

Research Progress on Decision-Right Allocation Mechanisms and Value Co-Creation in Human-AI Collaborative Creative Production

Qing Chen¹, Shiting Liao¹, Xueying Gou^{1*}

¹ Nanfang College Guangzhou, 510900, Guangzhou, China

* gouxy@nfu.edu.cn

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Abstract

Continuous advances in generative artificial intelligence (Gen AI), multimodal large language models (MM-LLMs), and agent technologies are transforming creative work from a model in which humans use tools into one in which humans and artificial intelligence (AI) jointly define problems, generate alternatives, and refine outcomes. These capabilities accelerate content production while shifting the power to propose ideas, generate alternatives, evaluate and revise content, make final decisions, and assume responsibility from individual creators toward intelligent systems and platforms. Using thematic synthesis and mechanism analysis, this review examines research published from 2024 to 2026 across four dimensions: technological evolution, collaboration modes, decision-right allocation, and value co-creation. On this basis, it proposes a five-dimensional model comprising goal setting, proposal generation, evaluation and selection, revision and refinement, and responsibility, together with an analytical framework spanning capability complementarity, interactive collaboration, and value creation. Decision rights should not be divided once and for all. AI may receive greater operational authority when model capability and traceability are high, but value objectives, final selection, and responsibility must remain under human control. Future research should shift from static division of labor to process governance and build a human-AI creative governance system in which decisions are transparent, contributions are traceable, outcomes are contestable, and benefits can be allocated.

Keywords Human-AI Collaboration; Generative Artificial Intelligence; Creative Production; Decision-Right Allocation; Value Co-Creation

1 Introduction

1.1 Gen AI and the Transformation of the Creative Production Paradigm

Creative production has traditionally been regarded as an activity in which meaning is constructed through human experience, imagination, and judgment. Generative AI now participates in brainstorming, draft generation, and revision. An empirical study of collaborative creative work found that the form of co-creation and users' creative confidence affect their engagement with AI-supported production [1]. This makes the distribution of control within a creative process a research question in its own right.

The resulting change concerns both output and control over the process. A meta-analysis of human-AI combinations reports that outcomes differ between decision tasks and content-creation tasks, highlighting the importance of task design [2]. Questions therefore arise about who may set a direction, reject an alternative, declare a work complete, and assume responsibility for it.

1.2 Limitations of Existing Research

Existing studies can be broadly grouped into three streams. The first examines the effects of AI tools on speed, cost, the number of alternatives, and innovation performance. The second investigates trust, anthropomorphism, algorithm aversion, and interaction experience. The third addresses the quality, authenticity, bias, copyright exposure, and other risks of generated content. These studies provide a basis for understanding technology adoption, but two limitations remain.

First, research on decision rights often remains at the level of general principles such as "human-led" or "machine-assisted" and rarely decomposes rights within the creative process. Goal setting, candidate generation, evaluation and selection, revision and optimization, and responsibility involve different

information conditions and risk profiles; they therefore cannot be represented by a single human-machine allocation ratio. Second, existing discussions frequently assess the value of AI through a substitution logic, placing humans and machines on a common capability scale. They pay less attention to how sustained interaction may produce new solutions, capabilities, and relationships that neither party could create independently. Value co-creation is therefore often reduced to efficiency improvement, while creator development, platform ecology, knowledge diffusion, and sociocultural value are excluded from a unified framework.

1.3 Scope of This Review

This review is organized around five themes: technological evolution, collaboration modes, decision-right allocation, value co-creation, and future governance. It first traces human-AI creative production from tool assistance and intelligent assistance to deep collaboration. It then develops a five-dimensional decision-right model to explain why different rights require differentiated allocation, analyzes value co-creation through capability complementarity, interactive collaboration, and value generation, and finally identifies four major challenges—agency, boundaries of authority and responsibility, data value, and copyright and benefit allocation—before outlining research directions involving augmentative AI partners, agent-based collaboration, and trustworthy governance.

2 Evolution of Human-AI Collaborative Creative Production

2.1 Tool-Assistance Stage: Unidirectional Support Under Human Leadership

Typical technologies in the tool-assistance stage include Photoshop, computer-aided design systems, digital audio workstations, automatic correction functions, and template-based software. These tools improve the efficiency of drawing, typesetting, editing, and calculation, but they cannot independently understand creative intent. Input rules, operating procedures, and judgments about outcomes remain under the creator's control. Within this configuration, humans retain the rights to propose ideas, select alternatives, impose revision constraints, and decide whether outputs will be used. The machine functions primarily as a technological extension of human expressive capacity. Decision-right allocation is therefore not a negotiated variable; authority is concentrated almost entirely in the human creator.

