DOI: 10.46340/eujem.2021.7.4.6

Roman Grynkevych
ORCID ID: https://orcid.org/0000-0003-3048-6809
Vasyl' Stus Donetsk National University, Ukraine

BASIC VECTORS TO TRANSFORM THE MANAGEMENT OF INNOVATION-ACTIVE ORGANIZATION

In bifurcation conditions, changes in technological systems open up opportunities for Ukraine to make qualitative changes – to work ahead, creating significant scientific, technical and innovative developments and to secure a foothold in certain high-tech niches – but they will depend on the possibility of applying high socio-humanitarian management technologies especially at the level of innovation-active organizations. The aim of the article is to define, systematize and substantiate the basic vectors of transformation of the management of innovatively active organization in conditions of growing complexity and uncertainty of the external environment. The article considers the evolution of the subject sphere of management in terms of changes in technological systems with the fixation of the main indicative concepts that determine the change of ideas about managerial rationality. According to the results of the analysis of scientific and practical sources it is generalized that the theoretical concepts synchronized with the practice of functioning of innovation-active organization determine the natural expansion of managerial discourse in the following areas: development of management technologies of coevolution of innovation-active organization and environment; development of scientific and practical basis of facilitative (supportive) management, which balances between the support of organizational identity and "soft" managerial interaction with a wide cognitive diversity, which facilitates the processes of innovative co-creation and activates the creator's personality in each of the subjects of collaboration opportunities to take part in the processes of recombination and proliferation of the properties of the created innovation; generalization, systematization and adaptation of transdisciplinary developments of synergetics, providing development of ideas of self-organization, as immersion creativity of polysubject and self-directed providing of processes of innovative activity.

Keywords: innovation value, coevolution, management 3.0, polysubject, self-organization, co-creation, facilitation.

Formulation of the problem and its relevance. The reproductive processes of value creation in Ukrainian enterprises for almost 95% belong to the productions of the third and the fourth technological paradigms, which creates a certain binding of the anachronistic management technologies aimed at maintaining and increasing the efficiency of obsolete business processes, which, in turn, forms retrograde thinking of management and exploitation of a techno-rational toolkit that levels the human factor. While dominant in developed economies, the fifth technological paradigm in Ukraine constitutes only 4% of the production (whereas, in the US it covers more than 60%); the ascending wave of the sixth technological paradigm in our country is supported by as little as 0.1% of produced innovations. Such inertia of management and production technologies, alongside the crisis in the global economy, raises the issue of finding a nonlinear movement trajectory that might provide a qualitative leap in the development of the domestic economy. It is clear that Ukraine needs such recombination of factors that will create an environment for intensive development of technologies of the sixth technological paradigm, that is, the emphasis is on creating nano-, bio-, information, and communication technologies that might significantly reduce material and energy consumption of production. It is at the intersection of the fifth and sixth technological paradigms that Ukraine has the opportunity to work proactively, creating significant scientific, technical and innovative developments and secure a foothold in certain high-tech niches. This is how the "Japanese economic miracle" emerged at the intersection of the third and fourth technological paradigms. In bifurcation conditions, there is a possibility of qualitative changes, but it will fully depend

on the possibility of the practical application of advanced socio-humanitarian management technologies, especially at the level of innovatively active organizations.

Literature review and analysis on the research topic. The theoretical and methodological foundations of a nonlinear approach to innovation management were defined and established by the following scientists: K. Bezgin[1], M. Castells, K. Christensen[2], V. Lepsky[3], C. Leadbeater, C. K. Prahalad, E. Rogers, D. Stark, J. Howe, H. W. Chesbrough, A. Shenkar, F. Jansen. The nonlinear paradigm of innovation is complemented by the works of the researchers defining the parameters of modern management I. Adizes, J. Appelo[4], H. Geiselhart, W. Edwards Deming[5], Peter F. Drucker, P. Kotler[6], V. Lefebvre[7], P. Senge, F. Trompenaars[8], T. Peters, J. Pfeffer, G. Hamel[9], T. Friedman[10], L. Shaulska[11], A. Karpenko, A. Doronina. But despite a large number of academic papers, an urgent problem for the theory and practice of managing innovatively active organizations remains in the context of complexity and uncertainty of the external environment, namely an inter- and transdisciplinary synthesis of ideas, allowing to form a holistic, internally consistent concept of innovative process management.

