

空间 内外

SPACE WITHIN AND AROUND

视觉抽象 · 语言类比 · 还原

VISUAL ABSTRACTION,
LINGUISTIC ANALOGY,
AND THE RETURN TO THE ORIGIN

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SPACE WITHIN AND AROUND



记得大约是高中的时候，我常听父亲——贺镇东在撰文或做设计的时候说起“空间”这个词。当时的中国对世界初开国门，崭新的建筑概念也随之而来。可当时高考占据了我所有的注意力；而父亲只是独自咀嚼着、领悟着、兴奋着。在大学本科第一学期的“建筑初步”课上，顾大庆教授和单踊教授也将“空间”这个概念作为主题，我开始从建筑专业的角度接触“空间”。当时只领会到，空间是我们习以为常的物理世界的负形，却不知空间交给我们的是一把开启建筑之门的钥匙。虽然建筑不只是空间，但没有空间便没有建筑。

本书的主题是空间，它不仅是建筑学科中的一个重要概念，也是许多其他学科的重要概念。正如马克思·雅默的《空间概念》一书所揭示的那样，空间贯穿了物理学学科探索的历史。令人惊讶的是，雅默对物理空间的论述似乎与理解建筑空间极度相关——不仅将空间的理论演绎与实际应用进行区分，同时将空间抽象与空间体验进行区分。本书把这种相关性定位作为对空间发现模式的简介和初探，从而更好地理解建筑学科本身。对建筑空间的发现始于破土的一刻，跨越空间和实体之间的界限，引向无穷尽的诠释。空间穿越时间，将原始的去与未见的未来、最终与现在联系起来。

要理解空间，我们必须让每个感官更加敏锐，在感觉、感知、思维的不同层面探寻其本义。空间包容着我们每日的存在，也超越了我们自身的文化。对空间的考察，将引领我们跨越建筑、诗歌、音乐、绘画、电影等这些媒介。

20世纪初，空间理论曾一度成为现代建筑理论界聚焦的核心论题，并给建筑设计和建筑教育带来了革命性的影

响。尔后，“空间”的本义被不断转换的研究方向和侧重所丰富，有时也被遮掩。这些切换包括：形式、文脉、语言学、哲学、人体、生物共生、可持续性、建构等。如今，我们正在经历由数字化技术所导引的技术革命，而这场革命又同时交织着手工艺的再度兴起。数字化与手工艺的相遇和碰撞，为建筑界以及设计界提出了崭新的课题和可能性，但似乎又在把我们带回认知的本原——对抽象逻辑的追求和对原始感觉的依赖。

科技大方向和侧重的转换，带来了审视建筑的视角和框架的转换。而视角和框架，无论是被社会因素所激发，还是被旁系学科所影响，都促成了对建筑的新理解和新发现。那么，“空间”是否是一个只属于 20 世纪初的概念？它是否已经被新的审视建筑的视角和框架所取代？回答是：空间无所不在，无时不有。因为空间是关系到人类生存与意识的基本；它不只是物质的，也是意识的。它与材料及建造互为前提、虚实相生，与人的生活和行为相辅相成，为社会结构留下烙印，被升华为空间艺术意境。正因为空间交织于我们的存在，空间对理解我们的存在举足轻重——无论是建筑的、社会的，还是哲学的；也无论是具体的，还是抽象的。这正是在 21 世纪的今天，从空间这个视角，再度审视建筑理论、建筑教育在过去一个世纪的发展的至关重要的原因所在。无论研讨建筑的视角和框架如何转换，空间或许是建筑学领域不变的核心之一。

这本书由中国建设工业出版社的焦扬编辑与我共同策划。它是我多年学习、教学与研究“空间”这个论题的一次小结。就素材和内容的层面而言，本书注重历史资料的佐证，它将汇集和引证自现代建筑运动至今有关空间的

重要理论和实践。就理论层面而言，本书将步步深入，探究空间抽象法，研究空间的载体以及空间表象背后的逻辑。因此，理论推理引导了书稿的组织结构。

本书以建筑空间为视角，为多样的读者群所写——建筑学学生、建筑界和设计界的同仁以及对设计和文化感兴趣的大众。空间这个论题意义深远。从根本上说，空间和时间是关系着人的存在的哲学论题。我们不难在建筑学的外围领域发现类似的空间研究，并借鉴其对应的研究方法。对空间研究的回顾，也是以空间论题作为框架，对建筑理论及其外延的视角变更的回顾。所谓建筑的界内界外之分，或许只有在从业这个角度来看是相对明确的。而更多的时候，建筑与生活相融合，懂生活才懂建筑。只要关心、品味生活，就不知不觉地走进了建筑。因此，本书最终是为所有对我们共同的生活环境感兴趣的读者所写，为那些在物质细节和无际思维之间游走的读者所写。

