience) by the expression $pAA + 2gAa + raa$, where p , $2g$ and r denote the number of production/consumption of a particular form of goods (exchange – inheritance of genovariation) by the corresponding pairs of social agents belonging to homogeneous and heterogeneous socio-economic genotypes⁵ we can determine the state of equilibrium in the market: $pr = g^2$.

² p is the frequency of inheritance of the traditional form by a homogeneous recessive genotype; r is the frequency of testing of the modified form by a homogeneous dominant genotype; $2g$ is the frequency of realization, depending on the circumstances, of a particular form by heterogeneous genotypes.

From this law an important conclusion follows: since for any values of p and r it is always possible to find such a value for $2g$ to satisfy the equality of $pr = g^2$, the state of mobile equilibrium in the market can be achieved for any ratio of the numbers of homogeneous dominant and recessive genovariational forms represented by the corresponding number of acting subjects (genotypes).

Thus, in the market from one production and trading period to another the number of one of the forms of goods - genovariations (regardless dominant or recessive), inherited by one or another homogeneous genotype, may exceed the number of other forms in 1, 2, 3... Times, and yet it will achieve a state of mobile equilibrium, if only the basic condition $pr = g^2$ is met.

In direct connection with this law there is another important law relating to the state of mobile equilibrium within a freely exchanging production aggregate under all the prerequisites previously accepted by us, and which can be called *the law of stabilizing exchange* established by K. Pearson.

This second law of free crossing in genetics (the law of stabilizing crossing) can be formulated as follows: *under the conditions of free crossing at any initial ratio of the number of homogeneous and heterogeneous parental forms as a result of the first crossing within the community, a state of equilibrium is established.*

Similarly, in the field of social phenomena: no matter how disturbed from the outside the state of mobile equilibrium in the market as a result of the first then free exchange – inheritance (stabilizing exchange), a new equilibrium state is established, which will remain until some external force violates it.

So, in the mechanism of free exchange there is an instrument, stabilizing the number of appropriate forms of genovariations, the number of reproducing subjects representing diverse socio - economic genotypes. Any change in the ratio of these numbers is possible only from the outside and is possible only as long as the external force that violates this equilibrium acts.

Of these external forces in the present work we will focus only on two: socio – economic selection and the emergence of new socio - economic genovariation. We now turn to the study of the role of these latter under conditions of complete freedom of exchange.

In section I, I tried to show that we have no reason to deny the existence in our non-specialized practice of the continuous process of the emergence of new genovariations and the number of their occurrence seems to us to be infinitely increasing. What is the fate of these single emerging new formations?

Continuing the analysis of the particular case, let's determine that the traditionally existing market suddenly has a new recessive heterogeneous genovariation (structure: Aa).

The appearance of such knowledge will disrupt the achieved state of market equilibrium. If its action is not immediately destroyed by the pressure of selection or a simple case, it will be inherited, will interact with the traditionally acting agents representing the dominant homogeneous genotype (structure: AA). At the same time, on the basis of the law of stabilizing exchange in the next production and trading period, the state of equilibrium will be restored again due to the absorption of recessive genovariation by dominant, and our recessive knowledge will go into a heterogeneous state (structure: Aa) and will be preserved initially by its initially testing subjects in the form of acquired experience.

For this reason, we must conclude that the economic population will include two subjects externally demonstrating dominant behavior (in full harmony with the prevailing market norm), but at the same time having heterogeneous experience, although so far unclaimed by the majority of acting subjects. Then, due to the state of mobile equilibrium, this structure of the experience process (due to the stabilizing exchange) will continue from one production and trade period to another.

A simple calculation shows that the probability of the initial genovariation (heterogeneous recessive primary form (Aa)) as a result of the meeting of two such heterogeneous social agents in the market is 1 divided by the reduced number of acting subjects per unit (under the conditions accepted by us, which is the same as the reduced number per unit sold by them, according to their socio - economic genotypic structure, forms of goods (knowledge)).

Translating into the language of symbols and taking the number of marketable forms (the number of acting subjects) equal to $N + 1$ (of which one form is offered by a social agent representing a homogeneous socio - economic genotype, and two forms are implemented by subjects belonging to a heterogeneous genotype), the probability (p) of re-reproduction of the primary form of knowledge as a result of the meeting of two such heterogeneous subjects can be expressed by equality:

$$p = \frac{1}{N}.$$

This equality means that in N consecutive acts of inheritance of genovariations there may occur such a meeting which will again give its initial form. Practically speaking, this probability is absolutely negligible and in fact our new formation will be absorbed by free exchange.