This paper aims to establish, systematize and substantiate the basic management transformation vectors of an innovatively active organization in the circumstances of an increasing complexity and uncertainty of the external environment.

Results and discussion. During the evolution of management, there has been a constant change of emphasis in permanent attempts to adjust theory to the complexity and uncertainty of practice, which never corresponded to the linear and normative management discourse and was rarely reproduced under its eclectic theories and schemes. Modern times convincingly prove that it is the person with their coherent essence, which, under the right circumstances, might combine the role of a leader, client, inventor, performer, etc. and can bear responsibility for the whole, must be inscribed in the innovative organizational forms, as a systemically crucial element. The human nature of the creator, constantly leveled by classical management, limited their creativity to instructions and algorithms of the standardized activity. But today's circumstances have created unprecedented opportunities for everyone to engage in the innovation processes where "everyone is connected to everyone," which is perhaps the only potentially correct answer to the increasing complexity of the world.

The foregoing requires taking into consideration several provisions in the domestic management model, which include:

– a balanced combination of the effectiveness of reproductive activity and adaptability (anticipativity) of innovative development will provide an organization's ability to lengthen its life cycle under the conditions of uncertainty;

– elimination of the primacy of approaches and methods related to the classical paradigm of the managerial rationality in the practical schemes of managerial activity, which eliminates subjective activity;

– implementation of transparent network organizational forms of co-creation that ensure co-evolution with the external environment and symbiotic interaction schemes;

– acceptance of the nonlinearity of innovative development requires the formation and installation of the polysubjectivity organizational principles of innovative processes, facilitation of the unification modes of collaboration subjects, their interaction, and nonlinear impact;

---

[1] Безгин, К. С. (2015). *Управление процессом создания ценности на предприятии: полисубъектность и коллаборация.* Харьков: НТМТ.

[2] Кристенсен, К., Холл, Т., Диллон, К., Данкан, Д. (2019). *Закон успешных инноваций: Зачем клиент «нанимает» ваш продукт и как знание об этом помогает новым разработкам*. Москва: Альпина Паблишер.

[3] Лепский, В. Е. (ред.) (2012). *Организация саморазвивающихся инновационных сред.* Москва: Когито-Центр.

[4] Аппело, Ю. (2018). *Agile-менеджмент: Лидерство и управление командами.* Москва: Альпина Паблишер.

[5] Деминг, Э. (2019). *Менеджмент нового времени: Простые мехнизмы, ведущие к росту, инновациям и доминированию на рынке.* Москва: Альпина Паблишер.

[6] Котлер, Ф., Айвен, С., Хермаван, К. (2019). *Маркетинг 4.0. Разворот от традиционного к цифровому: технологии продвижения в интернете*. Москва: Бомбора.

[7] Лефевр, В. А. (2003). *Рефлексия*. Москва: Когито-Центр.

[8] Тромпенаарс, Ф., Куберг, П. (2019). *100 ключевых моделей и концепций управления.* Москва: Манн, Иванов и Фербер.

[9] Хэмел, Г., Занини, М. (2021). *Гуманократия. Как сделать компанию такой же гибкой, смелой и креативной, как люди внутри нее*. Москва: Манн, Иванов и Фербер.

[10] Фридман, Т. (2007). *Плоский мир. Краткая история XXI века*. Москва: Хранитель.

– reformatting managerial consciousness into the ability to perceive the continuity of changes, postulates coordination with the possibility of knowing only general principles, patterns of complex systems functioning, and the inclusion of uncertainty as their natural characteristics.

