JOURNAL OF CULTURAL ANALYSIS AND SOCIAL CHANGE

Journal of Cultural Analysis and Social Change,
2025, 10(2), 3992-3996
ISSN: 2589-1316

# The Concept of "Computational Creativity": On the Use of Artificial Intelligence in Human Creativity

Grudtsina Ludmila Yu. [1*], Rakhimberdin Kuat Kh. [2]

[1] *Doctor of Law, Professor, Dean of the Faculty of Moscow Institute of Professional Education named K.D. Ushinsky, Honorary Lawyer of Russia, expert of the Russian Academy of Sciences,* RUSSIA*; Email: Ludmila.Gru@gmail.com; ORCID: 0000-0001-7731-724X*

[2] *Doctor of Law, Professor of the Department of Jurisprudence at S. Amanzholov East Kazakhstan University, member of the Coordinating Council under the Commissioner for Human Rights of the Republic of* KAZAKHSTAN*, Email: Kuat_Rakhimberdin@protonmail.com; ORCID 0000-0002-9280-2830*

*__Corresponding Author:__ Ludmila.Gru@gmail.com

**Citation:** Yu, G. L. and Kh, R. K. (2025). The Concept of "Computational Creativity": On the Use of Artificial Intelligence in Human Creativity, *Journal of Cultural Analysis and Social Change*, 10(2), 3992-3996. https://doi.org/10.64753/jcasc.v10i2.2221

**Published:** November 22, 2025

## ABSTRACT

In the article, the authors study the concept of "computational creativity" new to Russian law, used in foreign scientific literature. The article explores the concept of "computational (computer) creativity" as an interdisciplinary field at the intersection of artificial intelligence, cognitive science, philosophy and creative industries. The Standardized Procedure for Evaluating Creative Systems (SPECS) evaluation methods are analyzed, as well as legal regulation, with a special emphasis on the requirement of human authorship and transparency in the use of artificial intelligence.

**Keywords:** Computational Creativity, Artificial Intelligence, Human Creativity, Digital Art, Human Co-Authorship with AI.

## INTRODUCTION

The concept of computational creativity dates back to 1956 (Dartmouth AI Conference), where creativity was a key goal. The 1956 Dartmouth Conference[1] was a historic event that is considered the official birth of artificial intelligence as an independent scientific field. It was then that the term "artificial intelligence" itself was first proposed and began to be used. The organizers of the Dartmouth AI conference[2] set ambitious goals for the participants, which for decades determined the directions of research in the field of AI:

- Study of possibilities: modeling reasoning, intelligence and creative processes using computers.
- Specific goals: to teach machines to use language, to form abstractions and concepts, to solve problems that are available only to people, and to improve themselves.
- Association of science: the conference introduced leading researchers to each other and helped consolidate disparate areas (cybernetics, automata theory) into a single area.

The concept of "computational creativity" (computational creativity) refers to the direction in the field of artificial intelligence (hereinafter referred to as AI), which studies the possibility of endowing computer systems

[1] The official name is the Dartmouth Summer Research Project on Artificial Intelligence. Dartmouth College, Hanover, New Hampshire, USA.

[2] In the 1970s the first systems appeared, such as TALE-SPIN for stories. Since the 1990s adaptive models appeared, and in the era of deep learning (since 2010) - generative networks like GAN for art.

with the ability to independent creativity, that is, not just be a tool in the hands of a person, but become an autonomous creative entity. The concept of "computational creativity" was first used in 1994 in Jörgen Pind's note "Computational creativity: What place for literature?" In Behavioral and Brain Sciences.[3] Subsequently, the term was used by scientists A. Jordanus,[4] S. Colton[5] and G. Wiggins in 2009-2012. Computational creativity arose as a result of the development of digital art, from attempts to formalize the search in "conceptual spaces" (a term introduced into scientific circulation by scientist M. Boden) and compare machine generation with human estimates of value and novelty. If initially the computer was used only as a "brush" or "musical tool" to implement human ideas, then computational creativity sets itself the goal of creating systems that can generate new artistic ideas and objects themselves.[6]