2.2 Intelligent-Assistance Stage: Machine Participation in Idea Generation

Generative models can supply text, images, music, and composite alternatives at speed. In an experiment on idea generation, access to ChatGPT increased the creativity of ideas compared with no technology or conventional web search [3]. Human creators nevertheless determine the intended audience, constraints, and meaning of the work; the machine-generated alternatives remain proposals for evaluation.

2.3 Deep-Collaboration Stage: Joint Human-AI Creative Production

Large language models and agents extend collaboration into goal interpretation, task decomposition, tool use, and iterative feedback. Research on human-AI agency stresses the importance of human agency in realizing the gains from Gen AI [4]. A workflow should therefore preserve the human capacity to specify values, inspect intermediate choices, and interrupt or redirect the system.

3 Decision-Right Allocation in Human-AI Collaborative Creative Production

Decision rights refer to an actor's capacity to exert decisive influence over the direction, process, and outcome of creative work. Authority in creative production can be divided into five interrelated dimensions: goal-setting rights, proposal-generation rights, evaluation-and-selection rights, revision-and-refinement rights, and responsibility. Content evaluation and the final decision together constitute evaluation-and-selection rights: evaluation produces a judgment, while the final decision makes that judgment effective. These five rights are not static shares. They should be adjusted dynamically according to the value sensitivity of the task, severity of possible consequences, model reliability, human expertise, and process traceability.

Table 1. Five-dimensional decision-right configuration for human-AI collaborative creative production

Decision dimension	Core question	Appropriate AI role	Human reserved authority	Basic configuration
Goal setting	Why create, and which values should be served?	Trend detection, demand clustering, problem expansion	Value purpose, cultural position, boundary setting	Human-led
Proposal generation	Which expressions are feasible?	Batch generation, cross-domain combination, variant exploration	Original intent, prompts, and constraints	Conditionally shared
Evaluation and selection	Which alternative should be adopted?	Consistency checks, rule-based scoring, risk alerts	Aesthetic and ethical judgment, final decision, veto	Final human control
Revision and refinement	How should the work be iterated to an acceptable result?	Local rewriting, parameter adjustment, alternatives	Feedback direction, stopping condition, final confirmation	Cyclical co-governance
Responsibility	Who is accountable for errors, infringement, or harm?	Record rationale and flag uncertainty	Disclosure, review, correction, compensation, accountability	Not transferred to AI

3.1 Right to Set Creative Goals

Goal setting determines why a work is created and establishes value boundaries that must not be crossed. Humans possess lived experience, emotional memory, cultural identity, and moral commitments and can therefore judge whether an idea deserves expression. AI, by contrast, can identify trends and gaps in market information, audience feedback, and existing works. Expanding the search space must not allow probabilistic correlations to replace judgments about the legitimacy of purpose. Goal-setting rights should follow the principle of "AI supplies information; humans define meaning". Models may propose new questions and objects of inquiry, but humans must retain final authority to determine the values to be pursued, specify prohibited domains, and explain the social implications of the creative act.

3.2 Right to Generate Creative Proposals

Generation rights concern the conversion of abstract goals into candidate concepts, narrative structures, and perceptual forms. A quasi-experimental study of collaborative decision-making found that human and generative-AI strengths differ across unfamiliar and information-heavy situations [5]. AI may provide variations quickly, while authorization should vary with task structure and the cultural or ethical importance of the result.

3.3 Right to Evaluate and Select Creative Outcomes

Evaluation includes novelty, appropriateness, aesthetic impact, factual reliability, ethical permissibility, and social consequences. A study of human-centered generative-AI co-creation links visible user contribution and retained decision authority to users' sense of ownership [6]. Evaluation can combine machine-assisted checking, substantive human judgment, and a retained human veto. The final choice should be made by an accountable person or organization.

3.4 Right to Revise and Refine

Revision rights connect generation and evaluation and include prompt adjustment, local rewriting, parameter control, manual post-processing, and repeated regeneration. A reasonable arrangement is not a one-time authorization but a reversible loop: humans provide revision requirements, AI produces changes, humans compare the revised and previous versions and reset constraints, and the cycle continues until a stopping condition is satisfied. Value co-creation research suggests that AI affordances become co-creative

resources only after they are perceived, enacted, and matched to context by human actors. Revision rights should therefore include version histories, difference displays, and rollback mechanisms so that creators remain aware of and able to control the evolution of a work.