空间存在于从自然科学到艺术的诸多领域。它体现在人对身体的空间位置的意识上，这为语言中的隐喻奠定了物理基础，从而决定了我们思维中的逻辑。换言之，空间是物质存在，也是形而上的存在。探讨空间的过程，将历练出一种敏感性——无论是对于茫茫宇宙，还是对环绕在我们身体周围的光线和气息。

我们存在于空间。

When I was in high school, I often heard my father, Zhendong He, mention the word “space” when contemplating his writing and designs. This was during the time when China started to open up to the world. New architectural concepts were arriving. However, the college entrance examination took all my focus, so my father’s intellectual interest did not resonate with me. I did not realize the importance of the concept of space in architecture until Professors Gu Daqing and Shan Yong in my freshman studio made it the topic of the whole semester. I started to see space as the negative volume of the physical world. What I did not realize is that space is a key that opens the door to Architecture; it was/is foundational. It is fundamental to the very existence of architecture, as a discipline, in theory and in practice.

The subject of this book is space, a critical concept not only in the discipline of Architecture, but to many others as well. As Max Jammer’s book *Concepts of Space* demonstrates, space weaves through a history of explorations in the discipline of Physics. Surprisingly, some of Jammer’s perspectives seem extremely relevant to the understanding of architectural space such as a purely theoretical deduction versus its practical application—the abstraction versus the experience of space. This relevance positions this book as an introduction to a mode of discovery. Through discovery, we may better understand the discipline of Architecture. It begins with the first intervention on/in the ground and passes through the boundary between space and mass with unlimited interpretation. It traverses time, situates, and connects an original past with an invisible future and finally with the present.

To understand space, we must activate our senses and examine thoroughly the original meaning of space across the levels of sensation, perception, and conception. As it encompasses all aspects of our mundane existence and the larger culture that sustains us, our investigation and reading of space will take us to consider various mediums – architecture, philosophy, poetry, music, painting, and film.

At the beginning of the twentieth century, space theory was once the core topic of modern architecture. It brought revolutionary influence to architectural investigation, practice, and education. After that, the original meaning of “space” was enriched by the constantly shifting modes of studies, even when it became obscured. These shifts of focus include the following: form, context, linguistics, philosophy, human body, biological symbiosis, sustainability, and construction. At present, we are experiencing a new shift, a revolution derived from digital technology and artificial intelligence. This revolution is simultaneously intertwined with the resurgence of craftsmanship: a focus on analog and digital making and the resulting studies of tectonics and materiality. The coalescence of digitization and handicraft, along with the ambiguity of authorship and man-made have brought up new topics and possibilities for the architectural and design communities. These possibilities, although new, can bring us to an origin as part of our understanding of the world – the longing for highly abstracted logic and the dependence on primitive sensation.

Change in technological orientations and foci have brought about a transformation of the perspective and

framework for examining architecture as a discipline, a practice, and a product. These perspectives and frameworks, whether inspired by social factors or influenced by related disciplines, have contributed to new understandings and discoveries. In this context, is "space" an obsolete concept? Does it only belong to the beginning of the twentieth century? Has it been replaced by new perspectives and frameworks within architecture? Fundamentally, no. Space is the foundation of human existence and consciousness. It is premised on materials and construction, is reflected in our social structure, transformed into artistic expressions, and led towards thinking and concepts. Space plays a critical role in understanding whether our existence is architectural, social, or philosophical, whether it is concrete or abstract. This is why it is time to revisit the development of architectural theory, practice, and education in the past century from the perspective of space. Regardless of how the perspective and framework of Architecture transforms, space may be one of the constant cores of the discipline.

I envisioned this book together with Jiao Yang, editor at China Architecture and Building Press. In a way, the book is a summary of my prior studies. It conducts a historical review of theories, practices, and teaching methods of space since the modern architectural movement. On the theoretical level, this book investigates key concepts of space, such as abstraction, medium, and logic. Theoretical reasoning guides the organization of the book.

From the vantage point of architectural space, this book speaks to a diverse audience: architecture

students, colleagues in the architecture and design community, and communities interested in design and culture. Space and time, two fundamental philosophical topics, permeate various disciplines. Therefore, the study of space is tightly related to the mediums where space is formulated and discussed; what is and is not the Architecture discipline starts to blur. Ultimately, architecture and life are intertwined. To a certain extent, knowing how to live a life may be the only way to understand architecture and space. Therefore, this book relates to all readers who are interested in our shared living environment and for those who wander between material details and boundless thoughts.

Space exists in many fields, from the Natural Sciences to the Arts. However, it manifests in the consciousness of the position of the human body in space, which lays the physical foundation of metaphor in language and thus determines the logic in our thoughts. In other words, space is not just a material existence, but also a metaphysical existence. Eventually, the process in understanding space helps us develop a sensitivity – whether for the vast universe, or for the light and breath that surround our body.

We exist in space.

