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# ABSTRACT

Of the dissertation for the degree of Doctor of Philosophy

# PHİLOSOPHY OF INTERDİSCİPLİNARY KNOWLEDGE: GENESİS, STRUCTURE AND ORGANİZATİON

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## GENERAL CHARACTERISTICS OF THE DISSERTATION

**The relevance of the research and the degree of problematic research.** In the twenty-first century, philosophical and scientific cognition is regarded as a phenomenon of strategic significance. This thesis has found reflection not only within academic circles but also in the strategic official documents of independent states, including concepts, doctrines, programmes and other policy frameworks.

The National Leader of Azerbaijan, Heydar Aliyev, emphasized this point in relation to Azerbaijan, stating that: "*Our people have traversed a highly honourable path from the beginning of the twentieth century to the present day. Throughout this period, the cultural and educational level of our nation has risen, our culture has advanced, our science has developed and a substantial economic potential has been formed. Significant transformations have occurred in the lifestyle and worldview of our people and a major socio-political process has unfolded. All these achievements constitute the outcomes and fruits of the historical period we have passed through and its various stages*."[1].

The President of the Republic of Azerbaijan, Mr. Ilham Aliyev, addressing Azerbaijani scientists during his speech at the General Assembly dedicated to the 70th anniversary of the Azerbaijan National Academy of Sciences (9 November 2015), stated: "*I very much wish that Azerbaijani scientists will continue to play an even more active role in the comprehensive development of our country in the future*."[2].

The statements of the National Leader Heydar Aliyev and President Ilham Aliyev cited above demonstrate that the Azerbaijani state regards science as the principal driving force behind societal development.

The growing significance of science for an independent state is rooted in the specific features of the internal logic governing the development of scientific cognition. Among these features, the emergence of qualitatively new forms and content of interdisciplinary

[1] Əliyeva-Kəngərli, A. Heydər Əliyev və Azərbaycan elmi. Biblioqrafik göstərici. – Bakı, – Şərq-Qərb, – 2010, – 424 s., s.33-34

[2] Əliyev, İ. İnkişaf – məqsədimizdir / İ.Əliyev. – Bakı: Azərnəşr, – 2018, – 408 s., s. 150-151

relations is recognized as a particularly important process. The philosophical and epistemological investigation of this process is therefore of considerable relevance.

According to the forecasts of philosophers, the overall image of science in the near future will be determined by the integration of scientific disciplines. In this context, it is important to emphasize the increasing relevance of methodological, epistemological, logical, ontological and scientific-ethical aspects of the influence of philosophy on interdisciplinary relations. At the same time, against the background of the historical evolution of disciplinarity, the study of the nature of philosophy's influence on the formation of interdisciplinarity is regarded as an issue of particular significance.

Furthermore, the predominance of integrative tendencies among scientific fields gives rise to numerous cognitive, socio-cultural, practical, methodological, gnoseological and information-related issues that have become increasingly relevant to scientific inquiry. Their philosophical reflection has, in turn, become a necessity.

The methodology of philosophical investigation of the aforementioned scientific characteristics has likewise acquired renewed relevance. This aspect of the problem has become so significant that philosophers have developed a new field of inquiry known as the "*quantitative measurement of scientific communications*". In this regard, a doctoral dissertation prepared in Australia emphasizes that the method of *"computerized quantitative text analysis"* has produced more effective results[3].

Within the framework of the aforementioned considerations, the relevance of two scientific problems is beyond doubt. The first concerns the gnoseological, methodological and logical connections between the formation of interdisciplinary knowledge, scientific rationality and other cognitive factors. The second relates to the organization of scientific activity within interdisciplinary research. From a philosophical perspective, these two major directions are reflected in the investigation of the gnoseological and methodological

[3] Kingsley, I. Effective measurement: Improving the measurement of science communication effectiveness // – 2022, – pp. X+409, p. iii

genesis of interdisciplinary knowledge, as well as in the study of the structure and organization of knowledge.

Against this background, the classification of integrative forms in contemporary interscientific relations also remains highly relevant. Their differentiation into interdisciplinary, multidisciplinary, transdisciplinary and nanotechnological forms provides an opportunity to examine both the theoretical and practical dimensions of relations among scientific disciplines from a unified philosophical and scientific perspective. In this context, the emergence of collective creativity within the framework of interdisciplinary approaches constitutes an issue of considerable importance for both philosophy and science.

At the present stage, the philosophical understanding of forms of interdisciplinary integration is particularly significant for the development of new educational strategies and for fostering creative capacities among young people through interdisciplinary approaches.

The various philosophical aspects of knowledge formation within the framework of interdisciplinary integration are highly relevant not only in relation to the issues discussed above but also for understanding artificial intelligence, particularly from the perspectives of philosophy and cognitive science.

The considerations outlined above demonstrate that interdisciplinary research and the knowledge generated on its basis have acquired even greater significance under the conditions of digitalization.

With regard to the degree of development of the problem, it should be noted that the philosophical reflection on interdisciplinarity at the contemporary stage is mainly carried out in two aspects. The first aspect (or level) is concerned with the analysis of the general philosophical problems of interscientific relations. The second aspect focuses on the philosophical investigation of interdisciplinarity as a distinct form of integration within interscientific relations. A considerable body of contemporary philosophical literature demonstrates the tendency to examine these two aspects in their unity. Naturally, the knowledge generated within the framework of an

interdisciplinary approach must possess a complex substantive, gnoseological and methodological character.

In this regard, philosophers analyze interscientific relations from the perspective of their philosophical interpretation since antiquity, while simultaneously comparing them with the forms of interscientific interaction characteristic of the contemporary stage of scientific development.

J.T.Klein[4], Hoffmann[5], L.Deuttsch[6], M.O'Rourke[7], G.Gann[8], P.Galison[9] and F.Russo[10] in their analysis of the historical development of interdisciplinarity, demonstrate that interaction between different fields of knowledge has been one of the central themes of philosophical thought since antiquity. According to the authors, while relations among the sciences in the ancient period were primarily based on the idea of a unified body of knowledge, in the contemporary stage interdisciplinarity functions as a methodological approach oriented toward the solution of complex social, technological and scientific problems.

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[4] Klein, J.T. Interdisciplinarity: History, Theory and Practice // J.Klein. Interdisciplinarity: History, Theory and Practice. Wayne State University Press, – 1990, – pp. 331

[5] Hoffmann, S., Deutsch, L., Klein, J.T., O'Rourke, M. Integrate the integrators! A call for establishing academic careers for integration experts: [Electronic resource] // – Berlin: Humanities and Social Sciences Communications. Nature Portfolio. – 2022, v. 9, – №: 147 https://www.nature.com/articles/s41599-022-01138-z

[6] Hoffmann, S., Deutsch, L., Klein, J.T., O'Rourke, M. Integrate the integrators! A call for establishing academic careers for integration experts: [Electronic resource] // – Berlin: Humanities and Social Sciences Communications. Nature Portfolio. – 2022, v. 9, – №: 147 https://www.nature.com/articles/s41599-022-01138-z

[7] Hoffmann, S., Deutsch, L., Klein, J.T., O'Rourke, M. Integrate the integrators! A call for establishing academic careers for integration experts: [Electronic resource] // – Berlin: Humanities and Social Sciences Communications. Nature Portfolio. – 2022, v. 9, – №: 147 https://www.nature.com/articles/s41599-022-01138-z

[8] Gunn, G. Human Solidarity and the Problem of Otherness // In: Religion and Cultural Studies Princeton University Press. – 2001, – pp.80-94

[9] Galison, P. Trading Zone. Coordinating Action and Belief // P.Galison. – New York: Routledge. The Science Studies Reader. – 1999, – pp. 137–160

[10] Russo, F. Techno-Scientific Practices. An Informational Approach // F.Russo. – Lanham: Rowman & Littlefield. – 2022, – 336 pp.

V.S.Styopin[11], İ.T.Kasavin[12], T.D.Sokolova[13], O.V.Bıçkova[14], G.Rimondi[15], M.Veronese[16], S.R.Davies[17] and other contemporary philosophers have analyzed the problem from the aforementioned perspective. Alongside such a general philosophical approach, philosophers also focus on a more adequate epistemological investigation of interdisciplinary knowledge. In this context, research is typically conducted along two main directions.

One direction is associated with the epistemological approach that is considered more appropriate for the epistemic comprehension of interdisciplinary knowledge. A common position is that interdisciplinary knowledge requires an epistemology characterized by qualitatively new gnoseological and methodological features.

[11] Степин, В.С., Горохов, В.Г., Розов, М.А. Философия науки и техники: Учебное пособие // В.С.Степин, В.Г.Горохов, М.А.Розов. – М.: Контакт–Альфа, – 1995, – 384с.