But its fate will be completely different from the one that is thought by our evolutionists. This genovariation will not dissolve in the mass of traditionally operating agents in the market. It will exist in a heterogeneous state from one economic period to another, remaining hidden from the eyes, but in the form of a certain hereditary socio – economic genotype.

These considerations give us a deeper and clearer insight into the socio – economic genetic structure of production, carried out by a freely exchanging aggregate of social agents. To what extent is it socially and economically genotypically homogeneous in its properties?

We have just seen that each emerging innovation is absorbed by the bulk of the traditionally acting subjects, but it does not disappear from economic life, and is stored and accumulated in a heterogeneous state in the "heart" of the society. In

this case, the process of its occurrence should be considered by us not as a transient phenomenon, but as a regular, natural, although spontaneously arising from the constancy of the complex of reasons that cause this probability. Therefore, in repeated cases of new genovariations, they will be absorbed again and again and a new phenomenon arises, which makes it possible to approach some interesting questions of the evolution of production.

Let us assume that there is some freely exchanging set of $N + 1$ acting subjects implementing $N + 1$ form of experience. The probability of appearance *again* (as a result of the meeting of heterogeneous agents) of previously formed and preserved genovariation Aa will, as we saw, be equal to $\frac{1}{N}$, which, with a significant N , is a negligible quantity.

But imagine that in the same production aggregate, there is another independent single genovariation: Bb , also turning into a heterogeneous state. The probability of its secondary manifestation will also be $\frac{1}{N}$, for the third genovariation: Cc - the probability is the same, exactly the same as for the fourth genovariation: Dd , for the fifth: Ee , and etc, and etc. All these random changes, arising in production among normally functioning subjects, are transferred in the conditions of a free exchange to a heterogeneous state and are absorbed, "are absorbed" by them, being kept in the form of separately tested forms of knowledge. As a result, we come to the view that *the production, like a sponge, absorbs heterogeneous genovariations, while remaining all the time externally (phenotypically) homogeneous.*

The probability of meeting of two homogeneous heterogeneous social agents and reproduction by them of the original forms $\left(\frac{1}{N}\right)$ with a slightly large number (N) is so small that it can be practically ignored. But with consecutive appearances of new single genovariations (independent from each other) separately tested by relevant pairs of subjects, the likelihood of any of them will become more and more, being determined by the law of *summation of probabilities* of independent equally possible and compatible sufficiency (by counting cases). So with two saved genovariations the probability of the secondary manifestation of any of them will be almost 2 times more:

$$p = \frac{2}{N} - \frac{1}{N^2}$$

With three socio – economic genovariations it is equal to $\frac{3}{N} - \left(\frac{2}{N^2} - \frac{1}{N^3}\right)$. And in general, with m of absorbed innovations the probability (p) of occurrence of any of them as a result of combining with the free exchange will be expressed with by formula:

$$p = 1 - \left(\frac{N-1}{N}\right)^m,$$

with the exponent m , which is equal to the number of possible sufficiencies, i.e. tested and "absorbed" by a combination of genovariations, can grow infinitely.

It is clear that as this number increases (with an increase in the number m), this probability can turn out to be very large and the production will detect the one or the other of the innovations it contains.

Here we come to another very important issue. We have just seen that production (productive experience) is constantly like a sponge, "absorbs" and preserves new genovariations, while remaining externally of the same type. But as more and more such "hidden" innovations are accumulated within it, more and more often, then the other of them will appear externally in its original form (in a heterogeneous state), and this will lead to the fact that outwardly the production will begin to show a growing social - economic genotypically determined *variability*. Speaking generally, when all other conditions are equal, *the variability of production increases in proportion to its "age."*

In the previous analysis of the socio-economic genotypic structure of production, we touched on another important issue about the significance of the number of genovariations tested by the corresponding social agents (genotypes), for the manifestation of its variability. Here we are dealing with two opposite tendencies: on the one hand, *the more numerous* their approbation in production (the more numerous the number of subjects carrying them), the greater the chances of *the occurrence* of new genovariations within it. On the other hand, *the smaller* the number of social agents involved (the smaller the value of N), the greater the probability of *manifestation* in production in the original (heterogeneous) form of the genovariations absorbed by the given aggregate earlier. Both of these conditions in practice usually mutually cancel each other out, and what is lost in the small socio - economic formations on rarity (in this case there must be understood not absolute rarity (frequency), but the relative rarity (relative frequency)) occurrence of genovariations, then wins by them at the frequency of manifestation of absorbed and saved previously tested changes and vice versa.