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导论

建筑创造了空间，并以比其他任何媒介，尤其是表现艺术，都更直接、更密切的方式将空间馈赠于我们，以空间包容我们。在不同的环境和尺度中——城市的、建筑的、个人的、网络和虚拟的，我们深受空间的影响。在对这些影响作出直觉回应的同时，我们或许会问：空间是如何左右我们的行为、感知和思维的？本书将回顾 20 世纪理解空间的理论和方法论框架，试图从中找到答案。如果体验和反思植根于空间，这些框架可能会在一定程度上展现对本原的讨论。

20 世纪见证了空间作为现代建筑概念的形成及其从视觉层面演变为结构、隐喻和存在的层面。设计师和学者曾尝试利用各种框架，以不同程度的思辨手段来解密对空间的直观和笼统的印象。本书将这些观点和框架组织起来，以揭示思考空间的角度和模式。事实上，每个框架都面临着抽象或具体化的问题，并发展出相应的分析机制。理解这些思维过程和机制能够帮助我们超越直觉回应的层次，并通过分析方法达至对空间更深刻的理解。我们可以从评论家的视角去探讨空间在建筑辨析中出现的原因；从学生的视角去理解设计师的思维策略；从设计师的视角去有效地、自觉地运用这些策略并提出新的设计概念。

更重要的是，本书关于空间建筑理论的回顾，试图探寻思维过程背后的原理以及产生特定观点的基础和动因。在每个观点的背后，都存在着“什么”“如何”和“为什么”的问题。特定的空间抽象模式为研究提供了什么值得关注的要点？特定的问题描述和框架如何推进研究？每种研究模式的特定重要性在哪里？对分析问题的机制的理解，将有助于我们在研究空间的过程中获取新的视角和框架。空间最终是一种隐喻，并同时将我们带回到地本身——建筑空间的开始。从哲学的角度来看，空间有助于我们理解“居住”这个人最为基本的行为之一，并引导我们对居住方

Introduction

Architecture gives and holds us in space in a way that is more intimate than any other medium, especially the representational arts. We exist in different environments and scales: from the individual and the familial to the cultural, architectural, and even cyber/virtual. We negotiate with and are impacted by each. Therefore, we should think beyond merely responding to these impacts and ask: how do these spaces affect our behavior, perception, and thought? In an attempt to answer this question from the departure point of architecture, this book will review theoretical and methodological frameworks of understanding space in the twentieth century. If experiences and reflections are rooted in space, these frameworks may reveal how humans approach the question of origin.

The twentieth century witnessed the formulation of space as a modern architectural concept as well as its evolution from the visual to the structural, metaphorical, and existential. Designers and scholars experimented with various frameworks in order to decipher the intuitive and general impression of space by more or less analytical means. Their individual perspectives, when organized in this book, reveal patterns in how we can think about space. Each one deals with the issue of abstraction or concretization and develops analytical mechanisms for it. Analyzing these thought processes will help us move beyond an intuitive response and understand space critically and thoroughly. As a critic, we can deliberate on space in architectural discourse; as a student, we can understand designers' strategies; and as a designer, we can efficiently and consciously apply these strategies and formulate new concepts.

More importantly, this review of architectural theories on space is about understanding the rationale behind the thought process and the foundations and intentions of specific perspectives. In each perspective, there is a "what," a "how," and a "why." What does a certain mode of spatial abstraction allow to appear? How do the defined descriptions and frameworks facilitate the study? Why is a specific mode of study significant? The understanding of the analytical mechanisms will potentially lead us to new perspectives and frameworks for the understanding of space. Ultimately, space functions as a metaphor for something significant and brings us back to the literal ground as well. At a philosophical level, it helps us to understand dwelling and think

式进行反思。从根本上说，建筑这门学科通过空间的论题推进了人类的思考。

空间意识是建造的基础。它把我们的注意力从建筑构件，例如门、窗、柱，转换到它们之间的存在。空间就像中国水墨画中的留白，不及笔墨，却是笔墨的灵魂所在。而赏画人的视线，也转换于黑白之间。比尔·希利尔曾经这样说：“房屋之初衷不是实体本身，而是给予空间以秩序。实体只是达到目的的手段”（Hillier and Hanson, 1984）^①。这个观点与老子关于器之用的论点相似。^①两者都强调了实体之间存在着虚的空间。它与实体相互依存，互为主体与衬托。

20世纪初，“格式塔”理论^②作为起源于奥地利和德国的心理学流派，专注于视觉感知，并间接促进了空间研究的发展。格式塔理论借鉴修辞与提喻的逻辑，强调整体的意义——整体不同于部分的总和；人的大脑可以将部分组织起来，以获得对整体的认知。

在局部与整体的关系中，格式塔理论强调了图底关系。1915年，丹麦心理学家埃德加·鲁宾在哥本哈根大学完成的博士论文《视觉体验的图》中，首次提出了图底关系这个概念。他以《鲁宾酒杯》来例证视觉上“双重稳定”的状态，也就是两个“图”同时存在——观者的注意力不自觉地在“酒杯”和“人面”之间游移（图0-1）。