[12] Касавин, И.Т. Знание и реальность в исторической эпистемологии // – Москва: Эпистемология и философия науки. – 2020, т. 57, № 2, – с. 6–19;

[13] Соколова, Т.Д. Концептуализация научного прогресса: случай исторической эпистемологии // Т.Д.Соколова. – Москва: Эпистемология и философия науки, – 2023, т. 60, № 2, – с. 23–34

[14] Бычкова, О.В. Исследования науки и технологий (STS): чему научили нас за 50 лет? // О.В.Бычкова. – Санкт-Петербург. Журнал – Социология науки и технологий. – 2020, том 11, №3, – с. 7-21

[15] Rimondi, G., Veronese, M. Defining the dialogue between sciences: a view on transdisciplinary perspective in the human sciences // - Santa Rosa: Informing Science The International Journal of an Emerging Transdiscipline. – 2018, vol. 21, – pp. 255-268

[16] Rimondi, G., Veronese, M. Defining the dialogue between sciences: a view on transdisciplinary perspective in the human sciences // - Santa Rosa: Informing Science The International Journal of an Emerging Transdiscipline. – 2018, vol. 21, – pp. 255-268

[17] Davies, S. R., et al. //S.R.Davies, M.Horst. Science communication. Culture, identity and citizenship. – London, Palgrave Macmillan. – 2016, – 265 pp.

In this regard, studies conducted by members of the Club of Rome are also noteworthy.[18]. Philosophers such as M.Horst[19], M.O'Rourke[20], B.Laursen[21], A.P.Paraxonskiy[22], T.D.Sokolova[23], V.S.Mokiy[24], T.A.Lukyanova[25], J.Petts[26], S.Owens[27], H.Bulkeley[28],

[18] Римский клуб. История создания, избранные доклады и выступления, официальные материалы. // Под ред. Д.М.Гвишиани, Издательство: М.: УРСС, – 1997, – 384 с.

[19] Davies, S. R., et al. //S.R.Davies, M.Horst. Science communication. Culture, identity and citizenship. – London, Palgrave Macmillan. – 2016, – 265 pp.

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[21] Laursen, B. What is collaborative, interdisciplinary reasoning? The heart of interdisciplinary team science // – Santa Rosa. Informing Science: The International Journal of an Emerging Transdiscipline. – 2018, vol. 21, – pp. 75-106

[22] Парахонский А.П. Мультидисциплинарность научных исследований // – Москва: Издательский Дом – Академия Естествознания. Успехи современного естествознания. – 2009, № 9, – с. 121-122

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[24] Мокий В.С., Лукьянова Т.А. Междисциплинарные взаимодействия в современной науке: подходы и перспективы // В.С.Мокий., Т.А.Лукьянова. – Москва. Экономическая наука современной России. – 2017, № 3 (78), – с. 7-21

[25] Мокий В.С., Лукьянова Т.А. Междисциплинарные взаимодействия в современной науке: подходы и перспективы // В.С.Мокий., Т.А.Лукьянова. – Москва. Экономическая наука современной России. – 2017, № 3 (78), – с. 7-21

[26] Petts, J. et al. Crossing boundaries: interdisciplinarity in the context of urban environments: [Electronic reseurce] // J.Petts, S.Owens, H.Bulkeley. Geoforum, – 2004, № 39(2), – pp. 593–601
https://www.researchgate.net/publication/223330444_Crossing_boundaries_Interdisciplinarity_in_the_context_of_urban_environments

[27] Petts, J. et al. Crossing boundaries: interdisciplinarity in the context of urban environments: [Electronic reseurce] // J.Petts, S.Owens, H.Bulkeley. Geoforum, – 2004, № 39(2), – pp. 593–601
https://www.researchgate.net/publication/223330444_Crossing_boundaries_Interdisciplinarity_in_the_context_of_urban_environments

[28] Petts, J. et al. Crossing boundaries: interdisciplinarity in the context of urban environments: [Electronic reseurce] // J.Petts, S.Owens, H.Bulkeley. Geoforum, – 2004, № 39(2), – pp. 593–601

R.Evans[29], S.Marvin[30], M.S.Kiseleva[31], A.MacKenzie[32], Y.Huey[33], İ.T.Kasavin[34], S.Fuller[35], V.İ.Arshinov[36], V.Q.Budanov[37] have conducted research on this aspect.

Interdisciplinarity is also examined by a number of philosophers within the framework of veritist philosophy. As a rule, in this approach the problem is formulated in terms of the relationship between truth and intellectual virtue. In this context, the issue is further analyzed through the interrelation between truth, post-truth, post-normal science and the phenomenon of wisdom. In this regard, philosophical

https://www.researchgate.net/publication/223330444_Crossing_boundaries_Interdisciplinarity_in_the_context_of_urban_environments

[29] Evans, R., et al.. Disciplining the sustainable city: Moving beyond science, technology or society? // R.Evans, S.Marvin. – Cardiff: Cardiff University. School of Social Sciences Working Papers Series. – 2004, vol. 65, – 38 pp.

[30] Evans, R., et al.. Disciplining the sustainable city: Moving beyond science, technology or society? // R.Evans, S.Marvin. – Cardiff: Cardiff University. School of Social Sciences Working Papers Series. – 2004, vol. 65, – 38 pp.

[31] Киселева, М.С. Гуманитарные исследования и проективность: дисциплинарные и междисциплинарные стратегии знания // М.С. Киселева. – Казань: Ученые записки казанского университета. Серия: гуманитарные науки. – 2016, т. 158, кн. 4, – с. 1163–1172

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[33] Hui, Y. Recursivity and Contingency // Y.Hui.– London: Rowman & Littlefield International Ltd., – 2019, – pp. xv + 336. ISBN(s) 9781786600523

[34] Касавин, И.Т. Знание и реальность в исторической эпистемологии // – Москва: Эпистемология и философия науки. – 2020, т. 57, № 2, – с. 6–19;

[35] Fuller, S. Post-Truth: Knowledge as a Power Game // S. Fuller. New York, Michigan. Anthem Press. – 2018, – pp. 208.

[36] Аршинов, В.И. и др. Онтологии и риски цифрового техноуклада: к вопросу о представлении социотехнического ландшафта // В.И.Аршинов, В.Г.Буданов. - Москва: Сложность. Разум. Постнеклассика. – 2019, – №2, – с.51-60.

[37] Буданов, В.Г. и др. Сложностность и проблема единства знания. Вып. 1: К стратегии познания сложности // Рос. акад. наук, Ин-т философии; В.Г.Буданов, В.И.Аршинов, В.Е.Лепский, Я.И.Свирский. – М.: ИФ РАН, – 2018, – 105 с.

studies have been conducted by L.Zagzebski[38], D.Pritchard[39], R.Şeyn[40], E.Kassan[41], J.Turri[42], M.Alfano[43], J.Greco[44], L.V. Shipovalova[45].

Another line of research on interdisciplinary knowledge is associated with the influence of post-non-classical rationality on interdisciplinary relations. Philosophers generally maintain that post-non-classical rationality constitutes the gnoseological, cognitive and methodological foundation of contemporary interscientific relations. Research conducted in this direction focuses, within the aforementioned context, on how scientific rationality shapes and reconfigures the interactions between different disciplines at the present stage.

Post-non-classical rationality is characterized by the orientation of scientific cognition toward complex, open and self-developing systems. In this regard, significant contributions have been made by

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[38] Zagzebski, L. God, Knowledge and the Good: Collected Essays in Philosophy of Religion, forthcoming // L.Zagzebski. God, Knowledge and the Good: Collected Essays in Philosophy of Religion, forthcoming. Oxford University Press, – 2022, – 361 pp.

[39] Pritchard, D. In defence of veritism // – Moscow: Epistemology & Philosophy of Science. – 2021, vol. 58, №4, – pp.22–37.

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[41] Cassan, E. Bacon's Novum Organum: – The marriage bed between the mind and the universe // Epistemology & Philosophy of Science. – 2021, – vol.58, – №3, – pp.38–46.

[42] Turri, J., Alfano, M., Greco, J. Virtue Epistemology: [Electronic resource] // – 2019. Stanford, California: Stanford University. URL: https://plato.stanford.edu/entries/epistemology-virtue/.

[43] Turri, J., Alfano, M., Greco, J. Virtue Epistemology: [Electronic resource] // – 2019. Stanford, California: Stanford University.
URL: https://plato.stanford.edu/entries/epistemology-virtue/

[44] Greco, J. Pritchard's case for veritism // – Moscow: Epistemology & Philosophy of Science. – 2021, vol.58, № 4, – pp. 46–53.; Turri, J., Alfano, M., Greco, J. Virtue Epistemology: [Electronic resource] // – 2019. Stanford, California: Stanford University.
URL: https://plato.stanford.edu/entries/epistemology-virtue

[45] Шиповалова, Л.В. Как возможна пост-нормальная наука? //- Москва: Эпистемология и философия науки. – 2022, – т. 59, № 3, – с. 61–73;

V.S.Styopin[46], H.De Regt[47], B.Latour[48], V.İ.Arşinov[49], S.Fuller[50], İ.T.Kasavin[51], V.Q.Budanov[52], S.A.Lebedev[53], S.N.Koskov[54] and other scholars.

