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From Disciplinary Knowledge to Domain Knowledge: Knowledge Production Paradigm Transformation for the Landscape Architecture Professional Doctoral Students

Bingjie XU, Zongbin ZHU, Hui LIU, Longjie YAO, Bangrui YUE*

School of Architecture, Xi'an University of Architecture and Technology, Xi'an 710055, China

*CORRESPONDING AUTHOR
Address: No. 13, Yanta Road, Beilin District, Xi'an 710055, China
Email: yuebangrui@xauat.edu.cn

ABSTRACT

In response to the challenges brought by the extension of the Landscape Architecture professional degree to the doctoral level following the adjustment of the national professional degree catalogue in 2022, this study examines the paradigm transformation of knowledge production for Landscape Architecture professional doctoral students. Regarding the mode of knowledge production, by clarifying the fundamental logic differences in knowledge production between the academic doctorates and the professional doctorates, this study argues that professional doctoral knowledge production should shift from the sole pursuit of academic excellence toward the exploration of solutions to real-world problems; drawing on three international paradigms, it further offers insights into China's Landscape Architecture doctoral education. Regarding the attributes of knowledge production, grounded in Basil Bernstein's theory of knowledge structures, this study reveals the essential differences between discipline knowledge and domain knowledge in their organizational forms, and proposes that knowledge production attributes should shift from the single basic principle knowledge of the discipline toward the dual applied knowledge forms of the domain, i.e., applied principle knowledge and applied strategic knowledge. Regarding the pathway of knowledge production, this study analyses the disciplinary knowledge production pathway from a reductionist epistemological orientation and proposes that the domain knowledge production should shift from reductionist decomposition toward integrative construction, by innovatively proposing a staged knowledge production pathway: 1) problem domain identification and knowledge system construction; 2) cross-domain selection and knowledge system integration; and 3) domain expansion and knowledge system reconstruction. This study provides theoretical support and paradigmatic reference for Landscape Architecture professional doctoral education.

KEYWORDS

Landscape Architecture; Professional Doctorate; Knowledge Production; Discipline Knowledge; Domain Knowledge; Wicked Problems

HIGHLIGHTS

- Proposes transformation strategies for Landscape Architecture professional doctoral knowledge production
- Proposes a staged pathway to resolve knowledge production dilemmas of professional doctoral education
- Clarifies the fundamental differences in knowledge production between academic doctorates and professional doctorates
- Identifies three structural deficiencies in China's Landscape Architecture doctoral education

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1 Background

The development of doctoral education of Landscape Architecture in China has undergone a complex evolutionary process, which constitutes the historical premise for understanding the 2022 adjustment of the professional degree catalogue, when Landscape Architecture was abolished as a first-level discipline and its professional degree was reclassified at the doctoral level[1]. Throughout its history, prior to Landscape Architecture becoming a first-level discipline in 2011, the training of high-level professionals had long been dependent on related disciplines such as Architecture, Urban and Rural Planning, Landscape Ecology, Geography, Horticulture, and Forestry, resulting in a pluralistic yet fragmented knowledge production paradigm[2]. After 2011, although the doctoral education was systematically structured within an independent first-level discipline framework[3], a mature and complete knowledge system and an ontological methodology suited to the complex Landscape Architecture system had not yet been established[4].

At present, the discipline of Landscape Architecture stands at a juncture, transitioning from a focus on spatial aesthetic form toward addressing the complex existential crises of human habitats. Issues such as climate change and biodiversity conservation have emerged as "wicked problems" confronting the international community. Simultaneously, the comprehensive implementation of major national agendas—including ecological civilization construction, the carbon peaking and carbon neutrality goals, urban renewal, and rural revitalization—has endowed the discipline with an unprecedented mission. This context has produced today's complexity that the discipline faces: on the one hand, disciplinary self-awareness has been continuously strengthened[5]; on the other hand, the disconnect between existing doctoral training models and the highly complex and uncertain global challenges and national strategic demands has become increasingly prominent[6–8].

Research on higher education indicates that the core of doctoral education is to cultivate academic schloars, and its essence lies in the conduct of knowledge production activities[9]. However, because Landscape Architecture research is broadly embedded in Ecology, Urban and Rural Planning, History, and other disciplines, its knowledge boundaries with those fields remain blurred[8], greatly increasing the complexity of doctoral knowledge production. How to reconstruct the knowledge production mode of Landscape Architecture doctoral education to align with its new disciplinary orientation is a key issue urgently demanding attention from the Landscape Architecture academia[6–8,10–11]. In terms of disciplinary development, scholars have explored topics such as the disciplinary mission, the sources of its theoretical system, the connotation and extension of its professional knowledge system, the development trajectory of the Chinese Landscape Architecture theoretical system, and the innovation and expansion of the knowledge system[7–8,10–14]. In terms of degree education, scholars have also investigated coping strategies for the practical demands of the professional doctorate, developmental requirements and directions for professional degree education, and the relationship between academic theory and practice in professional degrees[6,15–16]. However, current discussions largely focus on either disciplinary knowledge systems or professional degree education as isolated topics. Faced with the global common challenges and national strategic demands above, core questions—such as how Landscape Architecture doctoral education identify key problems and how to produce strategic knowledge capable of effectively addressing wicked problems—have yet to be explored in depth. Based on this, the present article focuses on transformation strategies for knowledge production for Landscape Architecture professional doctoral students, and examines the responses to changes in Landscape Architecture degree education through three dimensions—knowledge production mode, knowledge production attributes, and knowledge production pathway—so as to provide insights and references for the transformation of professional doctoral education.

2 Transformation of Knowledge Production Mode: From the Pursuit of Academic Excellence to the Exploration of Solutions to the Practical Problems

2.1 Knowledge Production in Doctoral Education

Generally speaking, the development of degree education is inseparable from knowledge production. The change in knowledge production mode lays the foundation for knowledge evolution and determines the organizational form, knowledge characteristics, and operational mechanism of knowledge production[17]. Knowledge production is a collective process of cognizing, creating, and innovating knowledge[18]. In contrast to material production—which centers on the transformation of physical forms—knowledge production emphasizes the entire process by which knowledge is created, accumulated, disseminated, and applied[19].

Within the context of doctoral education, knowledge production is manifested as a disciplined practice of innovation: it refers to the process by which doctoral students employ knowledge

production tools to generate new knowledge from existing stocks of knowledge—that is, knowledge innovation[20]. Specifically, doctoral students apply conceptual tools and methodological frameworks to critically deconstruct existing knowledge and achieve breakthroughs in knowledge boundaries through the dialectical interaction between theoretical modelling and empirical testing. Landscape Architecture doctoral knowledge production discussed in this paper refers to the generation of "new" knowledge in doctoral education—namely, the academic practice process of producing new knowledge, such as spatial cognitive theories, spatial practice theories, and technical methods of disciplinary evolutionary value, through the critical deconstruction of the existing Landscape Architecture knowledge system and the creative integration of multiple cognitive paradigms[11].

2.2 Transformation of Knowledge Production Mode and Degree Education Form

As direct participants in knowledge production, doctoral students' education mode is closely linked to the knowledge production mode, and the development of degree education is inseparable from changes in knowledge production modes. The traditional knowledge production mode (Mode I) is typically discipline-based, generating knowledge in academic settings such as universities and research institutes[21]. In this mode, knowledge production takes place within strictly separated disciplinary frameworks, with each discipline possessing independent research questions and methodologies. New knowledge production mode (Mode II), by contrast, emphasizes the interdisciplinary nature and practical application of knowledge. In this mode, knowledge production emphasizes interdisciplinary collaboration and application orientation[22], and takes place in more open, flexible contexts[19] (Table 1). Mode II represents a transcendence and applied reconstruction of Mode I: on the one hand, it inherits Mode I's pursuit of systematic knowledge while breaking through its disciplinary-centrism; on the other hand, it transforms Mode I's linear knowledge accumulation into problem-oriented, spiralling cognitive iteration.