3.5 Right and Duty to Assume Responsibility

Responsibility includes the duty to bear consequences and the authority to determine publication, attribution, and commercialization. A recent framework for assigning credit to generative-AI outputs describes the difficulty of attributing contributions among multiple people and systems [7]. Developers, platforms, users, editors, and commissioning parties should therefore document their control, contributions, and review decisions in process records.

4 Value Co-Creation in Human-AI Collaborative Creative Production

4.1 Complementarity Between Human Creativity and AI Computation

Value co-creation begins with different capabilities: humans contribute lived experience and contextual judgment, while AI can rapidly retrieve, reorganize, and elaborate alternatives. An experiment found that human–generative-AI collaboration can improve task performance while reducing intrinsic motivation under some conditions [8]. A productive arrangement must therefore consider creator development alongside the immediate quality and quantity of outputs.

4.2 Human-AI Interaction and the Formation of Innovative Value

Co-created value can emerge through cycles of human conception, AI expansion, human evaluation, and further refinement. Research on generative-AI-assisted art examines how the stage at which AI is used affects evaluations of artworks and artists [9]. The quality of collaboration consequently depends on meaningful interaction and the creator's ability to reshape a proposal, not simply on the number of prompts exchanged.

4.3 From Product Value to Ecosystem Value

The value of human-AI co-creation should not be measured only by output volume or production time. It includes at least four levels. Product value concerns usable and communicable content. Capability value concerns creators' improvement in problem definition and aesthetic judgment through comparison, feedback, and reflection. Relational value concerns new collaboration networks among teams, users, platforms, and agents. Public value concerns knowledge diffusion, cultural diversity, and social innovation. If platforms reward only frequent and easily replicable content, technical efficiency will reinforce homogenization. If institutions support source disclosure, differentiated expression, and shared benefits, technical efficiency can instead contribute to a flourishing creative ecology. Value co-creation thus expands from individual outputs to creator development, organizational innovation, and sociocultural benefits.

5 Current Challenges

5.1 Risk of Weakened Human Agency

LLMs can broaden human cognitive bandwidth and restructure information processing, but a low-effort, high-feedback generation mechanism may also encourage creators to delegate conception, judgment, and refinement entirely to machines. Long-term dependence may erode problem-definition ability, technical proficiency, and independent aesthetic judgment. The risk to agency is not simply whether AI is used; it concerns whether creators understand the basis of generation, can reject outputs, and can rewrite them for reasons of their own. Future research should distinguish skill augmentation, skill substitution, and skill hollowing and examine the long-term effects of different authorization arrangements on creators' capabilities.

5.2 Ambiguous Boundaries of Decision Rights

When AI proactively decomposes tasks, invokes tools, and evaluates results, generation, revision, and selection rights may become bundled in a single interface. A creative-control account of human–AI collaborative authorship emphasizes the role of substantive human direction and selection [10]. A final click therefore cannot by itself demonstrate effective control; the creator must be able to understand, revise, reject, and explain decisive contributions.

5.3 Data Bias and Value Risks

LLMs function as knowledge media rather than neutral containers. They select, structure, and reconfigure visible knowledge through interfaces. Human-machine interaction also has a self-communication dimension: through repeated dialogue, users reveal preferences, revise identities, and accept machine feedback. Gender, regional, and cultural imbalances in training data may consequently narrow creative subject matter, homogenize aesthetic tendencies, and marginalize certain cultural expressions. A 2024 review of new-media research identifies knowledge-production paradigms, actor relationships, and risk governance as central issues in the era of Gen AI. Governance should move upstream to data provenance disclosure, model-bias assessment, and participation by diverse evaluators.

5.4 Copyright and Benefit Allocation

Copyright questions in AI-supported creative production concern training materials, the originality of outputs, attribution, and liability. Analysis of copyright reform argues for keeping human creators and their interests central in the treatment of generative AI [11]. Creative teams may maintain contribution records and explicit benefit-sharing terms, while recognizing that prompt counts alone do not measure creative contribution.

6 Future Research Directions

6.1 Human-Centered Augmentative AI Creative Partners

Evaluation criteria for future systems should shift from whether generated content appears realistic or polished toward whether it stimulates human creativity. Augmentative AI should help users identify anomalies, provide alternatives, mark uncertainty, explain the effects of revisions, and preserve the user's rights to reject, roll back, and redefine goals. Research should identify appropriate authorization ranges for different levels of expertise, task openness, and risk rather than applying a single collaborative interface to all creators.