Let us analyze the evolution process of the subject area of management in order to understand the general logic behind the increasing complexity of innovative development processes and, therefore, track the emergence of new order parameters in organizational management, ensuring its ability to adapt to the conditions of uncertainty (Table 1). As it can be seen from the table, there is a certain eclecticism in the attribution of the authors to the integrating Management 2.0 concept, the authors such as G. Kaplan, M. Hammer, and others attempted to revive the scientific management school in their concepts to a greater extent, in turn, Peter F. Drucker, W. Edwards Deming, G. Hamel talked about creating new order parameters in the subject area of management, building the foundation for Management 3.0. The works of these philosophers on management can explain everything that happens in managerial reality post hoc, examining it through the prism of their theories and appealing to known factors, however, they can predict, forecast, and reproduce certain consequences only in terms of probability and in a fairly constrained practical range.

The eclecticism of the Management 3.0 theory has a different synthesizing basis – a fragmented description of the managerial reality of each of the concepts, but in their synergistic combination, they form an unlimited field of modern management, which is bound to expand. If we divide the existing scientific knowledge into normative and descriptive, management in its new reading, to a greater extent, will be a systematic description of management practice, as a temporary map of a territory whose landscape is constantly going through changes. But the unpredictability of human behavior, combined with the uncertainty and dynamism of changes in the external environment, will permanently undermine the reproducibility of the established patterns in practice and deprive them of their predictive ability. The pragmatic value of the existence of such a systematic description – which has to be constantly updated to correspond to reality – is to extract the principles and general patterns of management, which establish new order parameters and indicate vectors of motion increasing the adaptive potential of the leader and organization under the circumstances of complexity and uncertainty.

The increasing complexity of the modern organizations' operating conditions and the growth of their uncertainty changes the abductive basis for the formation of basic metaphors and analogies of management. While analogies with classical mechanics were relevant for the creation of management technologies versions 1.0 and partly 2.0, version 3.0 gravitates more toward quantum mechanics and the functioning of the neural substrate with their thesaurus and axiomatics. For an innovatively active organization to meet the parameters of complexity and uncertainty of the external environment, it is necessary to create forms that symbiotically interact with the external environment. To generate such forms, it is necessary to understand the limitations that constrain this interaction and lead to systematic failures in the generation of relevant results. These constraints are cross-disciplinary and cross-functional in their nature and are localized at different levels: organizational; group; personal. Let us consider some of the limitations of the concepts that are in the asset of management thought at the transdisciplinary level, to convincingly demonstrate the indifference of some of them to the human essence and behavioral patterns. Heisenberg's uncertainty principle and H. Simon's bounded rationality concept indicate the subject's perceptual and cognitive limitations on the relevant perception of reality and optimal decision-making. This implies the need to increase the individual cognitive complexity of the subjects through the expansion of cognitive constructs that can interpret reality in different variations, i.e. the collection of the collective mind – polysubjective collaboration. In the context of K. Gödel's incompleteness theorem and A. Korzybski's "the map is not the territory" axiom, it should be noted that theoretical management models of reality are structurally similar to the landscape of management reality, but they are by definition incomplete and must be constantly updated. Lowering these statements to the level of innovative activity of the organization, it must be noted that to produce relevant innovative values, fulfilling the organizational purpose, you need to empathize with the external practical process, that is to co-evolve with the external environment. From the perspective of Bogdanov's "Tektology" and under the Second Law of Thermodynamics, the degree of disorder (entropy) of a closed system increases, and in the case of complex systems – artificial management influence, which aims to maintain the system in a given behavioral range, can complicate the situation, increasing entropy. Organizational negentropy (a measure of order) can be increased by maintaining information and communication balance with the environment – the creation of open organizational boundaries, which are characterized by the property of selective penetration to maintain organizational identity and not increase the entropy of the system due to the limited cognitive potential of the permanent participants – the transparency of organizational borders.