Table 1: Differences and connections between knowledge production Mode I and Mode II

Dimension		Mode I	Mode II
Difference	Nature of knowledge production	Basic theoretical knowledge	Basic theory knowledge, practical application knowledge
	Context of knowledge production	Universities and research institutes	Universities and research institutes, as well as government agencies, enterprises, communities, engineering sites, and other social settings
	Disciplinary form	Mono-discipline	Cross-discipline
	Form of knowledge	Closed theoretical system	Operable intervention strategies
	Quality of knowledge	Peer review within a single discipline	Multiple evaluations encompassing political, social, economic, and engineering practice fields
Connection		Mode II is a transcendence and applied reconstruction of Mode I	

2.3 The Characteristics of of Landscape Architecture Doctoral Knowledge Production

Before discussing the characteristics of Landscape Architecture doctoral knowledge production, it is necessary to clarify the basic distinction between the academic doctorate and the professional doctorate. The academic doctorate, with the core goal of training academic researchers, emphasizes systematic basic research in specific disciplinary directions to advance the frontier of disciplinary theories. The professional doctorate, with the core goal of cultivating high-level applied practitioners, emphasizes the comprehensive and creative application of multidisciplinary knowledge to resolve complex practical problems in industry and professional fields. The two are not hierarchically superior or inferior to each other; rather, they are different types of talent cultivation with distinct functional positioning—the former undertaking the innovation and deepening of the disciplinary knowledge system, while the latter undertaking the transformation of knowledge into strategies and solutions for addressing real-world problems[18]. This basic distinction constitutes the premise for this paper's discussion of the transformation of Landscape Architecture doctoral knowledge production.

Landscape Architecture is a practice-oriented discipline that coordinates the human–nature relationship. On the one hand, Landscape Architecture knowledge production aims at solving complex problems in the real world, emphasizing practicality and

applied value; on the other hand, it is also shaped by social needs, policies, and economic factors, emphasizing interdisciplinarity and social interactions. Under the academic degree orientation, Landscape Architecture doctoral education has been primarily based on the Mode I—that is, discipline-oriented knowledge production emphasizing in-depth research and knowledge innovation within specific disciplinary directions. However, the practice-oriented nature of the discipline urges professional doctoral education to pivot toward knowledge application. Consequently, the knowledge production of Landscape Architecture professional doctoral students should be primarily grounded in the Mode II, emphasizing a shift from the sole pursuit of academic excellence in disciplinary basic research toward a dual pursuit of both interdisciplinary applied basic research and practical problem response (Table 2).

2.4 International Paradigms of Landscape Architecture Professional Doctoral Education and China's Challenges

Internationally, leading universities have accumulated rich experience in Landscape Architecture professional doctoral education. According to their differing application orientations, these can be categorized into three paradigms: 1) macro-level strategic intervention, 2) reflective practice, and 3) evidence-based technology integration. Drawing on these international paradigms helps analyze in depth the structural misalignments and practical challenges facing China's current doctoral education.

First, Harvard University represents the macro-level strategic intervention paradigm. The Doctor of Design (DDes) programme at the Harvard Graduate School of Design is clearly distinguished from the traditional Doctor of Philosophy (Ph.D.) degree, which focuses on historical interpretation. Its core lies in emphasizing the strategic-intervention attribute of research—that is, doctoral research should not merely stop at explaining the world, but address wicked problems (e.g., climate change, urbanization) through policy formulation and spatial strategies[23]. Constrained by the inertia of traditional disciplinary paradigms, the current doctoral education exhibits an obvious structural shift in its orientation of knowledge production. Many scholars have pointed out a deep disconnect between Landscape Architecture research and the complex practical needs in the industry/profession[6–8] and have also noted obvious deficiencies in the current doctoral education from professional practice needs. At the level of knowledge production, this is primarily manifested in research topics that often describe phenomena and interpret regularities. In the face of major national strategic demands such as territorial spatial planning and urban regeneration, existing knowledge production pays excessive attention to "what" and "why," while lacking innovative strategies or operational frameworks for addressing "how." This structural imbalance between "explanatory knowledge" and "strategic knowledge" has led to a serious disconnect between high-level academic research and the exploration of solutions to pressing practical problems[24].

Second, RMIT University represents the reflective practice paradigm. This paradigm advocates "research through Design,"

Table 2: Comparison of knowledge production characteristics between the academic doctorate and professional doctorate in Landscape Architecture

Classifications	Academic doctorate	Professional doctorate
Production mode	Mode I	Mode II
Research motivation	Explore the basic theoretical knowledge of the discipline	Explore practical problem solutions to meet application requirements
Research orientation	The mono-orientation of theory: focusing on the development of basic research and disciplinary theory	The dual-orientation of theory and practice: focusing on applied basic research and providing innovative solutions to practical problems in the industry or professional field
Research outcome	Academic knowledge: knowledge oriented toward explaining phenomena and their underlying regularities	Interdisciplinary knowledge, practical knowledge: the knowledge required to deal with specific practical problems
Evaluation criteria	Academic standards within the discipline	Multiple standards of the combination of professional academic standards and social application standards

which transforms tacit knowledge embedded in design practice into explicit knowledge that can be disseminated[25]. China's current doctoral education evaluation system still tends to exclude design practice from core knowledge production, undervaluing "design inquiry" and lacking legitimacy for "design ontology knowledge." This has compelled doctoral students to suppress their exploration of authentic design in order to conform to standardized empirical paradigms. This divorce of academic research and design practice not only makes it difficult to refine and transform high-level design thinking—such as holistic problem-construction ability and reflective judgment ability formed in design practice—into an inheritable academic theory, but also causes a vast amount of innovative engineering practice experience to remain as silent tacit knowledge[26–27].

Third, Delft University of Technology represents the evidence-based technology integration paradigm. This paradigm emphasizes design as a heuristic tool that integrates ecology, engineering science, and big data technology within a scientifically evidence-based framework, demonstrating strong engineering rationality and practicability[28]. In contrast to this model, China's Landscape Architecture doctoral education is still lagging behind in interdisciplinary integration. Although the profession has broadly recognized the importance of multi-disciplinary fusion, it still faces deep-rooted disciplinary barriers in specific knowledge production. Moreover, existing design research often lacks rigorous data support and scientific model validation, making it difficult to achieve the paradigm shift from perceptual aesthetics to evidence-based design[24]. This gap between "soft aesthetics" and "hard technology" directly weakens the discipline's authority and credibility in addressing hard-constraint problems such as flood management and carbon sink measurement.

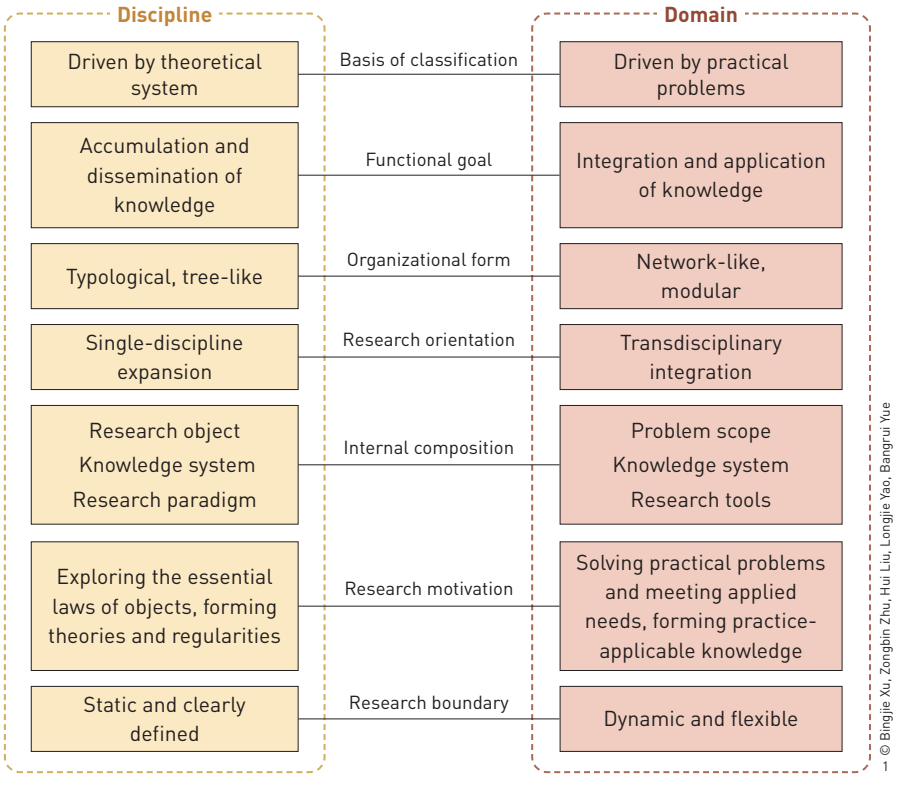
3 Transformation of Knowledge Production Attributes: From Single-Type Discipline Knowledge to Dual-Type Domain Knowledge