M. Boden identifies three basic types of creativity: combining (connecting previously unconnected elements), research (searching in a given space of rules and styles) and transformational (changing the rules themselves and space). This triad of types of creativity according to Margaret Boden sets the language for modeling creative systems and for assessing the degree of "novelty" of the result. For example, G. Wiggins[7] proposed a mathematized scheme for describing creative systems as a search for the space of concepts under the constraints of acceptability. This formalism allows you to compare systems between domains (music, poetry, design) and associate generation with selection procedures.

British AI researcher Anna Jordanus is the author of the Standardized Procedure for Evaluating Creative Systems (hereinafter referred to as SPECS) methodology, which assesses the degree of AI participation in human creativity.[8] SPECS consists of several elements:

1. ***Item. Specify Creativity*** - it is necessary to formulate what exactly it means to "be creative" in a given context. Example: for poems it is "novelty of images," "integrity of metaphor," "rhythm/musicality," "relevance of the topic." For a scientific article, this is novelty, originality (the absence of paraphrases of already published studies, the absence of plagiarism, etc.), the presence of copyright conclusions that were not previously available, etc. In other words, the first and most significant element of the SPECS methodology is the context that must be set as a platform for the following elements.
2. ***Element. Produce Criteria*** - You must decompose the above context into measurable criteria. Example: novelty (rating from 1 to 5 points): how much the solution is not banal for experts in this field; value (1-5 points): use/aesthetic significance in the context of the task (1-5 points); consistency (1-5 points), when the internal logic, depth and consistency of thinking (for example, in a scientific article), composition, etc. are determined.[9]
3. ***Element. Evaluate by Comparing Systems*** - it is necessary to evaluate and compare systems/settings according to specified criteria, describing the procedure: selection of dataset, "blind" experts (review), metrics, statistics.[10]

The importance, in our opinion, of the SPECS methodology is that its application, firstly, "removes" the "like/dislike" discussion (all parties see the same criteria and scales, analyzing, for example, a graduate student's scientific article), secondly, makes experiments reproducible (which is important, for example, for law science), thirdly, allows you to compare different models.

There is another classification of the place and role of AI in human creativity, which can be conditionally designated as:

1. **Assisting Mode:** AI offers options (drafts, sketches, stylistic reformulations), and a person makes decisions and edits in the process of his creative activity.

---

[3] https://iris.rais.is/en/publications/computational-creativity-what-place-for-literature?utm_source=chatgpt.com "Computational creativity: What place for literature?"

[4] Jordanous A. A Standardised Procedure for Evaluating Creative Systems: Computational Creativity Evaluation Based on What it is to be Creative // Cognitive Computation. 2012. T. 4, № 3. C. 246–279. DOI: 10.1007/s12559-012-9156-1.

[5] Colton S., Wiggins G. A. Computational Creativity: The Final Frontier? // Frontiers in Artificial Intelligence and Applications. 2012. Vol. 242. P. 21–26.

[6] Boden M. A. The Creative Mind: Myths and Mechanisms. 2nd ed. London: Routledge, 2004. 344 p.

[7] Wiggins G. A. Mind the Gap: an attempt to bridge computational and natural creativity // Frontiers in Human Neuroscience. 2014. Vol. 8. Art. 393. DOI: 10.3389/fnhum.2014.00393.

[8] Jordanous A. Evaluating Computational Creativity: A Standardised Procedure for Evaluating Creative Systems and its Application: PhD thesis. Brighton: University of Sussex, 2012. — URL: [https://kar.kent.ac.uk/42388/1/Jordanous%252C_Anna_Katerina.pdf]

[9] https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/computational-creativity-what-place-for-literature/7E21533B51E6729EFEC091A57D4C9AE6?utm_source=chatgpt.com "Computational creativity: What place for literature?"