But in some cases this equilibrium is violated, namely, when, for some reason or another, freedom of exchange - inheritance of practical experience is violated. If we imagine that *the total number* N involved in the production of genovariations *by corresponding number* of social agents, is divided into a number of *separate, local* economic formations, the frequency of occurrence within it of new genovariations will not suffer from it, but the probability of manifestation of these innovations by acting subjects will be increased depending on the smaller number (n) of that local area of production (area of knowledge) within which it appeared.

Thus, we come to a more in-depth understanding of the enormous role played by the factor of *isolation (localization)* in the appearance of visible production variability. At first glance it may seem that the very fact of "localization", taken in its pure form, cannot play any role in the course of production evolution. No matter how we isolate the equal, it will always remain equal. But the fact is that production within itself represents an unlimited variety of social and economic genotypes, and each such separation immediately creates conditions favorable for the manifestation of changes, or that already existed inside it prior to their onset (with their uneven initial distribution), or that have arisen in it after the isolation of individual, not directly interacting, local areas (areas of experience).

Thus, isolation completely automatically leads to a differentiation of production to what can be captured, either by direct study of this process in the course of expert observations or by econometric consideration of the average values and sizes of their fluctuations. *So, isolation (localization) under the conditions of continuous accumulation of socio-economic genovariations by a set of acting subjects becomes in itself the cause of intraspecific (further - interspecific) differentiation of production, practical experience.*

Of all the factors that cause the "disintegration" (functional decomposition) of production into separate, independent types in the first place, of course, it is necessary to place *territorial isolation* as the most powerful and most common factor of intraspecific differentiation. However, there may occur other forms of isolation, leading to the same results: *isolation over time (production disintegration into a number of time periods of operation, leading to the formation of local independent production entities) and social isolation (eg, class differentiation, as an economic organization, translated into the language of social relations).*

As a result of the interaction of all these external and internal factors, a state of mobile equilibrium is created: the stronger the factors that act as the isolators, the more pronounced variability within production (practical experience), the more often in its individual parts the socioeconomic genotypically determined differentiation hidden within it should manifest itself. Thus, it can be established that, *other things being equal, the degree of differentiation within production is directly proportional to the degree of isolation of its separate parts (areas of experience).*

III. Socio-economic selection

In the previous analysis of free exchange, we tried to establish its role as a production stabilizing factor.

Its direct antagonist in this respect is socio-economic selection. If free exchange stabilizes production relations, then selection, on the contrary, brings them out of balance, and if in this sense we can call free exchange the conservative beginning, then the action of selection is the evolutionary beginning, continuously leading to a modification of production through the spread of one form of knowledge to the detriment of another.

It is obvious that if the selection favors any of the proposed forms of transformation of value (regardless: dominant or recessive), then its pressure to preserve it, will violate the basic pattern underlying production, and thus withdraw it from the state of equilibrium. Thus, in the ratio of the number of forms of inherited productive knowledge (both new and traditional) will fight two opposing forces: one – the force of selection, disrupting the balance in favor of its selected form, the other – the stabilizing effect of free exchange, seeking in the near economic period to re-establish the balance, which again and again will be violated by the action of selection. As a result, all production (the whole set of subjects implementing it) will continuously move from one state of equilibrium to another and this will last until the selection work stops.

Obviously, *the speed, the quickness* of this process will be directly proportional to *the intensity, or strength*, of the selection. Here it is necessary to find out the concept, which plays a very important role in the activities and significance of socio – economic selection.

The main, fundamental difference between "artificial" selection from selection, acting in conditions of complete freedom of exchange, is that the first is personal and strictly targeted, while the second is spontaneous, and therefore, with sufficient mass of social phenomena, automatic. This difference, first of all, affects the factors that determine the degree of intensity of the selection.

If, in "artificial" selection, this factor is primarily *the person (group of persons)* making the selection, and the intensity of selection is determined by *the purpose* that the person sets for himself, then in selection, acting with full freedom of experience, the strength or intensity of it is determined ultimately by the value of the practical knowledge selected in the struggle for existence. While in the first case, the intensity of selection can easily be brought to 100%, in conditions of complete freedom of economic management, it is safe to say that the force of selection is not even remotely close to this limit. Even when the selected genovariation is very important for acting subjects, it is, nevertheless, for a number of economic periods social agents will side by side coexist, demonstrating different socio – economic genotypically determined models of behavior and experience. In the end, their social viability is dependent on such complex correlations of cause and effect that the value of one or the other separately inherited by them of *really* useful genovariations, generally speaking, is a matter of chance.