The transformation of knowledge production mode not only reshapes the organizational structure of knowledge, but also fundamentally determines the attributes of knowledge production—that is, the core question of "what kind of knowledge is being produced"[17]. The evolution from the Mode I to Mode II drives the attributes of knowledge production from discipline-orientation toward domain-orientation. Therefore, this chapter focuses on the essential differences in attributes between discipline knowledge and domain knowledge, and clarifies the direction of attribute transformation for Landscape Architecture professional doctoral knowledge production.

3.1 Disciplinary Knowledge and Domain Knowledge

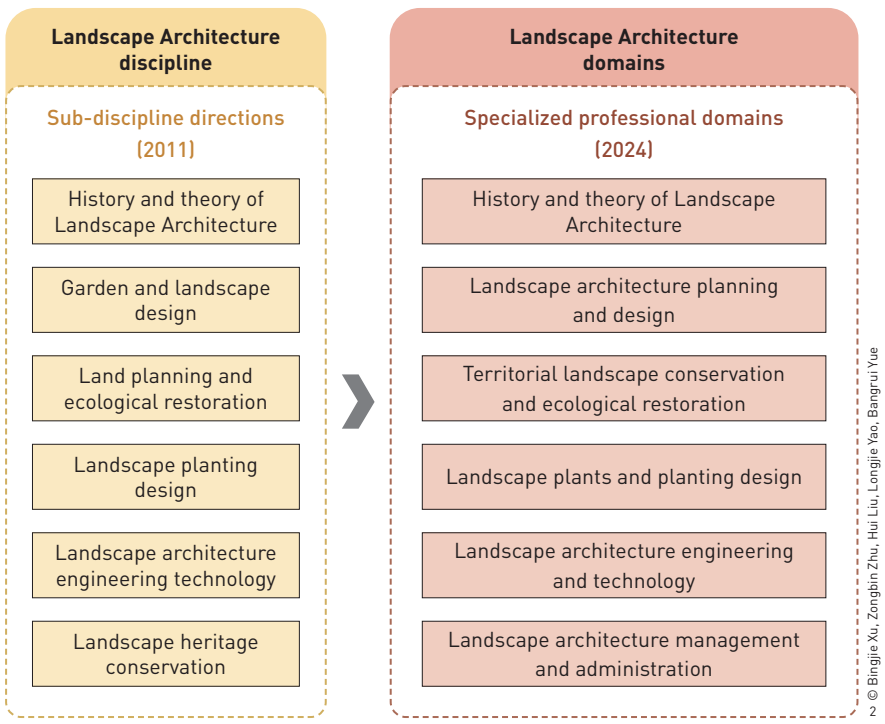
Against the backdrop of the transition of Landscape Architecture from an discipline to a professional degree program, its "discipline–sub-discipline" organizational structure has shifted towards a "professional degree program–specialized professional domain" professional framework[29] (Fig. 1). This transformation prompts further reflection on the relationship between the knowledge organizational structures of the discipline and the domain. According to Basil Bernstein's theory of knowledge structures[30], knowledge organization exhibits either a vertical hierarchical structure or a horizontal integrative structure. In the Mode I, in order to accumulate and disseminate knowledge, a series of closely interrelated conceptual and categorical systems are organized vertically to form knowledge systems with clear boundaries that are mutually independent—a typological, tree-like knowledge organization, which constitutes the "discipline." In the Mode II, knowledge from different disciplines is extracted and reintegrated to form a knowledge system for solving real-world problems—a network-like, modular knowledge organization, which constitutes the "domain." The discipline and the domain differ fundamentally in

Fig. 1 Essential differences between discipline and domain.



their research motivation, research boundaries, and organizational forms of knowledge production[31–33] (Fig. 2). From the perspective of knowledge form characteristics, disciplinary knowledge focuses on understanding the essential laws of things; its function is to explain the regularities of phenomena, and it is primarily manifested as principle-based knowledge, which is abstract and explanatory. Domain knowledge focuses on resolving a particular type of real-world problems; it is primarily manifested as applied knowledge, involving the intersection and integration of multiple disciplines, and has applicability and practicality[34].

Fig. 2 Comparison of the discipline and the domain of Landscape Architecture (source: *Guidance Training Program for Master of Landscape Architecture Professional Degree Postgraduates* [2024 Edition]).



3.2 The Dual Orientations and Two Types of Knowledge in the Landscape Architecture Domain

The domain knowledge of Landscape Architecture is oriented toward both theory and practice. With the evolution from the Mode I to Mode II, the production framework of knowledge has gradually shifted from discipline to domain[30], which is reflected in two types of knowledge with strong practical characteristics[10]: one type is oriented toward spatial interpretation, referring to the extraction of basic principle knowledge—such as concepts, theories, and methods—from other disciplines, which are then integrated and synthesized to form applied principle knowledge that explains the research objects of Landscape Architecture; the other type is oriented toward spatial operation, referring to the conversion of the modular knowledge derived from the above spatial interpretation into processual forms, generating the applied strategic knowledge of planning and design.

In order to address practical problems relating to technology, organization, and management, it is necessary to integrate disciplinary knowledge to form a "toolbox of applied knowledge," and then to generate planning and design strategies through spatial translation, thereby producing stable and disseminable knowledge. Because Landscape Architecture knowledge production involves multiple disciplines, the authors take the field of terrestrial spatial ecological conservation and restoration as an example to briefly analyse the domain knowledge system (Fig. 3). The basic principle knowledge in this domain mainly derives from disciplines such as Urban and Rural Planning, Landscape Ecology, Restoration Ecology, Geography, and Management Science. The theories within these disciplines—for example, Pattern–Process Coupling Theory and Regional Differentiation Theory—have been integrated to form modular applied principle knowledge (such as the "pattern–process–function–service–sustainability" theory paradigm), which is further translated through spatialization into operational applied