《鲁宾酒杯》在建筑界被广为引用，并深深影响了建筑空间的视觉表现和研究。鲁宾提出的对人面和酒杯的共时识别，在建筑空间的语境中被转化为对图与底、实体与虚体以及物体与空间并存的认识。对于底、虚体和空间的关注，淡化了图、实体和物体的重要性，并暗示了图底之间的一种共存和互换的特质。这种认识上的变化一直延续至今。

将空间作为认知对象需要有意识地调整观察的侧重。在《鲁宾酒杯》的认知实验中，“酒杯”和“人面”都是具体形象，因此观者对它们的识别力相似，从而对“图”和“底”的识别力也没有差异。但在建筑环境里，实体具备具体形象；而空间在多

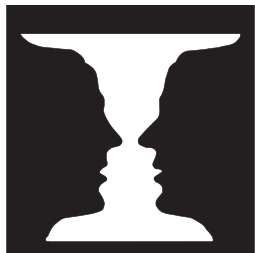


图0-1 埃德加·鲁宾《鲁宾酒杯》，1915年
（作品版权：公共域；图片来源：作者重绘）
Figure 0-1. Edgar Rubin, *Hidden Faces and Goblet*, 1915.
(Public domain, redrawn by author.)

about how we reside. Through space, the Architecture discipline contributes to thinking.

Spatial awareness is a foundation of making architecture. This awareness lets us shift our focus from objects, such as doors, windows, and columns to what is in between them. In Chinese painting, the essence of the painting resides in the emptiness among the brushstrokes. However, one has to shift his/her focus from the black ink to the white paper in order to grasp it. Bill Hillier once said, "It is this ordering of space that is the purpose of building, not the physical object itself. The physical object is the means to the end" (Hillier and Hanson 1984. This comment resonates in Lao Zi's emphasis that the usefulness of a teacup exists in its emptiness, the interior space.^① Both recognized space as the purpose of enclosure.

In the early twentieth century, the Gestalt,^② a school of psychology emerged in Austria and Germany focused on visual perception and indirectly contributed to the study of space. Borrowing from rhetoric and the logic of synecdoche, Gestalt theory emphasizes the significance of the whole: the whole is different from the sum of the parts, but the human brain can organize the parts to get a sense of the whole.

Within the relationship between the parts and the whole, a specific discovery was made between the figure and the ground. In 1915 at the University of Copenhagen, Danish psychologist Edgar Rubin introduced the term "figure-ground" in his dissertation, *Synsoplevede Figurer* (Visually Experience Figures). His image *Rubin Goblet* exemplifies the bi-stable state in vision. Two images simultaneously exist and produce ambiguity in that very simultaneity. The viewer's attention shifts between the goblet and the human face (fig. 0-1).

Rubin Goblet is widely quoted in the architectural field, impacting visual representations and investigations of architectural space. The simultaneous recognition of the face and the goblet in Rubin's observation is translated into the acknowledgement of the coexisting figure and ground, solids and voids, as well as objects and space. The focus on the ground, the voids, and the space decreases the overwhelming significance of the figure, the solids, and the objects and establishes an interchangeable relationship between them—changes which remain to this day.

To recognize space requires a conscious adjustment of the observational focus. In the cognitive experiments of the *Rubin Goblet*, both the vase and the human face are concrete images; no extra effort is required to recognize either the figure or the ground. However, in the context of architecture, the buildings naturally are the figure. On the contrary, space is the in between emptiness and often has complex and vague shapes. Therefore, the viewer's attention

数情况下，是实体之间空白的虚体，也往往是相对复杂和含糊的体量。因此，观者的注意力易于被拥有具体形象的房屋实体——“图”所吸引，而忽略房屋内以及房屋之间的空间。由此可见，对空间的强调首先是对观察的侧重，并找到把空间转化为“图”的策略。

在建筑领域，“poché”^③指的是建筑制图中将建筑内部或周围以涂黑表现。这一策略自文艺复兴以来逐渐发展并普及，用于强调建筑或城市中的组件。最早的例子，还要从《诺利地图》说起。这是一张由詹巴蒂斯塔·诺利于1784年蚀刻的罗马城地图。他传承和发展了当时的作图规范，将室外空间留白，将建筑实体涂成深色，并对重要建筑进行细化表现——用黑色强化建筑元素（图0-2）。

如果视觉的关注点易于被黑色区域所吸引，那么，黑白施色的反转实质是画面重点的反转。例如在《奥索伊-施瓦茨平面》（图0-3）中，街道被涂成黑色，人们会发现，其实街道系统也具有张合节奏。这些空间不再被理解为建筑实体留下的剩余空间，而被强调成城市生活的所在。这样，地图中的黑白反转暗示了空间作为“图”而建筑实体作为“底”的可能性。正如《鲁宾酒杯》所示，哪个部分被视为“图”实际上取决于我们有意识的选择。我们可以故意让这种选择同时存在，而让注意力决定黑与