Table 1

Evolution of the subject area of management

Branches of the evolution of the subject area of management	Versions of management	–			Management 1.0		Management 2.0	Management 3.0
	Evolution of management	Pre-scientific period of management evolution			Scientific period of management evolution			
	Main concepts	Spontaneous development of the management thought. (domination of the non-systematized and non-generalized individual management practices)			Objectivity. Classical managerial rationality. Organizational metaphor – the mechanism. Organization as a technical system. Stimulation. Product quality. Rationalism and bureaucracy in management. Closed innovations. Reflexive structure blocking of the managed subject. Directive influence.		Subjectivity. Non-classical managerial rationality. Organizational metaphor – organism. Organization, as a sociotechnical system. Motivation. Process quality. Reflexive structure support of the managed subject. Manipulative influence.	Polysubjectivity. Post-non-classical managerial rationality. Organizational metaphor– the brain. Organization, as a socio-cybernetic system that learns. Leadership. Self-organization. Organizational quality. Reflexive and cognitive management. Open innovations. The parity of the reflexive structure of the managing and the managed subjects. Influence through interaction and coming to the final decision.
	Represented by	Sun Tzu, N. Machiavelli, Carl von Clausewitz			F. Taylor, G. Ford, F. and L. Gilbreth,, H. Emerson, H. Gantt, H. Fayol, M. Weber, C. Barnard		I. Adizes, C. Argyris, Peter F. Drucker, W. Edwards Deming, R.Kaplan, H. Mintzberg, T. Peters, J. Pfeffer, M. Hammer, G. Hamed	J. Appelo, H. Geiselhart, F. Kotler, V. Lefebvre, I. Nonaka, J.D. Rifkin, P. Senge, R. Thaler, J. Howe, E. Phelps, T. Friedman
Closed nature of an organization		Unclearly indicated parameters			maximal		medium	minimal
Conditions of uncertainty					minimal		medium	maximal
Tempo of modernization					minimal		medium	maximal
Rational bureaucracy					maximal		medium	minimal
Subjectivity support					minimal		medium	maximal
Technological paradigms		…	I	II	III	IV	V	VI
Years		…	1770	1830	1880	1930	1980	2030

These theoretical concepts synchronized with the practice of operating an innovatively active organization determine the logical expansion of managerial discourse in the following areas: management technologies development of the coevolution of an innovatively active organization and the external environment; the development of the scientific and practical basis of facilitating (supporting) management; generalization, systematization, and adaptation of the transdisciplinary developments of synergetics, providing the development of ideas of self-organization in terms of innovation management (Fig. 1).

At the beginning of the XX century, organizations were presented as closed systems. Interactions and connections with the external environment were down to a minimum. This was all due to the dominance of The Cult of the Self and individualism, which, incidentally, penetrated deeply into modern archetypes of managerial interaction. Closed innovation systems, focusing on the individual personalities of developers and innovators – this could exist in a simple and deterministic world with a clear causality and predictability of consequences. In contrast, the world at the beginning of the XXI century is a complex and uncertain world in which the consequences occur before we can learn about their causes. It is a non-linear world in which the individual subject is left with less and less space and whose limited cognitive abilities are less and less consistent with the complexity of tasks and the unpredictability of the consequences of his innovative activities. The generated management models cannot keep up with the dynamics of changes in the management landscape, which to some extent justifies the manual management of complex systems, which provides the manager with operational information. But as the man-made cataclysms and permanently emerging contradictions of innovative development convincingly prove, the fact that individual cognitive potential is a priori limited in innovation and managerial rationality is almost incapable of providing a relevant response to complex innovation issues. This requires the collection of individual creators within a collective mind, a polysubject capable of generating relevant responses to and co-evolving with the environment.