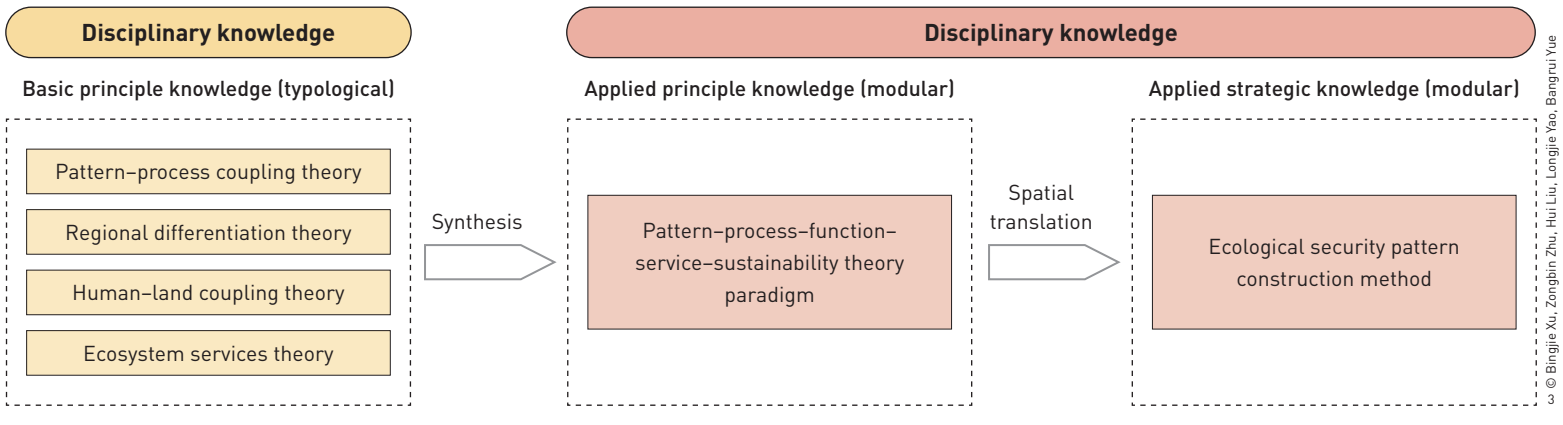


Fig. 3 The source and classification of domain knowledge of Landscape Architecture.

strategic knowledge in the technologies and methods of terrestrial spatial ecological conservation and restoration (such as the ecological security pattern construction method).

4 Transformation of the Knowledge Production Pathway: From Reductionist Decomposition to Integrative Construction

The production pathway of discipline knowledge is driven primarily by the exploration of theoretical problems. Following a reductionist epistemological orientation and specific disciplinary research paradigms (i.e., theoretical hypothesis and verification), the theories of a discipline are decomposed and reduced before being deepened further, thereby forming basic principle knowledge that reveals phenomena and explains regularities. The production pathway of domain knowledge, by contrast, is driven primarily by the engagement with practical problems. According to specific principles of knowledge organization, the concepts and theories of traditional disciplines are re-selected, re-positioned, re-distributed, re-associated, and re-configured (i.e., theory selection and integration, technical scheme construction and validation), thereby forming applied principle knowledge pointing to specific problems in the domain and applied strategic knowledge for transforming the world[34] (Fig. 4).

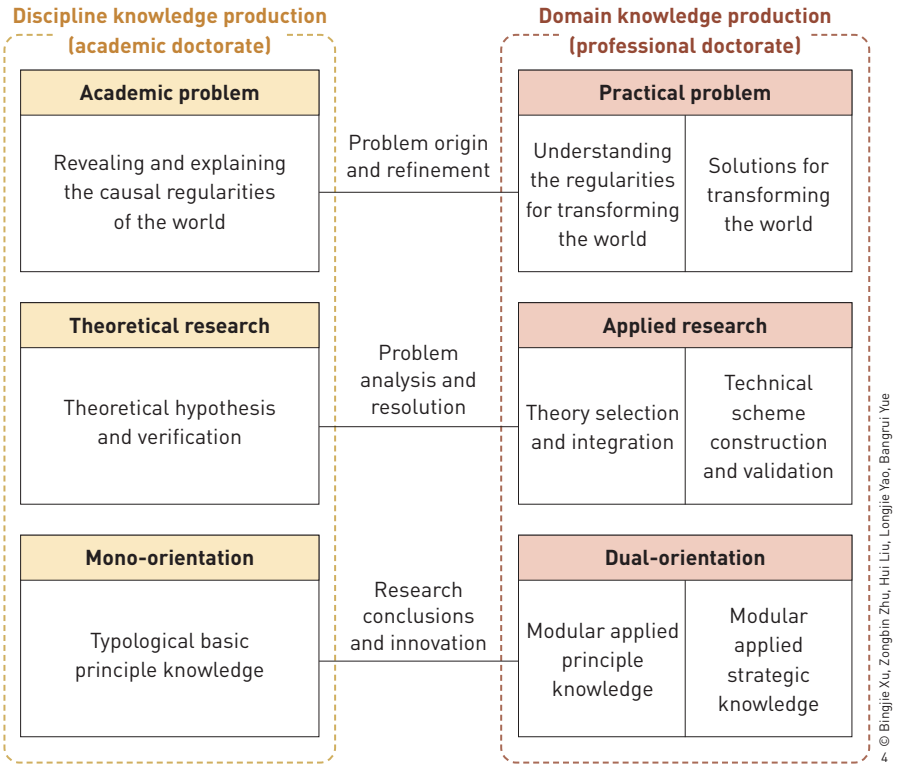


Fig. 4 The difference between the production pathways of discipline knowledge and domain knowledge.

Following the general scholarly logic of problem-oriented inquiry in academic research—that is, starting from the cognitive system of problem raising, problem analysis, and problem response[35]—the authors propose a general knowledge production pathway for Landscape Architecture professional doctoral students, so as to systematically resolve the logical dilemmas in knowledge production within the Landscape Architecture professional doctorate and promote the integration of knowledge and methodological innovation.

4.1 Problem Raising: Problem Domain Identification and Knowledge System Construction

The research problems addressed in the knowledge production of Landscape Architecture professional doctoral programs originate from practical problems within the domain. In the context of Landscape Architecture, the following steps are undertaken. First, identify the domain with problems: clarify the relationship between existing research problems and the current research problem, including the historical background and hierarchy of the problem; and examine the relationship between the problem and the domain, including whether the problem has been effectively addressed and the degree to which it has been resolved. Second, conduct systematic reviews to form a clear understanding of the knowledge hierarchy within the domain (i.e., knowledge element–knowledge unit–knowledge module–knowledge domain–cross-domain knowledge), thereby establishing shared knowledge space so that the research problem can be precisely represented on this common platform. Finally, on this basis, research gaps are identified and the research problems requiring resolution are distilled (Fig. 5).

4.2 Problem Analysis: Cross-domain Selection and Knowledge System Integration

Problem analysis in the knowledge production of Landscape Architecture professional doctoral students should rely on an applied research orientation. Applied research emphasizes the selection of theory and the integration of knowledge. First, new theories, technologies, and tools from other disciplines are compared and selected according to their relevance to the research problem. Second, these are combined with existing knowledge within the domain through integration and synthesis to construct a theoretical analytical framework for explaining spatial mechanisms—that is, the operative relationship between landscape spatial goals and landscape design proposals.Finally, based on the

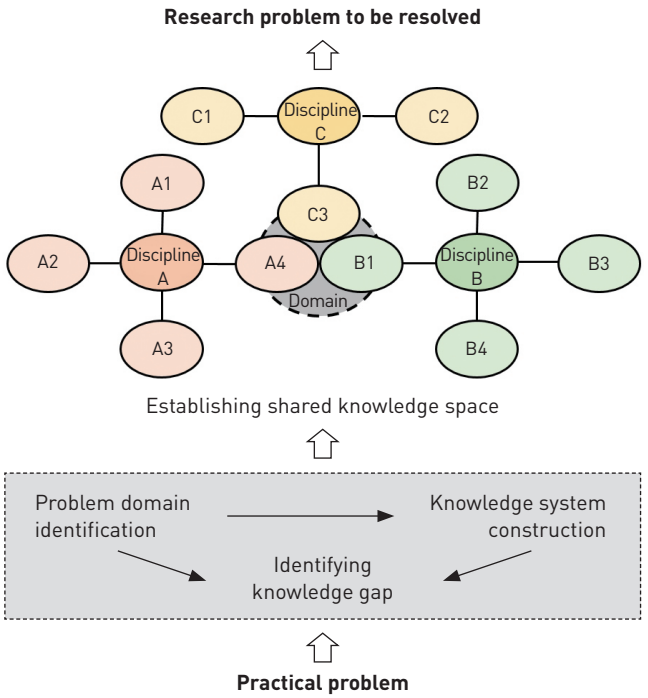


Fig. 5 Problem concise path and domain knowledge system construction (adaption source: Ref. [17]).

theoretical analytical framework, an implementation pathway of research (i.e., technical approach) is proposed (Fig. 6).