Finally, the philosophical and epistemological dimension of the application of interdisciplinary knowledge in various domains under conditions of digitalization has been increasingly investigated in recent years. This aspect of the problem is addressed in the context of the interaction between the cognitive, gnoseological and socio-cultural dimensions of the applied use of interdisciplinary knowledge in such

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[46] Степин, В.С., Горохов, В.Г., Розов, М.А. Философия науки и техники: Учебное пособие // В.С.Степин, В.Г.Горохов, М.А.Розов. – М.: Контакт–Альфа, – 1995, – 384с.

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[48] Latour B. Network, societies, spheres: Reflection of an actor–network theorist // International j. of communication. Los Angeles, – 2011, – vol. 5, – pp. 796-810.

[49]Буданов, В.Г., Аршинов, В.И. Большой антропологический переход: методология сложностносетевого мышления: монография/ В.Г.Буданов, В.И. Аршинов. – Курск: ЗАО – Университетская книга, – 2022. – 129 с.

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[52]Аршинов, В.И. Большой антропологический переход: методология сложностносетевого мышления: монография/ В.Г.Буданов, В.И. Аршинов. – Курск: ЗАО – Университетская книга, – 2022. – 129 с.

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[54] Лебедев, С.А., Коськов, С.Н. Плюрализм уровней научного знания // Гуманитарный вестник. – 2021, – № 3, – s. 1-13.

fields as education, engineering, art, sociology, cultural studies and other significant areas.

Research in this direction pays particular attention to the impact of digital technologies on the processes of creating, sharing and applying interdisciplinary knowledge. Scholars emphasize that the digital environment accelerates information exchange between different scientific fields and facilitates the emergence of new forms of collaboration. At the same time, they discuss new cognitive practices and mechanisms of knowledge production formed under conditions of digitalization.

In this regard, philosophical studies have been conducted by H.Kuo[55], Y.Tseng[56], Y.Yang[57], C.Ambrose[58], D.R.Moirano[59],

[55] Kuo, H., Tseng, Y., & Yang, Y.C. Promoting college student's learning motivation and creativity through a STEM interdisciplinary PBL human-computer interaction system design and development course. Thinking Skills and Creativity. – 2019, №31, – pp.1–10.

[56] Kuo, H., Tseng, Y., & Yang, Y.C. Promoting college student's learning motivation and creativity through a STEM interdisciplinary PBL human-computer interaction system design and development course. Thinking Skills and Creativity. – 2019, №31, – pp.1–10.

[57] Kuo, H., Tseng, Y., & Yang, Y.C. Promoting college student's learning motivation and creativity through a STEM interdisciplinary PBL human-computer interaction system design and development course. Thinking Skills and Creativity. – 2019, №31, – pp.1–10.

[58] Ambrose, D. Interdisciplinary invigoration of creativity studies // D.Ambrose. – Hoboken: Wiley-Blackwell . The Journal of Creative Behavior, – 2017, № 51(4), – pp. 348–351.

[59] Moirano, R., Sánchez, M.A., Štěpánek, L. Creative Interdisciplinary Collaboration: A Systematic Literature Review: [Electronic resource] // Thinking Skills and Creativity. – 2020, – vol. 35, – pp.1-14. https://www.sciencedirect.com/science/article/abs/pii/S1871187119302196

M.A.Sánchez[60], L.Štěpánek[61], S.Spuzic[62], R.Narayanan[63], K.Abhary[64], E.V.Maslanov[65], M.A.Xasiyeva[66], Xu Guang[67] and other scholars.

In the works of contemporary Azerbaijani philosophers, there are studies devoted to interdisciplinarity. These works address the investigation of the general philosophical and epistemological characteristics of contemporary interscientific relations. In addition, Azerbaijani philosophers have examined interdisciplinary knowledge

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[60] Moirano, R., Sánchez, M.A., Štěpánek, L. Creative Interdisciplinary Collaboration: A Systematic Literature Review: [Electronic resource] // Thinking Skills and Creativity. – 2020, – vol. 35, – pp.1-14. https://www.sciencedirect.com/science/article/abs/pii/S1871187119302196

[61] Moirano, R., Sánchez, M.A., Štěpánek, L. Creative Interdisciplinary Collaboration: A Systematic Literature Review: [Electronic resource] // Thinking Skills and Creativity. – 2020, – vol. 35, – pp.1-14. https://www.sciencedirect.com/science/article/abs/pii/S1871187119302196

[62] Spuzic, S. et al. The synergy of creativity and critical thinking in engineering design: The role of interdisciplinary augmentation and the fine arts // S.Spuzic, R.Narayanan, K.Abhary, H.K.Adriansen, S.Pignata, F.Uzunovic, G.Xu. – Technology in Society. – Elsevier. – 2016, vol.45, – pp. 1–7.

[63] Spuzic, S. et al. The synergy of creativity and critical thinking in engineering design: The role of interdisciplinary augmentation and the fine arts // S.Spuzic, R.Narayanan, K.Abhary, H.K.Adriansen, S.Pignata, F.Uzunovic, G.Xu. – Technology in Society. – Elsevier. – 2016, vol.45, – pp. 1–7. DOİ: https://doi.org/10.1016/j.techsoc.2015.11.00

[64] Spuzic, S. et al. The synergy of creativity and critical thinking in engineering design: The role of interdisciplinary augmentation and the fine arts // S.Spuzic, R.Narayanan, K.Abhary, H.K.Adriansen, S.Pignata, F.Uzunovic, G.Xu. – Technology in Society. – Elsevier. – 2016, vol.45, – pp. 1–7. DOİ: https://doi.org/10.1016/j.techsoc.2015.11.00

[65] Масланов, Е.В. Вызовы цифровизации для техногенной цивилизации // – Нижний Новгород: The Digital Scholar: Philosopher's Lab / Цифровой ученый: лаборатория философа. – 2021, № 1, – с. 6-21. DOI: 10.32326/2618-9267-2021-4-1-6-21

[66] Хасиева, М.А. Проблема цифровизации образовательной среды в контексте концепции информационного общества // – Тольятти: ООО –Ландрейл. Балтийский гуманитарный журнал. – 2021, т. 10, № 1(34), – с. 299-301.

[67] Spuzic, S. et al. The synergy of creativity and critical thinking in engineering design: The role of interdisciplinary augmentation and the fine arts // S.Spuzic, R.Narayanan, K.Abhary, H.K.Adriansen, S.Pignata, F.Uzunovic, G.Xu. – Technology in Society. – Elsevier. – 2016, vol.45, – pp. 1–7.

from philosophical, epistemological and practical-applied perspectives. The ethical dimension of the problem has also been given considerable attention.

In this regard, the works of A.Mammadov[68], I.Mammadzada[69], A.Abbasov[70], A.Abasov[71], F.Qurbanov[72], A.Buniyatov[73] and other scholars may be mentioned.

Philosophical analysis of interscientific relations has been conducted within the above-mentioned directions at the contemporary stage. The conditions governing the formation of interdisciplinary knowledge, its cognitive characteristics and its relations with the

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[68] Məmmədov, Ə. və b. Lütfi Zadənin Qeyri-səlis çoxluqlar nəzəriyyəsinin məntiqi-qnoseoloji təhlili // Ə.Məmmədov, F.Qurbanov. – Bakı, –Metafizika. -2019., 2-ci cild, №.1,serial.5, - s.7-29

[69] Məmmədzadə, İ. Bir daha fəlsəfə haqqında. Müasir yanaşmalar. Təmayüllər. Perspektivlər. Tamamlanmış və yenidən işlənmş ikinci nəşri // İ.Məmmədzadə. – Bakı: –Elm və təhsil. – 2019, – 200 s.; Məmmədzadə, İ. Dadaşova, S. Şüur və süni intellekt fəlsəfəsi: qarşılıqlı əlaqələrinin bəzi problemləri // İ.Məmmədzadə, S.Dadaşova. Şərq fəlsəfəsi problemləri. Beynəlxalq elmi-nəzəri jurnal. – Bakı, –Elm və təhsil, – 2023, № 29, – s.8-18; Мамедзаде, И. О конференции проведенной в институте Философии и Социологии НАНА //– Bakı: Elmi əsərlər. Beynəlxalq elmi-nəzəri jurnal. – 2021, №1/36, – c. 126-128