6.2 Agent-Based Deep Human-AI Collaboration

AI agents can independently plan, orchestrate models and tools, retain collaborative memory, and provide proactive feedback, transforming creative production from a "single-model dialogue" into a "human–multi-agent–platform" network. Decision rights will be transferred repeatedly among planning agents, generation agents, evaluation agents, and humans. Research should therefore shift from static role labels to flows of authority: when authorization should occur, how permissions should increase with trust, who should arbitrate conflicts, and when mandatory return to human processing is required. Agent autonomy becomes reliable collaboration only when pause, explanation, and takeover mechanisms are embedded in the system.

6.3 A Creative Governance System for Trustworthy AI

Trustworthy governance should make decision processes explainable, creative contributions traceable, generated outcomes contestable, and rights and responsibilities explicit. Platforms should preserve necessary version and provenance information and show creators the extent of model involvement. Organizations should specify, by risk level, which nodes require human review. Industries should establish disclosure requirements for AI use, compliance rules for training data, and benefit-allocation mechanisms. Creators need integrated capabilities in prompt design, fact checking, aesthetic judgment, and ethical

reflection. The purpose of governance is not to freeze the human-machine boundary but to make that boundary visible, negotiable, and accountable.

7 Conclusion

Human-AI collaboration has become a new paradigm of creative production. The fundamental change lies not in the quantity of content supplied by machines, but in the recombination of power, capability, and responsibility throughout the creative process. The five-dimensional model proposed in this review shows that goal setting, proposal generation, evaluation and selection, revision and refinement, and responsibility have different authorization conditions. AI may receive substantial operational authority in information processing, candidate generation, and local optimization, but humans must retain authority over value objectives, final selection, veto, and responsibility. Decision-right allocation should be adjusted according to task risk, value sensitivity, model trustworthiness, and traceability.

Value co-creation cannot be equated with efficiency improvement. Collaborative outcomes can simultaneously create product, capability, relational, and public value only when machine computation and generation are integrated with human experience, emotion, and value judgment through a reflective interaction process. Future research should incorporate creative agency, contribution measurement, copyright and benefit allocation, and agent governance into one analytical architecture. Transparent records, human intervention, review of objections, and tiered accountability can allow AI to become a partner that extends human creativity rather than an invisible authority that replaces human judgment of meaning.

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Conflicts of Interest

The authors declare no conflicts of interest.

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Biographies

1. **Qing Chen** Master, full-time teacher at Nanfang College , Guangzhou , engaged in research related to human-agent collaborative creative production, communication, and marketing transformation for a long time, and has published 4 papers publicly.
2. **Shiting Liao** Master, full-time teacher at Nanfang College , Guangzhou , research interests include intelligent communication and new media communication, and has published 2 papers publicly.
3. **Xueying Gou** Master, full-time teacher at Nanfang College , Guangzhou , engaged in research related to creative output empowered by intelligent media and human-machine collaborative communication narratives, etc. for a long time.

人-智能機器協同創意生產決策權分配機制及價值共創的研究進展情況

陳清¹，廖詩婷¹，苟雪穎¹

¹廣州南方學院，廣州，中國， 510970

摘要：生成式人工智慧、多模態大模型、智慧體技術不斷更新，促使創意創造從「人用工具」變為「人和人工智慧一起定義問題、生成方案、改進結果」。技術能力的變化一方面加快了內容產生速度，另一方面又使提出創意、生成方案、評價內容、修改內容、做出決定並承擔責任的權力結構從原來的集中在人類創作者那裡，轉變為集中在系統或智慧平臺手中。本文採用主題歸納和機制分析的方法，從技術演進、協同模式、決策權配置、價值共創四個方面來梳理2024-2026年有關的研究。在對已有成果進行綜合的基礎上提出目標設定、生成提案、評價選擇、修改完善、責任擔當的五維決策權模型並建立能力互補、交互協同、價值創造的分析框架。研究認為決策權並不是一次性的被人為地分割出去的，在任務風險高、價值敏感、模型能力強、過程有跡可循的時候，AI 就可以取得較高的操作權，但是價值目標、最終的選擇以及責任的承擔仍然要靠人類來決定。未來的研究應該由靜態的分工轉變為過程的治理，創建起決策透明、貢獻可以追蹤、結果可以申訴、收益可以分配的人-AI 創意治理體系。

關鍵詞：人-AI 協同；生成式人工智慧；創意生產；決策權分配；價值共創

1. 陳清，碩士，廣州南方學院專任教師，長期從事人-智能體協同創意生產、傳播與營銷轉化相關研究，公開發表論文 4 篇。
2. 廖詩婷，碩士，廣州南方學院專任教師，長期從事智能傳播、新媒體傳播相關研究，公開發表論文 2 篇。
3. 苟雪穎，碩士，廣州南方學院專任教師，長期從事智能媒介賦能創意產出、人機協作傳播敘事相關研究。