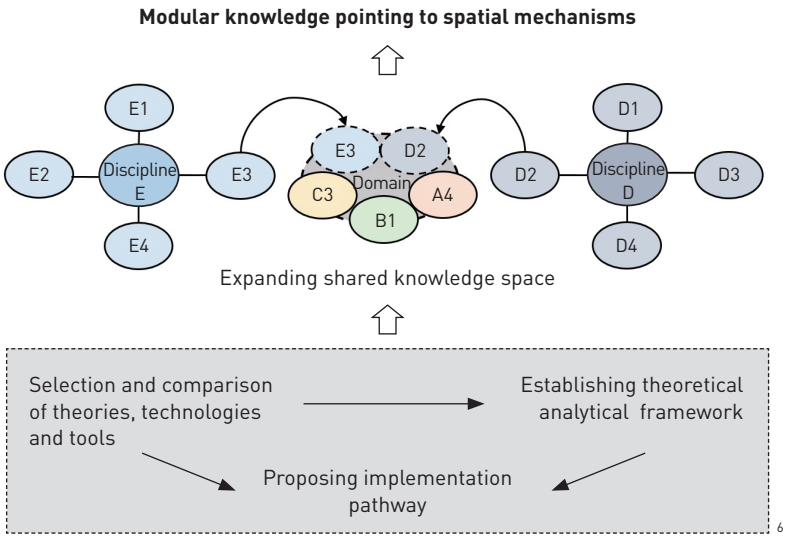
The integration of the domain knowledge system aims to help analyze problems and formulate implementation pathways by expanding the shared knowledge space. The integration of a domain knowledge system is intended to analyze spatial mechanisms and enhance understanding of landscape spaces. Constructing a theoretical analytical framework that is deeply matched to the research object and research problem generates modular knowledge pointing to spatial mechanisms, better enabling the exploration of possible pathways for resolving real-world problems.

4.3 Problem Response: Domain Expansion and Knowledge System Reconstruction

In the process of Landscape Architecture professional doctoral knowledge production, problem response refers to the transformation of a domain's existing knowledge hierarchy, structure, and relationships through the rational application of innovative knowledge—new theories, new methods, and new strategies—in response to new problems, ultimately reconstructing and reconstituting the domain's knowledge system. First, conduct research practice in accordance with the technical approach, translating the theoretical analytical framework into concrete operations to obtain empirical evidence. Second, based on empirical evidence and the practical context of the specific research object, verify the feasibility, rationality, and rigor of the theoretical analytical framework and propose applied principle knowledge. Subsequently, propose contextualized applied strategic knowledge, and evaluate and validate the quality of the strategic knowledge through multi-context verification to construct a general response and intervention strategy for the problem. Finally, having undergone the above verification and validation, the domain's existing knowledge framework can be substantively rewritten, forming new knowledge boundaries (Fig. 7).

5 Discussions

Students enrolled in professional degree programs are trained according to their respective professional degree categories, with emphasis on meeting the development needs of industry and cultivating practice-oriented innovative professionals with a solid disciplinary foundation, strong applied competence, and



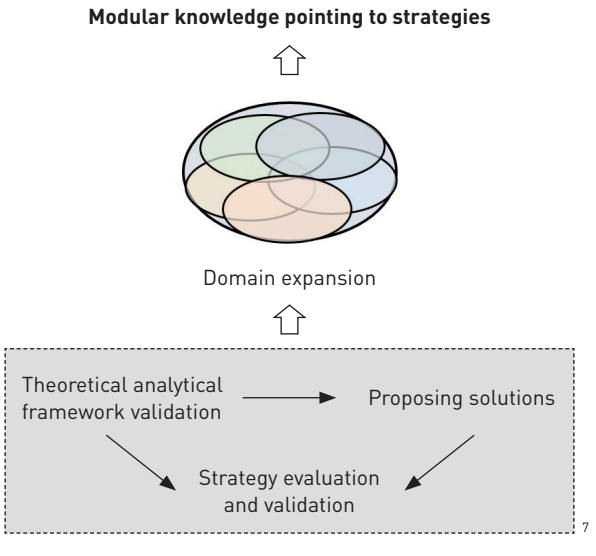


Fig. 6 Problem analysis path and domain knowledge system reconstruction (adaption source: Ref. [17]).

Fig. 7 Domain expansion and knowledge system reconstruction (adaption source: Ref. [17]).

high vocational quality. The core purpose is to strengthen the application orientation of knowledge production in responding to major national strategic demands and addressing complex practical problems. However, in this process of transformation, three pairs of core relationships must be carefully distinguished and handled in coordination to avoid falling into either-or cognitive misunderstandings.

5.1 Origin and Expansion: Professional Degree Education Is Not a Substitute for the Foundational Disciplinary Knowledge Base

It should be emphasized that the foundation of disciplinary development lies in the continuous deepening and innovation of its knowledge system. Even against the backdrop of vigorous growth in professional doctoral education, the innovative output of basic principle knowledge remains a cornerstone of Landscape Architecture's sustainable development. The academia's exploration of frontier questions is, in essence, governed by the inherent logic of scientific discovery, which is still primarily undertaken by academic doctoral education. Such research is fundamental to constituting the theoretical core of the discipline and enhancing the discipline's academic authority, providing principles for all applied research.

5.2 Tool and Law: Degree Provision Is a Phased Tool to Serve Disciplinary Development

The current establishment of the professional doctorate is a form of policy guidance and institutional tool adopted by the state at the contemporary juncture, in response to the immense demand for high-level, innovative, practice-leading professionals within the industry. Its core purpose is to fill the gap in the Pasteur's Quadrant (i.e., application-inspired basic research) and to strengthen the application of knowledge production in responding to major national strategic demands and addressing complex practical problems. It serves as an important supplement to the existing spectrum of degree types and talent training structures, rather than a replacement for academic research aimed at exploring the unknown.

5.3 Complementarity and Synergy: Building a Healthy Ecosystem of Academic and Professional Doctoral Education

The inherent developmental laws of a discipline are long-term, stable, and universal, whereas degree provision, as an educational policy, is more flexible and must be dynamically adjusted in response to socio-economic development. The cultivation of professional doctoral students aims to enrich and expand the discipline's knowledge production repertoire, and its success must ultimately be measured with the discipline's own developmental laws. The ideal configuration is one in which Landscape Architecture academic doctoral education and professional doctoral education form a clear functional complementarity, realizing the mutual promotion and coordinated evolution of discipline and degree.

6 Conclusions

Based on a reconceptualization of the relationship between domain and discipline, this article explores in depth the knowledge production paradigm of the Landscape Architecture professional doctorate in China. Through three dimensions—the mode, attributes, and pathway of knowledge production—it analyses the connections and distinctions between the Landscape Architecture professional doctorate and the academic doctorate, and proposes three transformation strategies: 1) the knowledge production mode shifts from the pursuit of academic excellence toward the response to real-world problems; 2) from a discipline knowledge organizational structure toward a domain knowledge organizational structure, the attributes of knowledge production shift from the single basic principle knowledge of disciplines toward the dual applied knowledge forms of the domain; and 3) the knowledge production pathway shifts from reductionist decomposition to integrative construction—from the abstraction of theoretical interpretation to the application of theoretical integration—forming applied principle knowledge pointing to specific domain problems and applied strategic knowledge for transforming the world. This article then proceeds, from the cognitive system of problem raising, problem analysis, and problem response, to innovatively propose a three-stage knowledge production pathway: problem domain identification and knowledge system construction; cross-domain selection and knowledge system integration; and domain expansion and knowledge system reconstruction.