[70] Abbasov, Ə.F. Müasir fəlsəfə və elmi idrak // İ.R.Məmmədzadə, Ə.F.Abbasov, Ə.S.Abasov, F.M.Qurbanov, A.R.Buniyatov. Müasir fəlsəfə, süni intellekt və qeyri-səlis məntiq. – Bakı: –Elm və təhsil, – 2022, – s. 28-111

[71] Abbasov, Ə.F. Müasir fəlsəfə və elmi idrak // İ.R.Məmmədzadə, Ə.F.Abbasov, Ə.S.Abasov, F.M.Qurbanov, A.R.Buniyatov. Müasir fəlsəfə, süni intellekt və qeyri-səlis məntiq. – Bakı: –Elm və təhsil, – 2022, – s. 28-111

[72] Abbasov, Ə.F. Müasir fəlsəfə və elmi idrak // İ.R.Məmmədzadə, Ə.F.Abbasov, Ə.S.Abasov, F.M.Qurbanov, A.R.Buniyatov. Müasir fəlsəfə, süni intellekt və qeyri-səlis məntiq. – Bakı: –Elm və təhsil, – 2022, – s. 28-111; Qurbanov, F. Autopoyezis və sinergetika: sosial təşəkkül metaforaları // F.Qurbanov. Autopoyezis və sinergetika: sosial təşəkkül metaforaları. Bakı: –Adiloğlu. – 2007, – 486 s.; Qurbanov, F., Zülfüqarov, V.R. Müasir elmdə fənlərarası yanaşma: bəzi aspektlərin fəlsəfi analizi // F.M.Qurbanov, V.R.Zülfüqarov. – Bakı: Gənc tədqiqatçı, - 2018, IV cild, №2, – s. 192-197; Zulfugarov, V.R, Gurbanov, F.M. Technoscience and digitality: an epistemological analysis of interactions // – Baku: Young researcher Scientific & practical journal. – 2023, – v.IX, № 3, – pp. 101-111. UDC: 1.16.165.3

[73] Abbasov, Ə.F. Müasir fəlsəfə və elmi idrak // İ.R.Məmmədzadə, Ə.F.Abbasov, Ə.S.Abasov, F.M.Qurbanov, A.R.Buniyatov. Müasir fəlsəfə, süni intellekt və qeyri-səlis məntiq. – Bakı: –Elm və təhsil, – 2022, – s. 28-111

socio-cultural environment have been clarified. In addition, significant results have been obtained regarding the philosophical and epistemological features of the application of interdisciplinary knowledge in various fields. The problem has been examined in the context of the changes brought about by digitalization at the current stage of scientific cognition and in society as a whole.

At the same time, there is a need for a systematic analysis of the sources of interdisciplinary knowledge based on a comparative study of classical, non-classical and post-non-classical rationalities. Within the philosophy of interdisciplinary knowledge, there is a pressing need for a deeper philosophical reflection on the interrelation between the genesis of knowledge, its structural-functional characteristics and its practical-applied dimensions. Furthermore, the cognitive and socio-cultural conditions of the application of interdisciplinary knowledge in various domains under conditions of digitalization require integrated investigation.

In this dissertation, the problem has been analyzed within the aforementioned contexts and important philosophical conclusions have been drawn.

**The object and subject of the research.** The object of the research is the philosophical reflection on the cognitive and socio-cultural conditions of interdisciplinary knowledge in the context of the development of interscientific relations at the contemporary stage.

The subject of the research is the philosophical investigation of the cognitive and socio-cultural aspects of interdisciplinary knowledge against the background of the interrelation of forms of interdisciplinary integration under conditions of digitalization.

**The aim and objectives of the research.** The primary aim of this dissertation is to investigate the possibilities of applying the forms of integration arising from the interactions between various scientific fields to the broader framework of philosophical-scientific thought and to different spheres of society at the contemporary stage. Special attention is given to examining the impact of digitalization on the content of the aforementioned problems and on the overall research strategy. In this context, the structure, formation characteristics and applied features of interdisciplinary knowledge are studied in detail.

In accordance with the aim, object, subject and characteristics of the research problem, the following objectives have been formulated:

1. To analyze the historical evolution of interdisciplinary relations;

2. To determine the genesis, structure and function of interdisciplinary knowledge;

3. To trace the evolutionary dynamics of interscientific relations in the context of the interaction between different types of scientific rationality;

4. To analyze the philosophical and epistemological aspects of interscientific relations within the framework of contemporary systemic approaches;

5. To examine the impact of post-non-classical rationality on the integration forms of interdisciplinary relations;

6. To investigate interdisciplinary, multidisciplinary, transdisciplinary and nano-research in terms of their interrelation in the formation of integrative knowledge;

7. To conduct a philosophical analysis of interdisciplinarity within the prism of interscientific research;

8. To achieve a philosophical reflection on the interrelation between the cognitive and socio-cultural dimensions of knowledge formation and functionality within the integration forms of interscientific relations in a digital environment;

9. To develop prognostic conclusions regarding the content transformation and applied features of interdisciplinary knowledge in cognitive and socio-cultural directions based on the conducted analysis.

**Research methods.** The following methods have been employed in the research:

1. The systematic and dynamic integration method used by J. T. Klein in studying the historical formation of interdisciplinary knowledge;

2. The systematic approach method employed by V. S. Stepin in analyzing different types of scientific rationality;

3. The synergetic structured method applied in the study of complex systems within synergetics.

**The main provisions submitted for defense**:

1. The philosophical analysis of the evolutionary trajectory of interscientific relations from Antiquity to the contemporary stage demonstrates that relations between sciences have changed dynamically. The specific content of interscientific relations has been shaped by the interaction between the socio-cultural context of each historical period and its cognitive characteristics.

2. Since the Modern period, relations between the sciences have been shaped by the influence of two key factors: first, the disciplinary organization of sciences; second, the recognition of scientific rationality as a privileged epistemic phenomenon.

3. The disciplinary structuring of sciences has played a decisive role in the dynamics and content of interdisciplinary relations. Gradually, integrative tendencies in both cognitive and applied dimensions have strengthened between previously distant disciplines. Since the twentieth century, this process has become a dominant feature of interscientific relations.

4. At the contemporary stage, the formation of interdisciplinary knowledge takes shape at the cognitive intersection of two directions. The first is the interaction between the theoretical, conceptual and methodological dimensions of new synthetic scientific directions formed in the second half of the twentieth century and those of the most recent synthetic scientific developments. The second concerns the new epistemic conditions introduced by digitalization into scientific cognition as a whole. Together, these two factors significantly shape both the theoretical and applied potential of interdisciplinary knowledge.

5. In the conditions of digitalization, interscientific relations are strongly influenced by the epistemological and methodological characteristics of techno-science. Science increasingly develops within a techno-civilizational environment. This feature not only necessitates a reconsideration of the cognitive boundaries of disciplinary divisions but also increases the likelihood of emerging new forms of interdisciplinary relations.

6. The development of artificial intelligence shifts interscientific relations to a different level. A transformation is underway in the content of concepts such as “intersubjectivity” and the “subject–object” relation. If this process continues, it will require a fundamental reconsideration of the philosophical foundations of science as a whole.

7. In the conditions of digitalization, a paradigmatic approach appears more promising for the structuring of interdisciplinary knowledge. However, this requires contemporary philosophy to be grounded in the paradigm of complexity. The complexity paradigm enables a more nuanced hierarchical conceptualization of interdisciplinary knowledge, thereby facilitating a philosophical and epistemological understanding of the synthesis of diversity under the influence of digitalization.

8. At the contemporary stage, the socio-cultural functionality of interdisciplinary knowledge is being transformed in close interrelation with its cognitive conditions. This transformation stems from the close connection between interdisciplinary knowledge and the processes of societal self-formation. As a result, a new epistemological situation is emerging and it is not excluded that this process may lead to the formation of a new epistemology.

**Scientific novelty of the research.** Based on the philosophical analysis of interdisciplinary knowledge under conditions of digitalization, the following scientific contributions have been achieved:

- Interdisciplinarity has been analyzed both as a general characteristic of interscientific relations and as a specific form of integration, examined from the perspective of interdisciplinary methodology;
- The formation of interdisciplinary knowledge has been studied in the context of the close interrelation between the cognitive and socio-cultural aspects of interdisciplinarity;
- The concept of “local synthetic cognitive domains” has been introduced for the philosophical and epistemological analysis of integration forms of interscientific relations;

- Digitalization and the most recent synthetic scientific directions have been identified as decisive factors influencing the cognitive content of interdisciplinary knowledge at the contemporary stage;

- It has been substantiated that the cognitive position of the subject plays a crucial role in the formation of interdisciplinary knowledge within the unity of cognitive and socio-cultural aspects;

- Although artificial intelligence significantly affects human cognition in the context of digitalization, it has been concluded that humans will retain the primary role in the formation of knowledge;

- It has been demonstrated that an adequate philosophical understanding of interdisciplinary knowledge is possible within the framework of the complexity paradigm.