We will call *the intensity of selection* of genovariation equal to 10%, 20%, etc. in the event that *the probability* of success in the struggle for the existence of the acting subjects, without inheriting it and/or applying it in practice, will be 10%, 20%, etc. less than the subjects who have acquired it and use in their economic life. Thus, with the intensity of selection equal to 10% of the 100 acting subjects who tested this knowledge, 10 social agents secured their existence precisely through its practical application.

Of course, the actual consideration of this ratio is not yet available to us. But in this case it is important to establish the concept of intensity of selection and its quantitative change.

Based on a similar definition of the concept of intensity of natural selection, acting in an unorganized nature, mathematician G. Norton calculated the table (cit. by: Pennett, 1997), the consideration of which will give us the opportunity, continuing the application of formal structural analogy now between the pressure of natural selection in the course of gene inheritance in genetics (in accordance with the laws of G. Mendel) and the action of socio - economic selection in production (in our case, in accordance with a particular case-competition in the market), to highlight the role of this factor in the process of production evolution.

The table includes a count of the number of generations (the number of production and trading periods), during which the population (production/consumption of a certain form of product (genovariation) relevant subjects (genotypes)), which is in conditions of free crossing (free market exchange - inheritance), goes from one state of equilibrium to another at different intensities of positive selection, favorable to the spread of a certain feature (form of goods (experience)) at the expense of other features (other forms), both with the dominance and recessiveness of the selected feature.

The three left columns show, according to Hardy's formula, the percentages of the number of individuals (the ratio of the number of acts of exchange in the market for both new and/or traditional goods (knowledge) corresponding to the number of subjects) that meet the requirement that the multiplication of the number of homogeneous genotypic forms is equal to the square of half the number of heterogeneous forms: $pr = g^2$.

In the right part of the table in vertical columns it is specified how many generations (production and trade periods) have to pass at a certain intensity of selection for this community (the exchange – inheritance of this or that form of goods (the form of experience) within the studied set) to pass from one state of equilibrium to another. At the same time, under the letter *D*, data is given for the case when the characteristic subjected to positive selection (the form of the goods (knowledge)) is dominant, and under the letter *P* – when it is recessive.

Norton's Table

Percentage of total population represented by individuals without the selected characteristic (percent of all traditional genovariations marketed by social agents) (<i>p</i>)	Percentage of total population, represented by heterogeneous individuals (the percentage of all genovariations inherited heterogeneously by market subjects) (<i>2g</i>)	Percentage of the total population represented by individuals having the selected characteristic (percentage of all new genovariations purchased in the market by	The number of generations (periods) that fall between the two equilibrium states, specified in percent relations in the three left columns							
			D. in case of dominance of the selected characteristic (dominance of the transformed form of practical knowledge)				P. in the case of recessive characteristic selected (recessiveness of a modified form of socio – economic genovariation)			
			The intensity of selection, %							
			50	25	10	1	50	25	10	1

		social agents) (r)								
99,9	0,09	0,000								
98,0	1,96	0,008	4	10	28	300	1920	5740	17200	189032
90,7	9,0	0,22	2	5	15	165	85	250	744	8160
69,0	27,7	2,8	2	4	14	153	18	51	149	1615
44,4	44,4	11,1	2	4	12	121	5	13	36	389
25,0	50,0	25,0	2	4	12	119	2	6	16	169
11,1	44,4	44,4	4	8	18	171	2	4	11	118
2,8	27,7	69,0	10	17	40	393	2	4	11	120
0,22	9,0	90,7	36	68	166	1632	2	6	14	152
0,008	1,96	98,0	170	337	827	8248	2	6	16	165
0,000	0,09	99,9	3840	6533	19111	191002	4	10	28	299

Examining the presented table, attention is drawn to the fact that in both cases - and when the selected form of the product (genovariation) is dominant, and when it is recessive - the process of *production transformation*, i.e. the *complete replacement* of the former less adapted form of transformation of the value with the new one, more socially demanded, is, practically speaking, *to the end*.

What conclusions do we have from the G. Norton's table?

First of all, we can assume that thanks to the activities of free exchange and socio – economic selection, even the weakest improvement has a certain chance to spread onto the entire process of economic development, modifying production.

Due to the peculiarities of free exchange, *nothing is lost from the economic experience acquired by the subjects*. No matter how little the improvement, there will be, perhaps, hundreds and thousands of socio – economic events, and yet it has all the chances to break out, to be re – inherited and gradually *communicate to all social agents*.