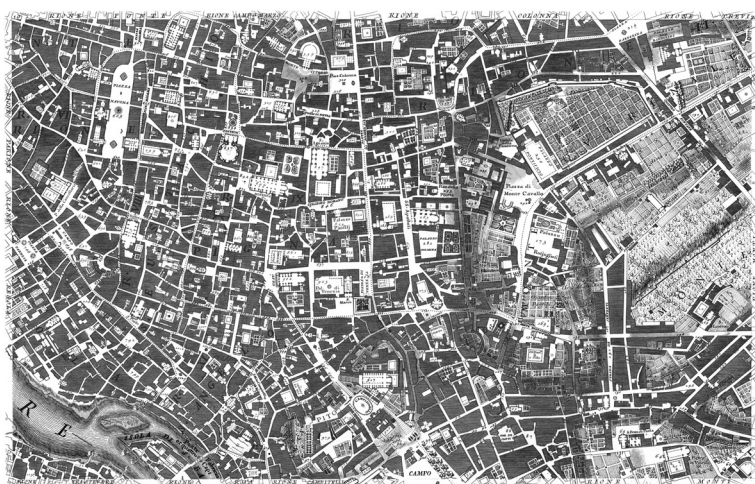


图0-2 《诺利地图》细节，1784
（作品版权：公共域；图片来源：[https://commons.wikimedia.org/wiki/File:Giovanni_Battista_Nolli-Nuova_Pianta_di_Roma_\(1748\)_05-12.JPG](https://commons.wikimedia.org/wiki/File:Giovanni_Battista_Nolli-Nuova_Pianta_di_Roma_(1748)_05-12.JPG)）
Figure 0-2. Details from the Nolli Map, 1784.
（Public domain. Image from [https://commons.wikimedia.org/wiki/File:Giovanni_Battista_Nolli-Nuova_Pianta_di_Roma_\(1748\)_05-12.JPG](https://commons.wikimedia.org/wiki/File:Giovanni_Battista_Nolli-Nuova_Pianta_di_Roma_(1748)_05-12.JPG)）

is naturally drawn to the buildings, "figures," and overlooks the space between the buildings. In order to focus on space, we need a strategy to turn space into the figure.

In architecture, the technique of *poché*^③—shading components within, of, or around buildings in a drawing—has been gradually developed and commonly used to emphasize building or urban components since the Renaissance. One of the prominent examples is a map of the city Rome etched by the Italian architect Giambattista Nolli in 1784, conventionally referred to as the *Nolli Map*. In this map, Nolli developed existing figure-ground strategy in map making at the time by leaving the outdoor space blank, filling building massing in dark shades, and articulating important buildings in terms of detailed architectural objects in black (fig. 0-2). *Poché* privileges the dark areas over the white by drawing visual attention to the areas where the marks are made.

If the visual emphasis tends to be drawn to the black areas, the invert of black-white color assignments becomes significant in indicating a focus shift. For example, in the *Orsoy-Schwarz Plan* (fig.0-3), the buildings are left white while the space among them are in *poché*. This inverted black-white color assignment reorients the viewer's attention. Space between buildings emerges from the background of the buildings to the foreground, the focus of study. Like the *Rubin Goblet*, what we interpret as the figure depends on how and what we consciously choose to see; we can manipulate the "trick" that is being played on us, though the intent of the transposition matters.

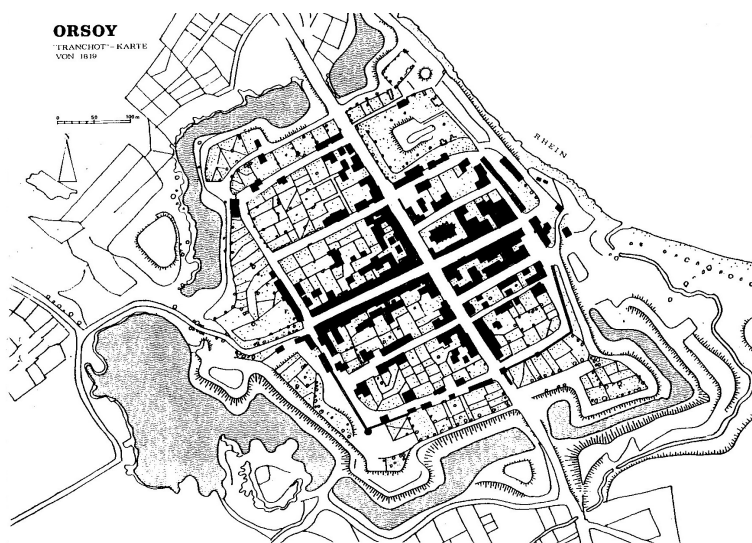


图 0-3 《奥索伊 - 施瓦茨平面》，1819
(作品版权：公共域；图片来源：<https://commons.wikimedia.org/wiki/File:Schwarzplan1819.jpg>)
Figure 0-3. Orsoy-Schwarz Plan, 1819.
(Public domain. Image from <https://commons.wikimedia.org/wiki/File:Schwarzplan1819.jpg>.)