**Theoretical and practical significance of the dissertation.** Interdisciplinary knowledge is a phenomenon characterized by a complex gnoseological and semantic structure. At the contemporary stage, the formation, structuring and functioning of this type of knowledge represent a hierarchical, multidimensional and partly spontaneous process.

In order to provide a comprehensive and adequate philosophical investigation of knowledge understood in this qualitative sense, the dissertation employs the following methods: the interdisciplinary approach, the analytical method, the synergetic approach and functional-structural analysis. The analytical method has enabled the examination of existing philosophical and scientific concepts of interdisciplinary knowledge from a general theoretical perspective. The interdisciplinary approach has made it possible to consider interdisciplinary knowledge within a shared gnoseological and methodological framework across different scientific fields. The synergetic approach, as an example of a contemporary integrative methodology, has provided the opportunity to address the synthesis of theoretical, conceptual and functional aspects of interdisciplinarity. Functional-structural analysis, in turn, has allowed for the study of the evolution of the problem in terms of the interrelation between its structural characteristics and functional properties from a contemporary epistemological standpoint.

Furthermore, the combined application of these methods has made it possible to more comprehensively determine the place of interdisciplinary knowledge within the modern system of scientific cognition and to better understand its developmental dynamics.

In this context, alongside foreign scholars, considerable attention has been given to the works of PhD, Prof. I.Mammadzadeh[74], PhD, Prof. A.Abbasov[75] və PhD F.Gurbanov[76] in Azerbaijan.

The applicability of the obtained results is related to the possibilities of their use for an adequate philosophical reflection of the philosophy of contemporary science and for ensuring effective practical implementation. The findings may be applied in scientific research for establishing productive interrelations between different disciplines, particularly in terms of their theoretical-conceptual and methodological foundations. This study may also be useful for the effective organization of the science–education interaction at the contemporary stage, especially in terms of ensuring harmony between the organization of scientific activity and the organization of teaching.

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[74] Məmmədzadə, İ. Bir daha fəlsəfə haqqında. Müasir yanaşmalar. Təmayüllər. Perspektivlər. Tamamlanmış və yenidən işlənmş ikinci nəşri // İ.Məmmədzadə. – Bakı: –Elm və təhsil. – 2019, – 200 s.; Məmmədzadə, İ. Dadaşova, S. Şüur və süni intellekt fəlsəfəsi: qarşılıqlı əlaqələrinin bəzi problemləri // İ.Məmmədzadə, S.Dadaşova. Şərq fəlsəfəsi problemləri. Beynəlxalq elmi-nəzəri jurnal. – Bakı, –Elm və təhsil, – 2023, № 29, – s.8-18; Мамедзаде, И. О конференции проведенной в институте Философии и Социологии НАНА //– Bakı: Elmi əsərlər. Beynəlxalq elmi-nəzəri jurnal. – 2021, №1/36, – c. 126-128

[75] Abbasov, Ə.F. Müasir fəlsəfə və elmi idrak // İ.R.Məmmədzadə, Ə.F.Abbasov, Ə.S.Abasov, F.M.Qurbanov, A.R.Buniyatov. Müasir fəlsəfə, süni intellekt və qeyri-səlis məntiq. – Bakı: –Elm və təhsil, – 2022, – s. 28-111

[76] Abbasov, Ə.F. Müasir fəlsəfə və elmi idrak // İ.R.Məmmədzadə, Ə.F.Abbasov, Ə.S.Abasov, F.M.Qurbanov, A.R.Buniyatov. Müasir fəlsəfə, süni intellekt və qeyri-səlis məntiq. – Bakı: –Elm və təhsil, – 2022, – s. 28-111; Qurbanov, F. Autopoyezis və sinergetika: sosial təşəkkül metaforaları // F.Qurbanov. Autopoyezis və sinergetika: sosial təşəkkül metaforaları. Bakı: –Adiloğlu. – 2007, – 486 s.; Qurbanov, F., Zülfüqarov, V.R. Müasir elmdə fənlərarası yanaşma: bəzi aspektlərin fəlsəfi analizi // F.M.Qurbanov, V.R.Zülfüqarov. – Bakı: Gənc tədqiqatçı, - 2018, IV cild, №2, – s. 192-197; Zulfugarov, V.R, Gurbanov, F.M. Technoscience and digitality: an epistemological analysis of interactions // – Baku: Young researcher Scientific & practical journal. – 2023, – v.IX, № 3, – pp. 101-111. UDC: 1.16.165.3

In the context of the increasing relevance of the integrative dimension of interscientific relations in the twenty-first century, the results may also contribute to processes of independent state-building and the development of civil society. In this regard, the outcomes of the research may be beneficial for strengthening the philosophical and scientific foundations of the strategic development of an independent state. At the same time, this approach reinforces the scientific foundations of modern governance.

**Approbation of the dissertation.** The main results of the research have been published in accordance with the relevant regulations and requirements of the Higher Attestation Commission under the President of the Republic of Azerbaijan. They are reflected in a total of 9 scientific works, including 4 articles in recommended local journals, 2 articles in internationally indexed journals, 1 article presented at a republican conference, 1 conference paper at an international conference and 1 conference paper at a foreign conference.

**The name of the organization where the dissertation work was performed.** The dissertation was performed at the department of Theory of cognition and logic of the Institute of Philosophy and Sociology of the Azerbaijan National Academy of Sciences.

**The total volume of the dissertation with the indication of the volume of the structural sections of the dissertation separately.** The dissertation consists of an introduction, three chapters, nine subsections, a conclusion and a list of references. The Introduction comprises 21,828 characters; Chapter I comprises 84,025 characters; Chapter II comprises 78,017 characters; Chapter III comprises 64,785 characters; and the Conclusion comprises 14,354 characters. Excluding the list of references, the total volume of the dissertation is 264,194 characters.

## MAIN CONTENT OF THE DISSERTATION

The Introduction of the dissertation provides information on the relevance of the topic, the object and subject of the research, its objectives, scientific novelty, theoretical and methodological

foundations, theoretical and practical significance, approbation and overall structure of the study.

Chapter I of the dissertation, entitled **"Philosophical foundations of interdisciplinary relations and knowledge integration"**, emphasizes that at the contemporary stage, the formation history of interdisciplinarity itself plays a crucial role in the dynamics and development trajectory of interscientific relations. Understanding this historical evolution is essential for comprehending the problem within the context of modern scientific cognition and philosophy.

Taking the above point into account, the first paragraph of Chapter I is titled **"Formation of interdisciplinary relations – A philosophical approach"**. The main feature of this paragraph is the analysis of the impact of interdisciplinarity on the integration of sciences against the background of the development of philosophical thought. It is noted that, in this aspect, philosophers from ancient times paid particular attention to the philosophical comprehension of the interaction between scientific knowledge and information

In this context, J.T. Klein, S. Hoffmann, L. Deutsch and M. O'Rourke emphasize in their joint research that in any form of interdisciplinary relations, "*historical, social, psychological, political, economic, philosophical and intellectual factors*" act in synthesis. They highlight that the integration of sciences typically constitutes the leading direction in interscientific relations[77].

Thus, the main thesis of the first paragraph in the context of interdisciplinarity is that any form of interscientific relations is shaped by the synthesis of historical, social, psychological, political, economic, philosophical and intellectual factors. In this process, the integration of sciences generally occupies a leading position within interscientific relations.

Additionally, the first paragraph analyzes the cognitive paradox between the disciplinary organization of contemporary science and the

[77]Klein, J.T. Interdisciplinarity: History, Theory and Practice // J.Klein. Interdisciplinarity: History, Theory and Practice. Wayne State University Press, – 1990, – pp. 2-10.

integrative tendencies in interscientific relations. I.T. Kasavin's position on this issue is also examined. He argues that no paradox actually exists, because if one incorporates into the philosophical analysis "*the condition whereby certain spheres of interdisciplinary interactions result in the integration of knowledge in the form of disciplinary institutionalization*", then, in reality, at each successive stage of understanding disciplinarity, the formation of interdisciplinarity can be regarded as its theoretical, conceptual, epistemological and methodological foundation.[78].

The second paragraph of Chapter I is entitled "**Main integrative forms of interscientific relations at the contemporary stage: Philosophical features**". This paragraph emphasizes that research on interscientific relations is increasingly conducted through collaborative efforts of scholars from different scientific fields. Greater priority is given to inter-field relations and there is a growing tendency toward forming unified creative teams in the organization of scientific activity.