[10] https://research.monash.edu/en/publications/computational-creativity-the-final-frontier?utm_source=chatgpt.com "Computational creativity: The final frontier?"

 

2. **Creation Mode:** a person sets tasks and sets criteria for areas of work (for example, search, analysis and layout of material) for AI, then selects from the proposed AI options, for example, text, fragments or writing options for a particular topic that a person needs, thus, the selection of material and the final choice remains with the person.
3. **Autonomous Mode:** when AI generates and selects results on its own (a person only sets a prompt); this can be a quick AI search for specified information (not deep, for example).

The difference between each mode lies, firstly, in the degree of AI participation in the performance of the task set by the person and, secondly, in the degree of human control of the results obtained, in the form of human participation in further refinement (partial) or processing of information obtained using AI. In each mode, a person's key asset is setting the task and selecting results, that is, managing the search space and eligibility criteria for solving a specific creative problem.

So, computational creativity is a dynamic field of research where artificial intelligence, psychology, philosophy and art intersect. This is not just a technical discipline, but an attempt to unravel the nature of creativity through the prism of computing. According to the definition of the International Conference on Computational Creativity (ICCC), it includes modeling behavior that, if observed in humans, would be considered creative. The goals are multifaceted: from creating programs with a human level of creativity to developing tools that enhance human abilities, without claiming the machine's own creativity.[11]

In practice, interrelated criteria are applied: novelty (historical/psychological, according to M. Boden); value/acceptability (consistency with domain constraints and task); surprise (the so-called "surprise" effect within the rules); autonomy (degree of independence of generation and selection); explainability/reflexivity (FACE/IDEA models by S. Colton et al.).

At the international level, two principles are enshrined: (a) transparency of AI participation in content creation (appropriate marking on the use of AI, documentation on training data); (b) recognition of protectability only if there is human authorship, etc.[12]

The current Russian copyright (part 4 of the Civil Code of the Russian Federation) proceeds from the traditional presumption of human authorship. The author is a citizen whose creative work created the work (Article 1228 of the Civil Code of the Russian Federation). Results that do not have a creative character, as well as works created automatically without human intervention, are not recognized as objects of copyright. Consequently, artifacts that have arisen without substantial human input are not protected as copyright objects. At the same time, the following can be protected: (a) works where AI acted as an instrument, and a person carried out creative selection, editing or layout; (b) composite works and databases as a result of creative selection and arrangement of materials (Article 1260 of the Civil Code of the Russian Federation), while the right of the database manufacturer is separately protected (for example, Chapter 70.1, Article 1333 of the Civil Code of the Russian Federation).[13]

In existing AI systems, a person still plays a key role - he adjusts the model, selects training data and interprets the results. It is important to understand that the generation of fundamentally new ideas[14] is the function that AI has ***so far*** (highlighted by us. - auth.) Cannot be completely taken away from the human creator. It should be recognized that in recent years, due to the rapid introduction of AI into human activity, there has been a shift in the value of creativity, when, for example, the value of art is increasingly shifted towards concept and idea, while AI takes on technical execution (implementation of the human idea) and routine processes. The most likely development scenario in the near future seems to be the "co-authorship" model, where AI and the artist/author complement each other.

In view of the above, it can be concluded that computational creativity is an interdisciplinary field that studies modeling, simulation or replication of creative processes using computers in order to understand human creativity or create tools to enhance it. Computational creativity focuses on creating systems that generate new ideas, artifacts or solutions, simulating the creative process of a person. It combines AI, cognitive psychology and art, highlighting the novelty, usefulness and surprise of the results. Theoretically, creativity is defined through a triad: novelty,

[11] Pind J. Computational creativity: What place for literature? // Behavioral and Brain Sciences. 1994. T. 17, № 3. C. 547–548. DOI: 10.1017/S0140525X00035871.