白之间，哪个是“图”。

图底概念同时出现在 1950 年代的艺术评论和建筑领域中。例如鲁道夫·阿恩海姆于 1954 年发表了具开创性的著作《艺术与视知觉：创造力之眼的心理学》。在第五章“空间”中，他着重讨论了艺术作品中的图底关系。1955 年，在得克萨斯大学奥斯汀分校任教的柯林·罗、本哈德·赫斯利和约翰·海杜克发布了一项城市设计项目，并提到“图底”的概念。对罗而言，图底的概念既是分析框架又是设计方法，这在他的教学和学术文章中显而易见。1963—1982 年间，罗在康奈尔大学任职，他所授的“城市设计”研究生课程就以图底为主题产生了多篇毕业论文。罗的论著《透明性：字面的和现象的（第二部分）》（1971）以及《物体的危机：纹理的困境》（Rowe and Koetter, 1979），都借助图底关系分析了建筑和城市的形态与空间。

图底关系的重要性不在于非黑即白的二元性，而是促进了对两者的同时认识。以柯林·罗和弗雷德·科特合著的《拼贴城市》为例，图底关系作为一种机制来彰显过度规划的现代城市与未经规划的自然生长而成的城市布局之间的差异。“一个几乎全是白色，另一个几乎全是黑色……两者的底烘托了截然不同的图——前者强调物体，后者强调空间。”（Rowe & Koetter, 1979）⁶²这一区别使得罗和科特辨别出了“以雅典卫城和广场为代表的”（Rowe & Koetter, 1979）⁶²两种模型之间的区别，并提出了“建筑物和空间存在于辩证的平衡之中”（Rowe & Koetter, 1979）⁶³的设想。

如果将图底转换的手法运用在物质空间之中，就将导致空间与实体之间的置换。虽然图底关系早在 20 世纪初叶就已风靡抽象艺术界，但雷切尔·怀特瑞德和戈登·马塔-克拉克这两位艺术家以最直白的方式表达了这一与建筑空间相关的概念。在一系列作品中，怀特瑞德用水泥、树脂等材料浇铸物体、建筑内部或周围的空间，将空间这个“负形”转化为正形。马塔-克拉克则直接切割建筑物，以强制的手段形成建筑内部的虚体和空隙（图 0-4）。怀特瑞德的浇铸将空间和实体置换，驱使观者想象原来被包围的空间和包围空间的建筑实体（图 0-5）。马塔-克拉

The concept of figure-ground appeared simultaneously in the disciplines of Art and Architecture in the 1950s. In 1954, Rudolf Arnheim published his seminal book, *Art and Visual Perception: A psychology of the creative eye*. In chapter V, "Space," he specifically discusses the figure-ground relationship in art. In 1955, Colin Rowe, Bernhard Hoesli, and John Hejduk, who were teaching at the University of Texas in Austin, issued an urban design project and referred to the term "figure-ground." To Rowe, the concept of figure/ground served as both an analytical framework and a design method, which is evident in his teaching and scholarly articles. During Rowe's tenure in Cornell between 1963 and 1982, the urban design graduate course that he taught yielded multiple theses on the topic of figure/ground. His articles, "*Transparency, Literal and Phenomenal, Part II*" (1971) and "*The Crisis of the Object: Predicament of Texture*" (Rowe and Koetter, 1979) examine architectural and urban form and space through the lens of figure/ground.

The significance of the figure-ground relationship does not reside in a binary focus of either the black or the white. Instead, it promotes a simultaneous awareness of both. Exemplified in Colin Rowe and Fed Koetter's *Collage City*, the figure-ground relationship serves as a mechanism to highlight the difference between the overly planned modern city layout and the genuinely unplanned but naturally grown ones. "The one is almost all white, the other is almost all black... In both cases, the fundamental ground promotes an entirely different category of figure—in the one *object*, in the other *space*" (62). This awareness leads to Rowe and Koetter's identifying the difference between the two models "typified as acropolis and forum" (62) as well as postulating that "both buildings *and* spaces exist in an equality of sustained debate" (83).

When applied to a physical space, the concept of figure-ground evolves into the interchangeability between form and space. Although the concept of figure-ground has been used in abstract art since the early twentieth century, two American artists Rachel Whiteread and Gordon Matta-Clark expressed the concept in the most literal way in relation to architectural space. Whiteread reversed the solid-void relationship between objects and space by filling them with concrete, resin, and other materials to materialize the negative shape; Matta-Clark cut the buildings and created forced voids and gaps within architectural objects (fig. 0-4). Whiteread's casting process places the object of space in front of the viewer and simultaneously drives the viewer to imagine the originally empty space and the architecture around it (fig. 0-5). Matta-Clark's cutting process reveals invisible volumes penetrating the architecture. Although both originally intended broader concepts than iteration of space, Whiteread's solidification of space