As noted by the Azerbaijani philosopher, Professor Ilham Mammadzadeh, the relationship between natural and socio-humanitarian sciences is characterized by multiple dimensions, which makes the search for answers to a number of fundamental questions particularly relevant. In this context, it is emphasized that, at the contemporary stage, processes aimed at completing fragmented structures within interscientific relations are becoming dominant. The expansion of access to knowledge represents an important philosophical factor in this regard. This process further strengthens the necessity of integrating and systematizing scientific knowledge. Consequently, ensuring conceptual coherence among different scientific fields has become one of the key directions of contemporary epistemological research.

[78]Касавин, И.Т. Метафизика прогресса и дисциплинарная структура науки // – Москва. Эпистемология и философия науки. – 2023, т.60, – № 2, – с.36.

Philosophers also emphasize that such dynamics of interscientific relations have significantly intensified the search for a "*meta-methodology*" at the methodological level [79].

In the same paragraph, it is highlighted that, in the context of knowledge formation, B. Laursen notably refers to "*collaborative interdisciplinary thinking*" as the "*heart*" of interdisciplinary team science, which draws particular interest[80]. It is also noted that G. Lotrecchiano and S. Misra describe interdisciplinary knowledge as the collective production of complex team activity, which draws particular attention.

All of the above leads to the following conclusion: the "synthetic cognitive domain" formed through the interaction of several scientific fields comes to the forefront in the philosophical comprehension of interscientific relations. It is emphasized in the paragraph that, at the current stage, this feature manifests itself as "local synthetic cognitive domains". We introduce this concept. Its meaning is associated with the cognitive expression of the formation of new research directions based on the common research field created by existing synthetic (integrative) scientific approaches and classical disciplines.

As examples of "local synthetic cognitive domains", the paragraph refers to quantum biology, nutrigenomics, synthetic biology, setteleretics, sonocytology, nanoscience and other emerging directions.

Against the background of these theoretical and methodological characteristics, the paragraph analyzes the following forms of integration in contemporary science: interdisciplinarity, multidisciplinarity, transdisciplinarity and NBICS technologies (nanoscience-based technologies).

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[79]Transdisciplinarity: stimulating synergies, integrating knowledge: [Electronic reseurce] // UNESCO: International Symposium on Transdisciplinarity, – 1998, – p.38 URL: https://unesdoc.unesco.org/ark:/4822pf0000114694?posInSet=2&queryId=N-EXPLORE-20f1bff0-0484-4afd-9597-cbed07a6eb90.

[80]Laursen, B. What is collaborative, interdisciplinary reasoning? The heart of interdisciplinary team science // – Santa Rosa. Informing Science: The International Journal of an Emerging Transdiscipline. – 2018, vol. 21, – pp. 76-104.

In general terms, interdisciplinarity is associated with the formation of general methodologies and methods corresponding to the essence of a specific research object. The French philosopher J. Piaget defined interdisciplinarity as "the general interaction of disciplines", meaning that it encompasses both multidisciplinarity and transdisciplinarity. However, a number of contemporary philosophers attribute the scientific research status of interdisciplinarity, in Piaget's sense, to transdisciplinarity. Representatives of this view include S. R. Davies, M. Horst, G. Lotrecchiano and S. Misra.

In summary, the forms of knowledge integration at the contemporary stage are distinguished as follows: interdisciplinarity, multidisciplinarity, transdisciplinarity and the nano approach. From this perspective, multidisciplinarity refers to the combination of scientific fields within a unified context for the study of a specific problem, while each discipline retains its own methodological characteristics. Transdisciplinarity, in turn, implies research that goes beyond the cognitive boundaries of a particular science and its socio-cultural framework, carrying out common epistemological and methodological investigations within an interdisciplinary cognitive space.

Chapter II is titled **"Interdisciplinary knowledge: Genesis, structure and the main philosophical features of organization"**.

The first paragraph of Chapter II is titled **"The genesis of interdisciplinary knowledge: From the perspective of the philosophical and epistemological features of disciplinary knowledge"**. The examination of the genesis of interdisciplinary knowledge in the context of the philosophical and epistemological features of disciplinarity is significant not only for understanding its origins but also for the philosophical reflection on the structure and organization of interdisciplinary knowledge.

The paragraph emphasizes that interdisciplinarity is closely related to the nature of human scientific cognition, drawing on the well-known physicist Erwin Schrödinger's thesis that human cognition is constantly oriented toward generalization and integrative thinking. In this regard, G. Gunn's view is also noteworthy, as he associates interdisciplinarity with the general nature of human thought

and with the manifestation of human solidarity in cognition. From this perspective, interdisciplinary knowledge functions as a natural stage in the development of scientific cognition, serving as a conceptual bridge between different fields of knowledge. At the same time, its formation reflects a transition of scientific thinking to a higher level of integration.

Furthermore, the paragraph highlights J. Klein's view that the need for interdisciplinary knowledge has existed since the emergence of Western science as a whole. At the same time, it also reflects the position that interdisciplinarity is associated specifically with the "*educational reforms, applied research and the movement of scientific cognition beyond disciplinary boundaries*" of the twentieth century[81]. Additionally, the paragraph emphasizes Y.A. Knyazeva's observation that interdisciplinarity is often employed as a synthesis of theoretical knowledge and technologies, as well as of knowledge and practical skills (know-what and know-how)[82].

Overall, the paragraph demonstrates that existing approaches in contemporary research confirm significant differences between the theoretical and practical functions of interdisciplinarity and interdisciplinary knowledge at the present stage and their philosophical interpretations prior to the twentieth century. This becomes particularly evident in the conclusions derived from the philosophical analysis of the structure and organization of interdisciplinary knowledge at the contemporary stage.

The second paragraph of Chapter II is titled **"The structure of interdisciplinary knowledge: Philosophical analysis of key features"**. It analyzes the structure of interdisciplinary knowledge at the contemporary stage. The paragraph proposes that applying the concept of paradigm in both theoretical and methodological aspects is effective for studying complex knowledge systems. In this context,

[81]Pohl, C, Klein, J.T, Hoffmann, S, Mitchell, C, Fam, D. Conceptualising transdisciplinary integration as a multidimensional interactive process // Environ Sci Policy, – 2021, №. 118 (3), pp:18–26.

[82]Князева, Е. Н. Философия науки. Междисциплинарные стратегии исследований: учебник для бакалавриата и магистратуры / Е. Н. Князева. – М.: Издательство Юрайт, – 2019. –с.17-18.

paradigmaticity refers to the self-generation and reproduction of a system (including cognitive systems) based on specific examples and models. In this sense, a paradigm encompasses the system's parameters, their identity, uniqueness and distinctions.

Interdisciplinary knowledge is examined in the context of the interaction between science and education, studied at the intersection of fundamental worldview (identificational) and concrete practical aspects. This is presented as the core logic behind the structuring of interdisciplinary knowledge.

The paragraph recognizes that interdisciplinary research is inherently complex. As a research object, interdisciplinary knowledge not only has a complex structure but also possesses multi-faceted functions. This approach allows us to consider it as a unified structural-functional system or as multi-knowledge. Within this context, the approach of C. Shunenbaum from the University of Vienna is discussed: the scholar adapts his research model by forming a cognitive "feedback" with the "world he creates". Shunenbaum's approach provides a solid foundation for the philosophical reflection of the structural and functional aspects of interdisciplinary knowledge at the contemporary stage.

Additionally, the paragraph analyzes the approaches of M.D. Fetters, C.F. Molina-Azorin, C.R. Wulgemat, B. Agoston and T. Hicks. The American philosophers C.R. Wulgemat, B. Agoston and T. Hicks view the formation of interdisciplinary knowledge through the interaction of empirical and theoretical knowledge, emphasizing that interdisciplinary knowledge emerges as a result of the generalization and evaluation of empirical knowledge.

Consequently, the structure of interdisciplinary knowledge is hierarchical and heterogeneous (non-uniform), indicating that it is structurally and functionally open to continuous renewal. This conclusion, in turn, underscores the philosophical significance of organizing the study of interdisciplinary knowledge.

The third paragraph of Chapter II is titled **"Organization of interdisciplinary knowledge research: Epistemological features in the perspective of complexity"**. The paragraph is based on the thesis of S.A. Lebedev, which concerns the existence of different levels of

scientific knowledge. This differentiation is manifested through four factors: the levels of scientific knowledge differ in terms of their origin (epistemological aspect), content (ontological aspect), methods of justification and criteria of truth (methodological aspect). The interrelation between the formation of scientific knowledge and its organization is examined within the framework of this thesis.

The paragraph notes that non-classical rationality, which emerged in the early twentieth century, is characterized epistemologically by pluralism, relativism, openness to change, revolutionary transformations of knowledge, falsifiability of scientific knowledge, competition of scientific theories, the non-cumulative nature of scientific development and the plurality of truth criteria.