Another important conclusion from the examining of the G. Norton's table is that the *transformation of production (all of its socio – economic genotypic structure) in the course of replacing the less popular forms of experience with more socially significant - in short, the process of its adaptive evolution, always goes to the end, ie, until it all changes totally or until the end of the socio – economic selection*.

This conclusion is very important for a correct understanding of the role of individual factors in the evolution of production. *In the conditions of free exchange, while localization does not work* (in one of its above forms), the struggle for social existence and selection can continuously change the face of production - experience, can spread more and more popular genovariations onto the whole mass of its acting subjects, can improve any features of its technical - organizational structure, *but never under these conditions, this production will give rise to a new kind, it will never break up into two separate areas of experience, there will never be a splitting of its production population into two independently functioning production communities, i.e. the process of production type formation will never be realized*.

All production as a whole, with the entire mass of the genotypes realizing it, will change, will evolve, and will become more and more perfect in its adaptation to the socio – economic genotypic environment of its functioning, emerging under the pressure of selection. In the process of its historical development, we will observe how one of its economic forms will be *completely* replaced by another, more perfect, we will observe the process of *adaptive* evolution.

But what will happen in the case, if the action of selection is interrupted before completion of the transformation of productive knowledge, if we imagine that in the course of its action there will disappear the key factor in the suppression of which a well-known method is specially selected? On the basis of the second (stabilizing) law of free exchange, we know that in the next economic period, the state of mobile equilibrium will be established, and in all subsequent periods, the relative number of forms (both dominant and recessive) of genovariations will remain, all other things being equal, unchanged. Production will break down, but not into two independent types but into two forms of its manifestation, he will have inherent *polymorphism*. As before, all its social agents (the genotypes they represent) will form a single production complex, freely interacting with each other, and on the socio – economic genotypic structure, formed in the process of experience, will depend whether the production will be of the same type (genotypically homogeneous) or in the course of its implementation will appear both forms of its reproduction (both dominant and traditional).

Finally, the third important conclusion that can be drawn from the Norton's table is that selection, like free exchange, *contributes to the accumulation of recessive practical knowledge in economic practice*.

If we measure the intensity of *positive* socio – economic selection as a percentage, we can also measure the intensity of *negative* selection. Not every adverse production change is inevitably fatal for acting subjects testing it. Only with a very

sharply socially harmful deviation from the current norm, the intensity of negative selection will reach 100%, in a very large number of cases the force of its action will be less, and there will be cases when the intensity of negative selection will be 10%, and even 1%. This means that social agents with less socially significant practical knowledge will not be immediately removed from the arena of social struggle and it will take more than a decade for the selection to finally eliminate the forms of knowledge, they implement, from our daily economic practice.

Thus, both the free exchange and socio – economic selection lead to the same final result, namely, *to the accumulation of recessive socio – economic genovariations in the heterogeneous state in the production.*

This analysis leads us to an understanding of the seemingly strange fact that the number of recessive forms of knowledge known to us is many times greater than the number of dominant forms. Especially sharply it affects those subjects who carry out the production process in complete freedom, when they get the material for their own existence "from the will" through the acquired experience, which is filled with recessive heterogeneous experience. Most of these genovariations has been accumulated by acting subjects during their entire economic life. At the same time natural appearance of genovariations, their *manifestation* from "hidden" condition can last for a number of economic periods and *to distinguish then the occurrence of new genovariation from the case of its simple extraction from accumulated experience, i.e. preserved in the heterogeneous state, becomes virtually impossible.*

Conclusions

We have noted above that the role of free exchange in production evolution is conservative, aiming to preserve the status quo, while selection acts as the opposite, evolutionary factor. But if we introduce in our analysis the process of continuous emergence of new genovariations, the given introduction will have to be changed and added will have to change and add. While free exchange, absorbing and keeping all newly arising genovariations within the production, is gradually undermining the traditional method of implementation, making it less stable, causing intraspecific differentiation, selection, on the contrary, protects the sustainability of our operations, ensuring that it is monomorphic. Socio-economic selection "clears" production of "clogging" by accumulating varieties of practical experience, and in the case of useful changes extends them to all social agents, thereby giving the production process again uniformity.

Thus, in the course of the evolution of production (practical experience) there is a struggle between two processes: the accumulation of genovariations and the process of their destruction, and the interaction of both of them ultimately determines the direction and speed of the entire process under study.

At the same time, the key factor of intraspecific (and interspecific) differentiation of production is localization (isolation), which creates the most favorable conditions for the manifestation of its socio – economic genotypic diversity.

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