It should be noted that this article has discussed the transformation strategies of professional doctoral education solely from the single dimension of knowledge production, without addressing topics such as teaching reform programs, research output evaluation standards, or knowledge system updating. Future research may deepen inquiry along these dimensions to respond to the contemporary reforms required of disciplines and education, as well as the demands of industry and society. In

addition, this article has discussed only disciplines and domains without further exploring their relationships with the industry. Future work may build on the ternary discipline–domain–industry interactions: the discipline knowledge system constructs the cognitive schema through basic theoretical research to explain the world (e.g., landscape process mechanism models); the domain undertakes the intermediary function of transforming cognitive schemas into operational programs for transforming the world; and the innovation demands of industry, through the reverse feedback of practice, shape the knowledge production agendas of both disciplines and domains. The core value of professional doctoral education lies precisely in cultivating cross-boundary knowledge workers capable of penetrating the theory–practice interface—professionals who not only possess the ability to deconstruct foundational theory into modular, practice-applicable knowledge, but also have the wisdom to reconstruct domain knowledge systems within complex real-world contexts. This transformation in the mode of talent cultivation will effectively bridge the gap between Landscape Architecture theoretical research and practical application and promote the interactive development of the discipline, the domain, and the industry.

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从学科知识到领域知识：风景园林专业型博士的知识生产范式转型

徐冰洁，朱宗斌，刘晖，姚龙杰，岳邦瑞*

西安建筑科技大学建筑学院，西安 710055

***通信作者**
地址：陕西省西安市碑林区雁塔路中段13号
邮编：710055
邮箱：yuebangrui@xauat.edu.cn

摘要

为应对2022年学科专业目录调整后风景园林专业型学位扩展至博士层次所带来的挑战，本文以知识生产范式转型为核心视角，聚焦风景园林专业型博士培养模式的转型议题。在知识生产模式维度，本文通过辨析学术型博士与专业型博士在知识生产逻辑上的根本差异，明确专业型博士的知识生产应从单一的学术卓越追求转向以现实问题为导向的解决方案探索，并结合国际3类典型范式为我国风景园林博士培养提供了借鉴参考。在知识生产属性维度，本文基于巴兹尔·伯恩斯坦知识结构理论，揭示了学科知识与领域知识在组织形式上的本质差异，提出知识生产属性应由学科的单一基础型原理知识转向领域的应用型原理知识与应用型策略知识的双重知识形态。在知识生产路径维度，本文遵循还原论认识论取向对学科知识生产路径进行解析，提出领域知识生产路径应从线性拆解还原转向跨域集成建构，创新性提出“问题领域识别与知识体系建构–跨域选择与知识体系整合–领域拓展与知识体系重构”的阶段式知识生产路径，旨在为当前风景园林专业型博士培养提供理论支撑与范式参考。

关键词

风景园林；专业型博士；知识生产；学科知识；领域知识；抗解问题

文章亮点

- 提出了风景园林专业型博士知识生产转型策略
- 提出三阶段路径以解决专业型博士的知识生产难题
- 厘清了学术型与专业型博士知识生产的根本差异
- 指出我国风景园林博士教育中的3项结构性缺失

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- 全国风景园林教育指导委员会2025年教育教学改革研究项目（编号：LAJGXM2025069）
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1 议题背景

中国风景园林博士教育的发展历经了复杂的演进过程，这构成了理解2022年专业学位目录调整的历史前提——2022年，风景园林学被取消一级学科，风景园林专业学位被调整到博士层次[1]——纵观其历史，在2011年风景园林学成为一级学科之前，其高层次人才培养长期依附于建筑学、城乡规划学、景观生态学、地理学、园艺学、林学等相关学科[2]，导致知识生产范式多元而体系分散。2011年后，博士教育虽在独立的一级学科框架下得以体系化建构[3]，但成熟、完整的知识体系及适用于复杂风景园林系统的本体方法论尚未建立[4]。

当前，风景园林学科正处于从关注“空间美学形式”向应对复杂“人居环境生存危机”转型的历史节点：气候变化、生物多样性保护等已成为国际社会共同面临的“抗解问题”，同时生态文明建设、双碳目标、城市更新、乡村振兴等国家重大战略的全面实施，赋予了学科前所未有的历史使命。这一背景造就了今日的复杂格局：一方面，学科主体性自觉不断增强[5]；另一方面，既有的博士培养模式与上述高复杂性、高

不确定性的全球挑战及国家战略需求之间的脱节现象日益凸显[6-8]。

高等教育研究指出，博士生教育的核心是培养学术研究者，其本质是进行知识生产活动[9]。但是，由于风景园林研究广泛嵌入生态学、城乡规划、历史学等学科之中，与其他学科的知识边界模糊[8]，大大增加了博士知识生产的复杂性。如何重构风景园林博士生知识生产模式以适应新的学科定位，是风景园林学界当下亟需探讨的关键议题[6-8,10-11]。在学科发展方面，众学者对风景园林学科使命、理论体系来源、专业知识体系内涵与外延、中国风景园林理论体系发展脉络、知识体系创新与拓展等进行了探讨[7-8,10-14]；在学位教育方面，亦有学者对专业博士学位实践需求的应对策略、风景园林专业学位教育的发展要求及方向、专业学位的学理与实践关系等进行了探讨[6,15-16]。然而，目前的探讨多集中于学科知识体系或专业学位教育的单一议题。面对上述全球共性挑战与国家战略需求，风景园林博士教育究竟应如何识别核心问题领域、如何生产能够有效应对抗解问题的策略性知识等核心问题尚未展开深入讨论。基于此，本文着眼于风景园林专业型博士知识生产转型策略这一议题，从知识生产模式、知识生产属性、知识生产路径3个维度探讨风景园林学位教育的变化应对，为专业型博士培养方式的转型提供思路与借鉴。

2 知识生产模式的转型：从学术卓越追求到探索现实问题解决方案

2.1 博士教育语境下的知识生产

通常而言，学位教育的形态发展与知识生产密不可分，知识生产模式的变化奠定了知识演化的基础，决定了知识生产的组织方式、知识特征及运作机制[17]。知识生产是一种群体的认知、创造和创新知识的过程[18]。相较于以物质形态转换为核心的物质生产而言，知识生产强调知识被创造、积累、传播和应用的整个过程[19]。

聚焦于博士教育语境，知识生产表现为规训化的创新实践，指博士研究生借助知识生产工具，作用于存量知识产出新知识的过程，即知识创新[20]。具体而言，即博士研究生运用概念工具与方法论框架，对存量知识进行批判性解构，并通过理论建模与实证检验的辩证互动，实现知识边界的前沿突破。本文探讨的风景园林博士知识生产是博士教育语境下“新”知识的产生——即通过批判性解构风景园林既有知识体系并创造性整合多元认知范式，生成具有学科专业演进价值的空间认知理论、空间实践理论与技术方法等新知识的学术实践过程[11]。

2.2 知识生产模式与学位教育的形态转变

博士生群体作为知识生产的直接相关者，其培养模式与知识生产模式直接相关，学位教育的形态发展也与知识生产模式变化密不可分。传统的知识生产模式（模式Ⅰ）通常以学科为基础，在院校和科研机构等学术环境中生产知识[21]，其主要特征是知识生产在严格分离的学科框架内进行，每个学科有独立的研究问题和方法论。新的知识生产模式（模式Ⅱ）则强调知识的跨学科性和实际应用，主要特征包括跨学科合作与应用导向[22]，知识生产在更开放、灵活的情境中进行[19]（表1）。整体而言，模式Ⅱ是对模式Ⅰ的发展超越和应用重构：一方面，它继承了模式Ⅰ对知识系统性的追求，但突破了其学科中心主义的桎梏；另一方面，它将模式Ⅰ的线性知识积累转化为问题导向的螺旋式认知迭代。

2.3 风景园林博士知识生产的特征

在讨论风景园林博士知识生产特征之前，有必要厘清学术型博士与专业型博士的基本区分。学术型博士以培养学术研究者为核心目标，强调在特定学科方向内开展系统性基础研究，以推动学科理论的前沿突破；专业型博士则以培养高层次应用型实践人才为核心目标，强调综合运用多学科知识创造性地解决行业领域中的复杂现实问题。二者并非高低之别，而是功能定位形成互补的两种人才培养类型——前者承担学科知识体系的创新与深化职能，后者承担将知识转化为应对现实问题的策略与方案的职能[18]。这一基本区分，构成本文讨论风景园林博士知识生产转型的前提。