From these premises, the paragraph derives a philosophical conclusion: there exist certain common principles in the organization of interdisciplinary scientific research and the knowledge it produces. Their key feature is the synthesis of diversity and constructiveness. This reflects a broader transformation in the cognitive strategy of scientific inquiry within the context of organizing interdisciplinary research. Its general philosophical expression is associated with the transition in science from explanation to understanding. In this regard, the paragraph discusses the views of L. Zagzebski, D. Pritchard and J. Turri.

From this, an important conclusion for the dissertation topic can be drawn: contemporary scientific cognition is no longer primarily focused on the search for absolute scientific truth, but rather on the search for scientific perspectivism. This implies that modern scientific activity is characterized by the coexistence and competition of different approaches in its organization.

The analysis leads to the conclusion that, at the contemporary stage, there is a close relationship between the organization of interdisciplinary research and the content, structure and cognitive features of the knowledge it produces. Two philosophical aspects are particularly emphasized. The first is the relationship between the organization of scientific creativity and innovation. According to philosophers, this can be adequately understood within the framework of an interdisciplinary paradigm. The second concerns the formation

of collective creative collaboration teams. M.S. Barrett, A. Creech and K. Zhukov use the concepts of "creative collaboration" and "co-creation". In this leading area of interdisciplinary research, philosophers analyze the organization of scientific activity in the context of intersubjectivity, innovation and science-education interaction. This approach highlights the need to understand social and cognitive factors as a unified system in the organization of scientific activity. Consequently, interdisciplinary research becomes an important driver of both methodological and institutional transformations in the development of modern science.

Chapter III is titled **"Interdisciplinary research and knowledge in the context of digitalization: A philosophical analysis".** This chapter conducts a philosophical investigation of interdisciplinary research and knowledge within a socio-cultural environment where digital technologies are widely applied. It examines issues such as innovation and artificial intelligence through the lens of scientific creativity.

The first paragraph of Chapter III is titled **"The impact of digitalization on interdisciplinary research and knowledge: Epistemological aspects"**. It highlights that digitalization is a fundamental, far-reaching scientific and technological factor affecting human life and society as a whole.

The paragraph also notes that the concept of "digital culture" was introduced by the philosopher Richard Gir[83]. We prefer the definition of digital culture as the complex existence of the values of modern society encoded in numbers, considered from an axiological perspective. Within this approach, it becomes possible to understand digital culture as human experience and practice and the role it plays in social life.

In terms of understanding the role of human experience and practice in social life within the context of digital culture, D.V. Qalkin's classification is noteworthy. He divides digital culture into five levels: material level (digital devices), functional level (social

[83]Gere, Ch. Digital Culture // Ch. Gere. Digital Culture. – London: Reaktion Books, – 2002, – 222 pp.

institutions enabling communication), symbolic level (programming language), mental level (new rules for working with digital devices and information) and spiritual level (formation and support of moral values in ethnic, local, national and international contexts).

From the perspective outlined above, this paragraph turns to the philosophical reflection on the impact of digitalization on interdisciplinary research and knowledge. First, the scientific justification and established scientific structure change; second, the analysis of digital culture as an interdisciplinary direction generates various conceptual models; third, techno-discourse in culture strengthens; fourth, digital humanities, contextual epistemology and related areas emerge.

The paragraph also notes that an interesting informational phenomenon, called "*digital trials*", has currently appeared. Philosophers emphasize that digitalization is a phenomenon that fundamentally affects all spheres of society. In this context, the German philosopher Alfred Norman argues that an epochal fundamental change has occurred in the culture of research as a whole. As evidence, he points to the example of techno-science. A. Norman considers it a "*techno-science hybrid*" phenomenon. It incorporates the eternal theoretical conception of nature and the technical ability to *"control the world"*. Accordingly, for A. Norman, at the stage of digitalization, the creation of scientific knowledge requires the integration of theoretical-conceptual conceptions with socio-cultural conditions[84].

Thus, the main conclusion drawn from this paragraph is that digital culture acts as a catalyst for the emergence of a new stage in post-nonclassical rationality. The primary feature of this new stage is the synthesis of gestaltness and processuality within the context of interdisciplinarity. "Gestaltness" indicates that scientific cognition manifests not in fragments but as a whole, complete entity. In the

[84]Nordmann, A. Collapse of Distance: Epistemic Strategies of Science and Technoscience: [Electronic resource] // – Copenhagen: A revised version of a plenary lecture at the annual meeting of the Danish Philosophical Association Copenhagen, – 2006, №41, – pp.7-8. URL: http://www.uni_bielefeld.de/ ZIF/FG/2006Application/PDF Nordmann_essay2.pdf.

context of digitalization, this primarily shows that the cognitive process occurs in an interdisciplinary plane and in a holistic manner. This, in turn, facilitates a more integrative formation of knowledge.

Paragraph II is titled **"Scientific creativity and innovativeness in the digital environment: Philosophical aspects of their interrelation".** In this paragraph, a semantic comparison between creativity and inventiveness is made. It is indicated that, in general, these two concepts are treated as synonyms. However, at a more concrete level, inventiveness is perceived as a phenomenon that, through practical application, can be evaluated in society as innovation.

From this, the philosophical-logical and practical relationship between creativity and innovativeness can be determined. Creativity, in a digital environment, is a type of activity capable of generating a synthesis between theoretical novelty (scientific invention) and practical-applied novelty (innovation). Overall, however, the relationship between creativity and innovativeness is complex. In this regard, it is also noted that creativity exists within a context of complex interrelations.

One of the main conclusions of the paragraph is that the relationship between creativity and innovativeness is formed through the unity of cognitive, practical-applied and socio-cultural aspects. In this process, the application of new technologies (information and communication technologies) plays a significant role.

The paragraph also examines the general content of the relationship between scientific creativity and innovativeness against the background of the emphasized thesis. In this context, the position of the Russian philosopher I.T. Kasavin is analyzed.

Within this aspect of the problem, the evaluation of the results of scientific creative activity is of particular importance. Philosophers argue that, in order to adequately determine that the novelty resulting from creativity is also a scientific innovation and is valuable as such, the researcher must possess tools that allow both themselves and the scientific community to evaluate the acquired new knowledge as an "established fact". It is emphasized that J.C. Watson put forward the thesis that "the definition of conceptual criteria is a fundamental

condition" for the examination of scientific knowledge. This thesis is one of the important conclusions drawn in the paragraph in relation to the philosophical understanding of the relationship between scientific creativity and innovativeness.

In light of the theoretical and methodological propositions emphasized in the paragraph, it is noted that digitalization as a whole renews the content and mechanisms of the realization of creativity.

Furthermore, digitalization makes knowledge and information more abstract and symbolic. The general conclusion reached in these studies is that, under digital conditions, uncertainty expresses not only the complementarity of knowledge (in the sense accepted in non-classical science) but also their alternativity, pluralism and multifunctionality (explanatory, interpretive, prognostic, etc.). It is no coincidence that, due to such philosophical characteristics, contemporary philosophers, in the context of organizing interdisciplinary research and acquiring scientific knowledge, emphasize the issue of achieving the "integration of integrators".

The third paragraph of Chapter III is titled: **"Digitalization, artificial intelligence and interdisciplinary knowledge: Epistemological and methodological aspects".** In this paragraph, the scientific problem is analyzed from two aspects. The first aspect concerns the theoretical and methodological role of interdisciplinary knowledge in the creation of artificial intelligence in a digital environment. The second aspect relates to the features of applying artificial intelligence to society within the context of interdisciplinary knowledge under digital conditions.

Approaching the problem in this way requires taking several aspects into account in a complex manner. First, the issue must be considered through the philosophical-scientific lens of the interaction between the cognitive (purely epistemic) and socio-cultural (applied-practical) aspects of digitalization. From this perspective, a philosophical analysis is carried out of interdisciplinary research in the digital environment and the resulting knowledge in relation to the design, development and practical implementation of artificial intelligence. This analysis is conducted in the context of the synthesis of AI creation with its creative engineering design.

In this context, the paragraph examines the role of the new scientific direction known as Design Science (the design of scientific form) in the stages of AI design and application. It is shown that this new scientific field emerges at the intersection of research, engineering and design (including its aesthetic dimensions). From this, the paragraph draws the following conclusion: in Design Science, the theoretical and methodological study of AI from an interdisciplinary perspective in the digital environment and its practical implementation manifest together as an interconnected cognitive system.

Based on contemporary philosophical research, the paragraph proposes the following thesis: in all cases, the problem of artificial intelligence—both theoretical and practical—can find its most effective solution within the framework of an interdisciplinary approach. To substantiate this thesis, the dissertation cites examples from the works of L.D. Clive, M.A. Alice, O. Eris, D. Daniel, D.D. Frey, L.J. Larry, S. Spuzik and S.A. Lebedev.