[12] Jordanous A. Evaluating Computational Creativity: A Standardised Procedure for Evaluating Creative Systems and its Application: PhD thesis. Brighton: University of Sussex, 2012. — URL: https://kar.kent.ac.uk/42388/1/Jordanous%252C_Anna_Katerina.pdf](https://kar.kent.ac.uk/42388/1/Jordanous%252C_Anna_Katerina.pdf.

[13] Civil Code of the Russian Federation (part four): Art. 1228, 1257, 1259, 1260, 1333 et seq. (As amended on 07.10.2025).

[14] Ward T. B. Structured imagination: The role of conceptual structure in exemplar generation // Cognitive Psychology. 1994. T. 27, № 1. C. 1-40. URL: https://resolve.cambridge.org/core/services/aop-cambridge-core/content/view/7DA4DF7016D6E8799930E7C57C365DAD/9780511807916c10_p189-212_CBO.pdf](https://resolve.cambridge.org/core/services/aop-cambridge-core/content/view/7DA4DF7016D6E8799930E7C57C365DAD/9780511807916c10_p189-212_CBO.pdf

 

usefulness, and surprise. M. Boden, one of the key theorists, distinguishes between P-creativity (personal novelty for the system) and H-creativity (historical novelty for society), as well as exploratory (research within the space of ideas) and transformational (transformation of the space itself).[15] Another approach is the Geneplore model (it was developed by scientists R. Finke,[16] T. Ward,[17] S. Smith[18]), where the creative process is divided into the generation of ideas and their evaluation. Geneplore is a classic cognitive cyclical model of creativity, consisting of two phases: generation → research/evaluation.[19]

In the United States, for example, a court confirmed that a work created exclusively by AI is not copyrighted; requires human input. The position was consolidated by the District of Columbia Court of Appeals in the case "Thaler v. Perlmutter"[20] (March 2025), and it is consistent with the guidelines of the US Copyright Office.[21] Work is underway on the "copyright infrastructure" for the era of generative AI - emphasis is placed on transparency and technical means of managing rights; this is not a rule of law, but a guideline (for the United States and the member states of the European Union[22]).

In the near future, in our opinion, it is important to adopt normative legal acts that give a legal definition to such concepts as "AI creativity," "quasi-creativity," "computational creativity" and "boundaries of permissible learning on other people's data."

## REFERENCES

Boden M. A. The Creative Mind: Myths and Mechanisms. 2nd ed. London: Routledge, 2004. 344 p.

Civil Code of the Russian Federation (part four): Art. 1228, 1257, 1259, 1260, 1333 et seq. (As amended on 07.10.2025).

Colton S., Wiggins G. A. Computational Creativity: The Final Frontier? // Frontiers in Artificial Intelligence and Applications. 2012. Vol. 242. P. 21–26.

European Commission. Transparency obligations for generative AI (guidance and timelines). — URL: [https://digital-strategy.ec.europa.eu](https://digital-strategy.ec.europa.eu)

Finke R. A.; Ward T. B.; Smith S. M. Creative Cognition: Theory, Research, and Applications. Cambridge, MA: The MIT Press, 1992. 256 p. — URL: https://mitpress.mit.edu/9780262061506/creative-cognition/

Finke R. A. Imagery, creativity, and emergent structure // Consciousness and Cognition. 1996. T. 5, № 3. C. 381–393. DOI: 10.1006/ccog.1996.0024.

https://iris.rais.is/en/publications/computational-creativity-what-place-for-literature?utm_source=chatgpt.com "Computational creativity: What place for literature?"

https://research.monash.edu/en/publications/computational-creativity-the-final-frontier?utm_source=chatgpt.com "Computational creativity: The final frontier?"

https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/computational-creativity-what-place-for-literature/7E21533B51E6729EFEC091A57D4C9AE6?utm_source=chatgpt.com "Computational creativity: What place for literature?"