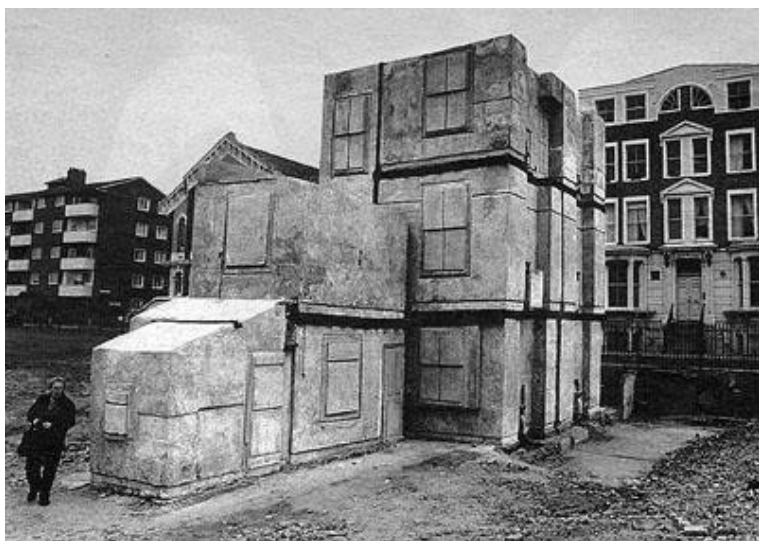


图 0-4 雷切尔·怀特瑞德
《宅 6》，1994 年
(作品版权：© 2022 艺术家
权利协会 (ARS)，纽约 / 伦
敦 DACS；摄影：约翰·戴
维斯)
Figure 0-4. Rachel
Whiteread, *House 6*, 1994.
(© 2022 Artists Rights
Society (ARS), New York
/ DACS, London. Photo
credit: John Davis.)

克的切割过程则展现了隐形体量是怎样穿透建筑的。虽然两位艺术家的初衷远远不止于表现空间，但从建筑空间的角度看，怀特瑞德对空间的实体建构以及马塔 - 克拉克对空间的虚体建构，无疑定义了一个新视角。

在建筑界，对图底关系的意识表现在人们从关注建筑形体转移到关注空间。这也是 20 世纪初的现代建筑运动的重要特征之一。布鲁诺·泽维在 1957 年出版的《作为空间的建筑：如何审视建筑》中概括了这种关注，并为“空间”在建筑领域确立了根本性的地位。泽维指出，空间可以作为揭示建筑本质特征的框架；其他诠释建筑的方式与空间相比只是从属的。他对西方建筑历史上的典型例子进行了空间概念上的归类，无疑证明了这样一个论点——空间概念早在现代建筑运动之前就已存在。泽维的论述暗示了空间的双重角色——它既将现代建筑从之前的建筑中区分出来，又点明了两者的连续关系。

同时，现代建筑对空间的关注打破了“房间”的概念。建筑内部的隔墙消失了，展现在眼前的是流动、通透、光线充足的空间。这些空间导演了一种以机器美学和社会自由为基础的新的生活方式，也展现了“房间”所不具备的一系列复杂的空间属性。

图 0-5 戈登·马塔-克拉克《圆锥相交》，1975 年
(作品版权: © 戈登·马塔-克拉克财产会 / 2022 艺术家权利协会 (ARS), 纽约; 图片来源: 数字图像 © 美洲艺术惠特尼博物馆 / SCALA 授权 / 艺术资源授权, 纽约)
Figure 0-5. Gordon Matta-Clark, *Conical Intersect*, 1975.
(© 2022 Estate of Gordon Matta-Clark / Artists Rights Society (ARS), New York. Photo credit: Digital image © Whitney Museum of American Art / Licensed by SCALA / Art Resource, NY.)



and Matta-Clark's construction of voids provide an undoubtedly exciting perspective from an architectural point of view.

In the field of architecture, the awareness of the figure-ground relationship has been demonstrated in the shift away from architectural figure towards the focus of space during the Modern Movement in the early twentieth century. As one of the early works summarizing this awareness, *Architecture as Space: How to Look at Architecture* (1957) by Bruno Zevi provided a comprehensive argument of the subject and emphasized the significance of "space." Zevi points out space as a framework to reveal essential characteristics of architecture; other ways of interpreting architecture are only subordinate to space. By referring to examples in architectural history and categorizing them as various representations of space, Zevi also proves that the concept of space existed long before the Modern Architecture Movement. Zevi's work suggests the double role of the concept of space exemplified in modern architecture, both distinguishing it from and associating it with prior architecture.

Furthermore, the focus on space in the Modern Architecture era challenged the establishment of "room" and replaced it with "space." As a result, interior walls dissolved into free, transparent, and well-lit spaces. These spaces choreographed a new way of living informed by machine aesthetics and social freedom. The spaces also implied a level of complexity of inherent spatial properties that rooms do not possess.