风景园林作为一门协调人与自然关系的实践学科，一方面，风景园林知识生产以解决现实世界中的复杂问题为目标，强调实践性和应用价值；另一方面，风景园林知识生产往往受社会需求、政策和经济因素等影响，强调跨学科性与社会互动。学术型学位属性下，风景园林博士教育主要基于知识生产模式Ⅰ，即学科导向的知识生产，强调在特定学科

表 1：知识生产模式Ⅰ与知识生产模式Ⅱ的区别与联系

	维度	模式Ⅰ	模式Ⅱ
区别	知识生产性质	基础理论知识	基础理论知识、实践应用知识
	知识生产情境	大学、科研机构	大学、科研机构与政府机构、企业、社区、工程现场等社会场所
	学科形态	单一学科	跨学科
	知识形态	封闭的理论体系	可操作的解决方案干预策略
	知识质量	单一学科的同行评议	政治、社会、经济、工程实践界等多元评价
联系		知识生产模式Ⅱ是对知识生产模式Ⅰ的发展超越和应用重构	

方向内进行深入研究和知识创新。然而，风景园林的“重实践”属性敦促专业型博士学位教育转向知识应用。因此，风景园林专业型博士的知识生产应主要基于模式Ⅱ，强调从侧重学科基础研究的学术卓越追求到侧重跨学科应用基础研究和现实问题应对的双重卓越追求（表2）。

2.4 国际风景园林专业型博士教育范式与中国挑战

纵观全球，国际顶尖院校已在风景园林专业型博士教育方面积累了丰富经验。依据其应用导向的不同，可将其概括为“宏观策略干预”“反思性实践”与“循证技术整合”3类范式。借鉴这些成熟的国际范式可有助于深刻剖析当前我国博士培养体系中面临的结构性错位与现实挑战。

首先，哈佛大学代表了宏观策略干预范式。哈佛大学设计研究生院的设计博士DDes（Doctor of Design）课程明确区分于侧重历史解释的传统哲学博士（Doctor of Philosophy）学位，其核心在于强调研究的策略干预性，即博士研究不应止步于解释世界，而应致力于通过政策制定和空间策略来应对气候变化、城市化等抗解问题[23]。受传统学科范式惯性的制约，现有培养体系在知识生产取向上存在明显的结构性偏移——众多学者指出风景园林研究与行业复杂现实需求之间深层脱节[6-8]，亦指出当前培养体系在应对专业实践需求方面存在明显不足，这在知识生产层面集中表现为研究选题偏重现象描述与规律解释。面对国土空间规划与城市更新等国家重大战略需求，现有的知识生产过分关注“是什么”和“为什么”，却缺乏提出“怎么做”的创新性策略和可操作框架。这种“解释性知识”与“策略性知识”的结构失衡，导致高层次学术研究与紧迫的现实问题应对方案探索之间存在严重脱节[24]。

其次，皇家墨尔本理工大学代表了反思性实践范式。该模式主张“通过设计进行研究”（research through design），通过反思性实践将设计行为中的隐性知识转化为可传播的显性知识[25]。我国现行的博士教育评价体系仍倾向于将设计实践排除在核心知识生产之外，存在轻“设计探究”的倾向及“设计本体知识”合法性认定上的缺失。这导致博士生被迫剥离鲜活的设计探索，去迎合标准化的实证范式。这种学术研究与设计实践的割裂不仅造成设计实践中形成的整体性问题建构能力、反思性判断能力等高阶设计思维难以被提炼转化为可传承的学术理论，也使得大量具有创新价值的工程实践经验沦为沉默的隐性知识[26-27]。

最后，代尔夫特理工大学代表了循证技术整合范式。该范式强调在科学循证框架下，将设计作为一种整合生态学、工程科学与大数据技术的启发式工具，具有极强的工程理性和落地性[28]。对照这一模式，我国风景园林博士教育在跨学科交叉方面仍显滞后。虽然行业已广泛意识到多学科融合的重要性，但在具体的知识生产中仍面临深厚的学科壁垒；且现有的设计研究往往缺乏严谨的数据支撑和科学模型验证，难以实现从“感性审美”向“循证设计”（evidence-based design）的范式转型[24]。这种“软性美学”与“硬性技术”的隔阂，直接削弱了风景园林学科在应对洪涝灾害、碳汇计量等硬性约束问题时的话语权与公信力。

表 2：风景园林学术型博士与专业型博士知识生产特征比较

分类	学术型博士	专业型博士
生产模式	模式Ⅰ	模式Ⅱ
研究动机	探索学科基础理论知识	探索现实问题解决方案，满足应用需求
研究面向	理论面向：侧重于基础研究和学科理论的发展	理论和实践双重面向：侧重于应用基础研究和为行业或职业领域中的实际问题提供创新解决方案
研究成果	学术知识：针对现象与规律解释的知识	跨学科知识、可实践知识：应对特定现实问题所需要的知识
评价标准	学科内在学术标准	专业内在学术标准和社会外在应用标准结合的多元标准

3 知识生产属性的转型：从单一学科知识到双重领域知识

知识生产模式的转变不仅重塑了知识的组织结构，更从根本上规定了知识生产的属性——即“生产什么样的知识”这一核心问题[17]。知识生产模式Ⅰ向模式Ⅱ的演进，驱动着知识生产的取向从学科转向领域，进而规定了所生产知识的属性特征。因而，本章将重点辨析学科知识与领域知识在属性上的本质差异，厘清风景园林专业型博士知识生产的属性转型方向。

3.1 学科知识与领域知识

风景园林在“学科-专业”转型的背景下，由原来的“学科-二级学科”的学科架构方式转向“专业-领域”的专业架构方式[29]（图1），这样的转变促使我们进一步思考学科与领域的知识组织结构关系。根据巴兹尔·伯恩斯坦的知识结构理论[30]，知识组织具有垂直分层结构或横向整合结构的特性。在知识生产模式Ⅰ中，为了知识的积累和传播，将一系列具有严密内在联系的概念和范畴体系进行垂直化组织，形成边界清晰、相互独立的知识体系，其知识组织呈类型化、树枝状特征，即“学科”（discipline）；在模式Ⅱ中，不同学科知识抽取并重新整合形成解决现实问题的知识体系，其知识组织呈网络状、模块化特征，即

“领域”（domain）。学科与领域在知识生产的研究动机、研究边界、组织形式等方面存在本质区别[31-33]（图2）。从知识形态特征来看，学科知识关注于理解事物的本质规律，作用是解释现象规律，主要表现为原理型知识（principle-based knowledge），具有抽象性和解释性；领域知识关注于解决某一类现实问题，主要表现为应用型知识（applied knowledge），涉及多个学科的交叉与融合，具有应用性和实践性[34]。

3.2 风景园林领域知识的双重面向与两类知识

风景园林领域知识一方面面向理论，一方面面向实践。随着知识生产模式Ⅰ向模式Ⅱ演进，知识生产架构由学科向领域逐步转变[30]，体现为两类具有强烈实践性特征[10]的知识：一类指向空间解释，指抽取其他学科的概念、理论、方法等基础型原理知识，进行整合与集成，形成解释风景园林研究对象的应用型原理知识；另一类指向空间操作，指将上述空间解释的模块化知识流程化，形成规划设计的应用型策略知识。