Jordanous A. Evaluating Computational Creativity: A Standardised Procedure for Evaluating Creative Systems and its Application: PhD thesis. Brighton: University of Sussex, 2012. — URL:

[15] Boden M. A. The Creative Mind: Myths and Mechanisms. 2nd ed. London: Routledge, 2004. 344 p.

[16] Finke R. A. Imagery, creativity, and emergent structure // Consciousness and Cognition. 1996. T. 5, № 3. C. 381–393. DOI: 10.1006/ccog.1996.0024.

[17] Ward T. B.; Kolomyts Y. Creative Cognition // The Cambridge Handbook of Creativity / eds. J. C. Kaufman, R. J. Sternberg. 2nd ed. Cambridge: Cambridge University Press, 2019. P. 9. (online published 12.04.2019). — URL: https://www.cambridge.org/core/books/cambridge-handbook-of-creativity/creative-cognition/6B776E318DDC54ECFDB89CFD96141B07

[18] Smith S. M.; Ward T. B.; Finke R. A. (eds.). The Creative Cognition Approach. Cambridge, MA: The MIT Press, 1995. 392 p. — (Bradford Books). — URL: https://direct.mit.edu/books/edited-volume/chapter-pdf/2409589/9780262283892_caa.pdf

[19] Finke R. A.; Ward T. B.; Smith S. M. Creative Cognition: Theory, Research, and Applications. Cambridge, MA: The MIT Press, 1992. 256 p. — URL: https://mitpress.mit.edu/9780262061506/creative-cognition/

[20] Thaler v. Perlmutter. U.S. Court of Appeals for the D.C. Circuit. 18.03.2025. Case No. 23-5233. — URL: [https://media.caDC.uscourts.gov/](https://media.caDC.uscourts.gov/)

[21] The Creativity Post. What is Computational Creativity? 10.04.2014. — URL: [https://www.creativitypost.com/article/what_is_computational_creativity](https://www.creativitypost.com/article/what_is_computational_creativity)

[22] European Commission. Transparency obligations for generative AI (guidance and timelines). — URL: [https://digital-strategy.ec.europa.eu](https://digital-strategy.ec.europa.eu)

 

https://kar.kent.ac.uk/42388/1/Jordanous%252C_Anna_Katerina.pdf](https://kar.kent.ac.uk/42388/1/Jordanous%252C_Anna_Katerina.pdf.

Pind J. Computational creativity: What place for literature? // Behavioral and Brain Sciences. 1994. T. 17, № 3. C. 547–548. DOI: 10.1017/S0140525X00035871.

Smith S. M.; Ward T. B.; Finke R. A. (eds.). The Creative Cognition Approach. Cambridge, MA: The MIT Press, 1995. 392 p. — (Bradford Books). — URL: https://direct.mit.edu/books/edited-volume/chapter-pdf/2409589/9780262283892_caa.pdf

Thaler v. Perlmutter. U.S. Court of Appeals for the D.C. Circuit. 18.03.2025. Case No. 23-5233. — URL: [https://media.caDC.uscourts.gov/](https://media.caDC.uscourts.gov/)

Ward T. B.; Kolomyts Y. Creative Cognition // The Cambridge Handbook of Creativity / eds. J. C. Kaufman, R. J. Sternberg. 2nd ed. Cambridge: Cambridge University Press, 2019. P. 9. (online published 12.04.2019). — URL: https://www.cambridge.org/core/books/cambridge-handbook-of-creativity/creative-cognition/6B776E318DDC54ECFDB89CFD96141B07

Wiggins G. A. Mind the Gap: an attempt to bridge computational and natural creativity // Frontiers in Human Neuroscience. 2014. Vol. 8. Art. 393. DOI: 10.3389/fnhum.2014.00393.

The Creativity Post. What is Computational Creativity? 10.04.2014. — URL: [https://www.creativitypost.com/article/what_is_computational_creativity](https://www.creativitypost.com/article/what_is_computational_creativity)