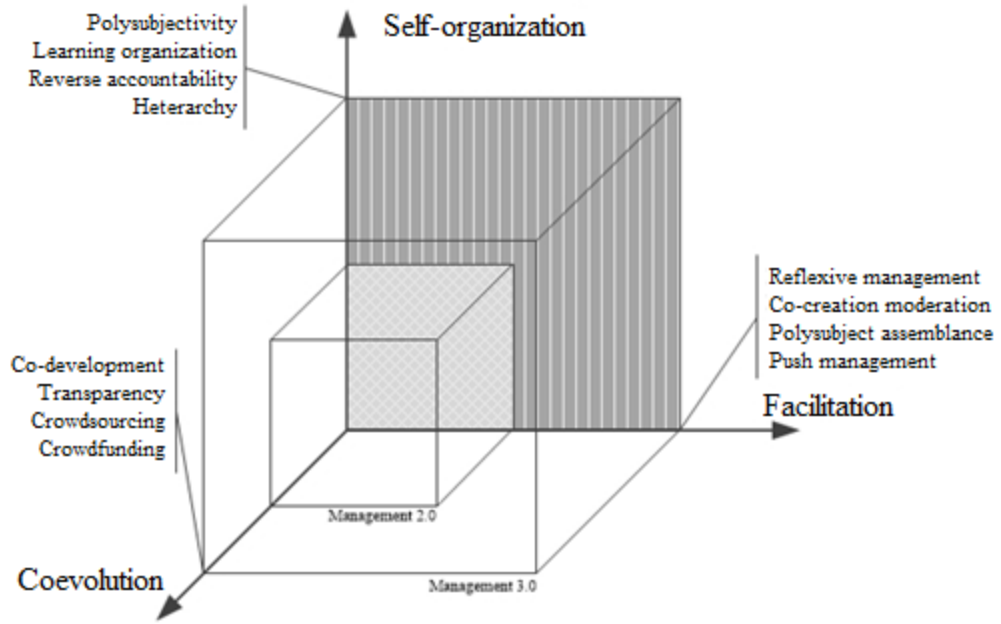

Fig. 1. Basic management transformation vectors of the innovatively active organizations.

The contradiction of the modern socio-economic systems is an attempt to reduce the perception and linearity of response to the uncertainty of the external environment due to the mechanistic superstructure of new levels of organizational complexity, predictably leads to a downward trajectory of their life cycle due to the loss of the ability to respond quickly and flexibly to changes. The ambivalence of organizational reengineering lies in the fact that it is necessary to react to the complications of the environment without complicating the organizational vertical, but, on the contrary, "flatten" it, increasing the number of connections "each with each". The counterintuitive nature of these activities lies in the fact that in order to adapt to changes, there is no need

to administer them, rebuilding everything through the prism of one's limited understanding, but symbiotically co-evolve with the changes. The pace of modernization in the 21st century is striking in its intensity. The development of information and communication technologies and free access to knowledge have exhausted the possibilities of maintaining information asymmetry as a way of managing social masses. The exponential growth of knowledge and the possibility of free access to it, the formation of expert communities and the ability to obtain information from anywhere, consumers with developer skills, and the intensive obsolescence of technical and technological developments – this and much more leads to a rapid devaluation of management concepts of the twentieth century.

Some components of the rational bureaucracy concept have not lost their relevance in the present, but most of them were created for the parameters of another world that is in the past. Having borrowed the logic and metaphors of Newtonian mechanics, as well as being armed with the engineering and technical principles of the effectiveness of the human activity, representatives of the scientific school of management did everything to erase the difference between a living person and an artificial mechanism. The foundations of the subject-object pattern of interaction between the controlled and the controlling subsystems laid down within the framework of this school are one of the managerial atavisms that are difficult to eradicate, which is especially destructive for innovatively active organizations. The one-dimensional perception of a subordinate as an object, devoid of his activity and value-oriented guidelines, for a long time formed in theoretical management the image of an "administrative person", is identified with an automaton that technologically and predictably fulfills the tasks set by the manager before him. But human nature breaks out of these mechanistic schemes, and not the least role in this socio-humanitarian revolution was played by the conditions prevailing in the 21st century, which gravitate toward facilitation as a relevant form of managerial interactions in an innovatively active organization.

In the process of increasing the number of social connections and local interactions between the subjects of the internal and external environment, a symbiotic polysubject arises, whose cognitive potential and cooperative behavior do not require control from the controlling subject. The function of the manager in this self-organizing unity is to provide conditions for the functioning and determine the direction of development. Self-organization, as a person's ability to act as an active element of the social system, prepared for knowledge, transformation, and activity. This is the ability to have a certain extent of behavioral autonomy, which provides for the incomplete determinism of their choices on the part of the leadership and the system – this is the opportunity for productive interaction, which, through under conditions, motivates innovation-oriented co-creation.