为了解决和应对这些实践中的技术、组织、管理等现实问题，需要对学科知识进行整合以便形成“应用知识的工具箱”，再通过空间转译形成规划设计策略，从而生产出一种可供传播的稳定知识。由于风景园林知识生产涉及学科多元，笔者仅以国土空间生态保护与修复领域为例，对领域知识体系进行简要分析（图3）。该领域内基础型原理知识主要来源于城乡规划学、景观生态学、恢复生态学、地理学、管理学等学科，这些学科中的理论（如格局-过程耦合理论、地域分异理论）经过整合后形成了模块化的应用型原理知识（如 “格局-过程-功能-服务-可持续性”理论范式），进一步通过空间化转译为指向国土空间生态保护与修复技术、方法中可操作的应用型策略知识（如生态安全格局构建方法）。

4 知识生产路径的转型：从拆解还原到集成建构

学科知识的生产路径是以理论问题的探索为主要牵引，根据特定的学科研究范式（理论假设与验证），遵循还原论（reductionism）的认识论取向，对学科的理论进行拆解还原再深入，进而形成揭示现象及解释规律的基础型原理知识。领域知识的生产路径则是以对实践问题的关照为主要牵引，根据特定的知识组织原则，对传统学科的概念、理论进行再选择、再定位、再分配、重新关联和转化（理论选择与集成，以及技术方案构建与验证），进而形成指向领域特定问题的应用型原理知识和改造世界的应用型策略知识[34]（图4）。

笔者根据学术研究中问题意识的一般学理逻辑，即从问题提出、问题分析、问题应对的认知体系着手[35]，提出风景园林专业型博士进行知识生产的一般路径，从而系统解决风景园林博士知识生产中的逻辑困境，推动知识的整合和方法创新。

4.1 问题提出：问题领域识别与知识体系建构

风景园林专业博士知识生产中涉及的研究问题源于该领域的实践问题。立足风景园林学科视角，采取以下步骤：首先，识别问题领域，即明确既有研究问题与当前研究问题的关系，其中包括问题的历史发展脉络、层级等；明确问题与领域的关系，包括该问题是否已经得到有效干预、问题的解决程度如何等。其次，通过开展综述形成对其领域内知识体系（知识元-知识单元-知识模块-知识领域-知识跨域）的清晰认识，并建立共域使问题得以精确表征。最后，基于此，寻找研究缺口，凝练待解研究问题（图5）。

4.2 问题分析：跨域选择与知识体系整合

风景园林专业型博士生知识生产的问题分析应依托应用研究导向。应用研究强调理论的选择与知识集成整合。首先，根据其与研究问题的相关性，筛选并匹配来自其他学科的新理论、技术和工具。其次，结合与领域内的现有知识进行整合集成，建立理论分析框架用于解释空间机制，即景观空间目标与景观设计方案之间的作用关系。最后，根据理论分析框架，提出研究实施路径，即技术路线（图6）。

领域知识体系整合旨在通过扩大共域，帮助研究问题的分析与实施路径的提出。对某一领域知识体系整合目的在于分析空间机制，增强对景观空间的认知。构建与研究对象、研究问题深度匹配的理论分析框架，从而产生出指向空间机制的模块化知识，更好地为现实问题探索可能的解决路径。

4.3 问题应对：领域拓展与知识体系重构

在风景园林专业博士知识生产过程中，问题应对是指基于新问题的分析，合理应用新理论、新方法、新策略等创新知识对于该领域原有知识层次、结构及关系的改造，最终对既有领域的知识体系进行重构和再造。首先，依照技术路线开展研究实践，将理论分析框架付诸具体操作，获取实证。其次，基于实证结合具体研究对象的实践情境，验证理论分析框架的可行性、合理性、科学性，并提出应用型原理知识。进而，提出情境化的应用型策略知识，并通过多情境验证对策略知识的质量进行评价校验，构建该问题的一般性应对 / 干预策略。最后，经过上述验证与校验，领域既有的知识框架被实质性地改写，形成新的知识边界（图7）。

5 讨论

专业学位按专业学位类别培养，重在面向行业产业发展需要，培养具备扎实系统专业基础、较强实践能力、较高职业素养的实践创新型人才。其核心目的是强化知识生产在响应国家重大战略需求与应对复杂现

实问题中的应用导向。然而，在这一转型过程中，必须审慎辨析并协同处理以下3对核心关系，以避免陷入非此即彼的认知误区。

5.1 本源与拓展：专业学位教育并非对学科知识本源的替代

必须明确学科发展的根基在于其知识体系的持续深化与创新。即便在专业型博士教育大力发展的背景下，基础型原理知识的创新产出依然是风景园林学科可持续发展的基石。学术共同体对前沿问题的探索，其本质是遵循科学发现的自身逻辑，这主要仍由学术型博士培养体系承担。这类研究是构成学科理论内核、提升学科学术话语权的根本，为所有应用性研究提供着原理性支撑。

5.2 工具与规律：学位规定是服务学科发展的阶段性工具

当前的专业型博士设置是国家在特定历史发展阶段，针对行业对高层次、创新型实践领军人才的巨大需求，而采取的一种政策性引导与制度性工具。其核心目的是填补“巴斯德象限”（即应用引发的基础研究）的空白，强化知识生产在响应国家重大战略需求与应对复杂现实问题中的应用导向。这是对现有学位类型和人才培养结构的重要补充，而非取代以探索未知为目标的学术研究。

5.3 互补与协同：构建学术型与专业型博士教育的健康生态

学科的内在发展规律是长期、稳定且具有普遍性的，而学位规定作为一项教育政策，则更具灵活性，需随社会经济发展动态调整。专业型博士的培养旨在丰富与拓展学科的知识生产谱系，其成功与否最终必须接受学科自身发展规律的检验。理想的格局应是风景园林学术型与专业型博士教育形成清晰的功能互补，实现学科与学位的相互促进与协同演进。

6 结语

本文基于领域与学科关系的重新认识，深入探究了我国风景园林专业型博士知识生产范式，通过知识生产模式、属性、路径3个维度，分析了其与风景园林学术型博士的联系与区别，并提出了3项转型策略：1）知识生产模式从学术卓越追求转向现实问题应对；2）从学科知识组织结构走向领域知识组织结构，知识生产属性由学科的单一基础型原理知识转向领域的应用型双重知识形态；3）知识生产路径从拆解还原到集成建构，从对理论的抽象解释到对理论的集成应用，形成指向领域特定问题的应用型原理知识和改造世界的应用型策略知识。本文继而从问题提出、问题分析、问题应对的认知体系着手，创新性提出“问题领域识别与知识体系建构–跨域选择与知识体系整合–领域拓展与知识体系重构”的分阶段知识生产路径。

需要指出的是，本文仅从知识生产视角的单一向度探讨了专业型博士培养转型策略，未探讨教学改革方案、研究成果评价标准、知识体系更新等内容。未来，研究可从上述几个方面继续深入，以回应学科和教育的时代变革、行业和社会的时代需求。此外，本文仅探讨了学科和领域，未对行业与二者的关联进一步探讨。未来可基于“学科–领域–行业”的三元互动进一步完善。其中，学科知识体系通过理论基础研究构建解释世界的认知图式（如景观过程机理模型），领域承担将认知图式转化为改造世界的操作程式的中介职能，而行业创新需求又通过实践的逆向反馈牵引学科与领域的知识生产过程。专业学位博士教育的核心价值正在于培养能穿透“理论–实践”界面的跨界型知识工作者——他们既掌握将基础理论解构为可实践应用的模块化知识的能力，又具备在复杂现实情境中重构领域知识体系的实践智慧。这种人才培养方式的转型，将有效弥合风景园林理论研究和实践应用的差距，推动学科、领域、行业互动发展。

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图 1. 学科 – 领域本质区别
图 2. 风景园林“学科方向 – 专业领域”对比（资料来源：风景园林硕士专业学位研究生指导性培养方案 [2024 年版]）。
图 3. 风景园林领域知识的来源与分类
图 4. 学科知识生产路径与领域知识生产路径的区别
图 5. 问题凝练路径与领域知识体系建构（改绘自参考文献 [17]）
图 6. 跨域选择与知识体系整合（改绘自参考文献 [17]）
图 7. 领域拓展与知识体系重构（改绘自参考文献 [17]）