Interestingly, among contemporary philosophers, the significant cognitive impact of the subject's emotional characteristics in engineering design is emphasized. As examples, the paragraph refers to the theses of S. Spuzik, R. Narayanan, K. Abhary, H.K. Adriansen, S. Pignata, F. Uzunovic and G. Hun regarding the important interaction between cognitive and emotional characteristics in human understanding.

Finally, the paragraph highlights that philosophers are exploring how creativity can alter approaches to artificial intelligence from epistemological and methodological perspectives. To this end, the works of H. Kitano, I. Mammadzada, E. Abbasov, V.V. Senkevich, S. Dadashova and others are examined. H. Kitano refers to the study of scientific innovations, i.e., the formation of new knowledge, as the "science of science". An alternative form of science can overcome the limitations imposed by contemporary science. That is, it is possible to exceed the cognitive boundaries of the individual and the constraints imposed by the social environment. Kitano emphasizes the necessity

of realizing the theoretical and practical unity of the "*AI-scientist*" concept[85].

Azerbaijani philosophers I. Mammadzadeh and S. Dadasheva write that artificial intelligence "*brings different types of knowledge into a unified framework*". In other words, according to I. Mammadzadeh and S. Dadasheva, the formation of a new type of researcher becomes possible.[86]. It is emphasized that Canadian scholar V.V. Senkevich shares the same view.

Another Azerbaijani philosopher, Abulhasan Abbasov, examines the concept of "megability" in the context of applying artificial intelligence in scientific creativity. According to him, this can be realized through the interaction of "*fuzzy logic and mathematics, synergetics, information-management technologies and theories related to artificial intelligence*"[87].

As a result of the analysis presented in the paragraph, the following conclusion is drawn in addition to the emphasized aspect: "The formation of a new type of researcher-scientist based on the unity of human and artificial intelligence is possible, but this may not be the only transitional scenario. The observance of appropriate conditions, including ethical issues, is a crucial factor".

The conclusions reached in the "**Conclusion**" section of the dissertation are presented in the form of the following theses:

1. Interdisciplinarity has various ontological and epistemological interpretations; the most adequate sees it as grounded in a shared understanding of the object of study.

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[85] Kitano, H. Nobel Turing Challenge: creating the engine for scientific discovery // –Springer Nature: Systems Biology and Applications. – 2021, vol. 7, №:29, pp. 2-10. DOİ: https://doi.org/10.1038/s41540-021-00189-3.

[86] Məmmədzadə, İ. Dadaşova, S. Şüur və süni intellekt fəlsəfəsi: qarşılıqlı əlaqələrinin bəzi problemləri // İ.Məmmədzadə, S.Dadaşova. Şərq fəlsəfəsi problemləri. Beynəlxalq elmi-nəzəri jurnal. – Bakı, –Elm və təhsil, – 2023, № 29, – s.8-18.

[87]Abbasov, Ə.F. Müasir fəlsəfə və elmi idrak // İ.R.Məmmədzadə, Ə.F.Abbasov, Ə.S.Abasov, F.M.Qurbanov, A.R.Buniyatov. Müasir fəlsəfə, süni intellekt və qeyri-səlis məntiq. – Bakı: –Elm və təhsil, – 2022, – s. 89.

2. Interdisciplinarity can serve a dual function: a general integrative term encompassing other forms (multidisciplinarity, transdisciplinarity, nano-research) or as a distinct integration form.

3. Some philosophers view transdisciplinarity as a universal integration form, reflecting the overall characteristics of modern interdisciplinary relations.

4. New scientific directions can be seen as "local synthetic cognitive fields," connecting distant disciplines and generating new fields through their interaction, forming integrative knowledge.

5. These developments extend beyond internal cognitive evolution, creating new research situations that make science policy increasingly relevant.

6. Science policy addresses state–society–science relations, research organization, and practical application, with digitalization introducing new dimensions.

7. Two philosophical conclusions: internal scientific activity stimulating interdisciplinarity is crucial, and new interactions emerge between research organization and knowledge content.

8. In the digital era, research organization is more deeply integrated with knowledge creation; interdisciplinary knowledge depends on research methods and collaborative team effectiveness.

9. Forming collaborative teams is complex, facing methodological, pedagogical, psychological, and social challenges.

10. Collective creativity shapes the structure of knowledge, making interdisciplinary knowledge hierarchical, heterogeneous, and a synthesis of traditional levels.

11. Structural interactions and new elements are grounded in post-non-classical rationality, characterized by pluralism, multivariance, uncertainty, intersubjectivity, and a renewed role of humans in cognition.

12. These cognitive features require philosophical reflection on both interdisciplinary relations and knowledge integration.

13. Cognitive and socio-cultural interactions reveal new factors in knowledge formation, linking integration and uniqueness in digital contexts.

14. Analyzing integration through “local synthetic cognitive fields” is fruitful: first, fields formed by mid-20th-century scientific directions; second, fields emerging from their conceptual-methodological bases.

15. Digitalization is a key factor in interdisciplinary knowledge, affecting storage, preservation, and transmission.

16. Despite AI’s impact, humans remain central in knowledge formation; AI expands cognitive possibilities, supporting a human–AI partnership.

17. Disciplinary structure underpins interdisciplinary relations, shaping their dynamics and content.

18. Philosophical reflection on interdisciplinarity aids prognostic research and defines science’s role in new societal formation.

**The main points of the dissertation are reflected in the author's following publications:**


1. İnterdisiplinar yanaşma prizmasında fənlər arasımda əlaqə: bir sıra epistemoloji özəlliklər. "GEOSTRATEGİYA" jurnalı. Bakı: "Class Print" MMC nəşriyyatı 2023. №06 (78), s. 167-174.

2. Elmi tərəqqi və interdisiplinarlıq: fəlsəfi-epistemoloji yanaşma (Scientific Progress and Interdisciplinarity: a Philosophical-Epistemological Approach). Path of Science: International Electronic Scientific Journal ISSN 2413-9009 2023. Vol. 9, №11 s. 6001-6009.

3. İnterdisiplinar biliyin formalaşmasında sosial-mədəni mühitin rolu: epistemoloji təhlil. "Mədəniyyət dünyası" jurnalı Bakı: ADMIU 2023. №44, s. 184-196.

4. Müasir mərhələdə interdisiplinar bilik: formalaşması özəlliklərinin fəlsəfi təhlili. "Gənc tədqiqatçı Elmi-praktiki jurnal Bakı: "ELM" nəşriyyatı 2024. №1, s. 90-97.

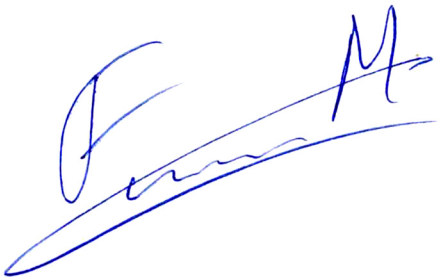
5. Fənlərarası tədqiqatın təşkili: bir sıra epistemoloji problemlər. "Şərq fəlsəfəsi problemləri beynəlxalq elmi-nəzəri jurnalı Bakı: "Elm və təhsil" nəşriyyat-poliqrafiya 2024. №30, s. 39-49.

6. Heydər Əliyev elm və təhsilin inteqrasiyası haqqında: fənlərarası yanaşma. Mingəçevir Dövlət Universiteti Azərbaycan xalqının Ümummilli lideri Heydər Əliyevin anadan olmasının 101-ci ildönümünə həsr olunmuş "Heydər Əliyev müasir Azərbaycanın xilaskarı və qurucusudur" Respublika Elmi Konfransı 2024. s. 307-312.

7. İnterdisiplinarlıq, yaradıcılıq və innovasiyalılıq: qarşılqlı əlaqələri (Вопросы взаимодействия междисциплинарно сти, креативности и инновационности). Сборник материалов VII международной научно-практической конференции Новый Мир Новый Язык Новое Мышление Россия ISBN 978-5 6051831-6-7 2024. s. 574-578.

8. İnterdisiplinar bilik və mürəkkəblik paradiqması (Междисциплинарное знание и парадигма сложности). Воронежский институт Россия И Мир Xxi Века в Зеркале Социально-Гуманитарных Исследований Россия ISBN 978-5-4446-1901-8, 2024. №22 s. 119-122.

9. Müasir təhsildə fənlərarası əlaqələrin əhəmiyyəti və çətinlikləri (İmportance and challenges of ınterdıscıplınary connectıons ın modern educatıon). АКТУАЛЬНІ ПРОБЛЕМИ ФІЛОСОФІЇ ТА СОЦІОЛОГІЇ Україна Видавничий дім «Гельветика» ISSN 2410-3071, 2024. №50 s. 3-7.



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