Conclusion. Thus, the behavior and viability of such a complex system as an innovatively active organization, can be justified through the three vectors of transformation of the management paradigm: 1) openness of the system as an opportunity for organizational coevolution with the external environment through ideological, evaluative and subjective diversity in the process of creating innovative concepts; 2) self-organization of the system, as immersive creativity and self-directed support of the innovation processes, with permanent interactions with the external environment (the definition and specification of the innovation value criteria) and irritative managerial influences (identification of the development direction and ensuring organizational identity); 3) nonlinearity of managerial influence to ensure the necessary vector of development, support of organizational identity – on the one hand, and "soft" managerial interaction with a wide cognitive diversity, which facilitates the processes of innovative co-creation and activates the personality of the creator in each of the collaborators due to the open opportunity of participation in the processes of recombination and proliferation of the properties of the created innovation.

Reference:

1. Appelo, Y. (2018). *Agile-menedzhment: Liderstvo i upravleniye komandami* [Agile Management: Leadership and Team Management]. Moscow: Alpina Publisher. [in Russian].
2. Bezgin, K. S. (2015). *Upravleniye protsessom sozdaniya tsennosti na predpriyatii: polisubyektnost i kollaboratsiya* [Management of the process of creating value in the enterprise: polysubject and collaboration]. Kharkiv: NTMT. [in Russian].
3. Deming, E. (2019). *Menedzhment novogo vremeni: Prostyye mekhnizmy, vedushchiye k rostu, innovatsiyam i dominirovaniyu na rynke* [New Age Management: Simple Mechanisms Leading to Growth, Innovation and Market Dominance]. Moscow: Alpina Publisher. [in Russian].
4. Kotler, F., Ivan, S., Hermavan, K. (2019). *Marketing 4.0. Razvorot ot traditsionnogo k tsifrovomu: tekhnologii prodvizheniya v internete* [Marketing 4.0. The U-turn from Traditional to Digital: Internet Promotion Technologies]. Moscow: Bombora. [in Russian].

5. Christensen, K., Hall, T., Dillon, K., Duncan, D. (2019). *Zakon uspeshnykh innovatsiy: Zachem kliyent «nanimayet» vash produkt i kak znaniye ob etom pomogayet novym razrabotkam* [The Law of Successful Innovation: Why does a customer "hire" your product and how knowing about it helps new developments]. Moscow: Alpina Publisher. [in Russian].
6. Lepsky, V.E. (ed.) (2012). *Organizatsiya samorazvivayushchikhsya innovatsionnykh sred* [Organization of self-developing innovative environments]. Moscow: Cogito-Center. [in Russian].
7. Lefebvre, V.A. (2003). *Refleksiya* [Reflection]. Moscow: Cogito-Center. [in Russian].
8. Trompenaars, F., Kuberg, P. (2019). *100 klyuchevykh modeley i kontseptsiy upravleniya* [100 key management models and concepts]. Moscow: Mann, Ivanov and Ferber. [in Russian].
9. Hamel, G., Zanini, M. (2021). *Gumanokratiya. Kak sdelat' kompaniyu takoy zhe gibkoy, smeloy i kreativnoy, kak lyudi vnutrineye* [Humanocracy. How to make a company as flexible, bold and creative as the people inside it]. Moscow: Mann, Ivanov and Ferber. [in Russian].
10. Friedman, T. (2007). *Ploskiy mir. Kratkaya istoriya XXI veka* [Flat world. A Brief History of the XXI Century]. Moscow: Guardian. [in Russian].
11. Shaulska, L., Karpenko, A., Doronina, O., Naumova, M., Biletskyi, O. (2021). Drivers of macroeconomic growth in a creative economy: innovation policy and human capital. *AD ALTA: Journal of Interdisciplinary Research, 11/01-XVII.* [in English].