要真正把握空间的复杂性，我们必须通过分析推进。在虚无的空间中，空间关系成为其本质之一，例如拓扑关系、几何关系，相对于人体的量度关系、意义关系等。同时，空间外缘的诸多元素映射着空间这个虚无，例如行为、社会关系、身体、感知、现象、材料以及建造等。这些元素与空间互动，反映着空间法则。因此，对空间的讨论将涉及两种关系：一是内在关系——专注于空间关系本身；另一种是映射关系——专注于空间的映射机制。这两种关系相互依存。

本书将追溯泽维前后的涉及空间主题的理论与实践，并因循视觉抽象、语言类似，以及还原到本原的过程为构架。而这个过程影响了20世纪的建筑思考，分别体现了从感知到概念，再到感觉的侧重转移。空间的知觉、概念、感觉，每一部分都可以自成一书。因此，不敢妄言本书的深度，只将论述定位在理论回顾、分析和总结的层面，力图在阐述中引入和组织有代表性的例证，以阐述不同历史阶段的空间观及其演进。同时，本书的理论分析旨在勾勒例证背后的逻辑框架，而非辨析其细节。

本书由三篇组成。第一篇“视觉抽象”将涵盖20世纪初，以现代主义运动为代表的空间观。从绘画中的视觉空间开始延伸，将讨论以下几个论题：如何通过视觉抽象提取空间关系并将其作为构图进行研究，如何将网格作为一种操作和讨论空间的机制，以及，如何理解空间深度这个基本的空间性。

第二篇“语言类比”将讨论从1960年代开始，到1980年代全盛，一直延续至21世纪初的空间理论。这些理论深受1960年代的语言学，尤其是结构语言学发展的影响。对空间的抽象也从依赖视知觉发展为侧重于几何关系，再发展到探究拓扑和“形而上”的意义关系，并对空间的逻辑进行深入的挖掘，包括空间的运算逻辑、结构配置逻辑以及意义生成的逻辑。

第三篇“还原”将回顾以建筑现象学为基础的理论与实践，最终回归到建筑之初。这一篇的侧重在于人的物质存在，也就是刺激感官的现象、这些现象的空间关系以及空间和时间的具体体验。而向体验的回归，最终导致了建筑的溯源——地。如果说人

To truly grasp the complexity of space, we need to take an analytical route. Space is the emptiness in between objects, where its essence is defined in terms of topology, geometry, scale, and meaning. At the same time, many aspects interact with space and reflect its laws, such as behavior, social relations, body, perception, phenomenon, materials, and construction. Therefore, the discussion of space involves two kinds of relationships: (1) the internal, which focuses on the spatial relationship itself, and (2) the mapping, which focuses on relationships that map themselves onto space. These two relationships are interdependent.

This book traces theories and methodologies within and around the topic of space, prior to and after Zevi's summary. Its framework follows the sequence of visual abstraction, linguistic analogy, and the return to the origin. This sequence influenced architectural thinking in the twentieth century, while emphasizing perception, conception, and sensation, respectively. As one cannot exhaust the discussion on the perception, conception, and sensation of space in three independent books, this book will focus on a review and critique at an introductory level.

This book consists of three parts. *Part I, Visual Abstraction*, will review the understanding of space as visual perception, representative of the modern movement in the early 20th century. Extending from the visual spaces in painting, I aim to discuss the following topics: how spatial relationships are extracted through visual abstraction and studied as a composition; how the grid facilitates as a mechanism for manipulating and discussing space; and how depth serves as a fundamental aspect of spatiality.

Part II, Linguistic Analogy, will discuss theories of space on a linguistic basis, including structural linguistics, from the 1960s to the 1980s and continuing into the beginning of the twenty-first century. Through the lenses of structural linguistics, the abstraction of space and form evolved in terms of geometric relationships, topological relationships, and metaphysical meanings. In a way, these theories focus on the logic of space that is not completely visual, including computational logic, configurational logic, and the logic between form and meaning.

Part III, The Return to the Origin, will revisit the theories and practices departing from architectural phenomenology and conclude at the beginning of space. The focus resides on our physical existence: the phenomena stimulating the senses, the spatial relationship of these phenomena, and the embodied experience in space and time. The return to bodily experiences leads to architecture's origin, the ground. If the human body is the origin of the perceived space, then the ground is the origin of the physical existence of space. Architectural space is first and foremost an intervention on and in the

体是感知空间的原点，那么地就是空间的物质存在的原点。建筑空间从根本上是地对地的介入，介入本身就建立了空间关系。本书的最后一章“地”是与孟伯恩博士合作完成的，他从比较文学的角度，将身体、地以及建筑本原进行了哲学提升。

本书中的案例研究将分为两个层次跟进讨论。在简介的层次上，设计、生物学、哲学、语言学研究以及各种艺术形式的案例将佐证书中的论点。在深入分析的层次上，约翰·海杜克的早期作品将例证设计思维从形式主义传统向空间的形而上学研究的转变。海杜克的作品以其独特的方式与视觉抽象、语言类比和回归本原的主题相交织，同时揭示了空间概念的形成以及建构这些概念的设计策略和机制。

本书的写作以中、英文同时展开。两种文字各自定义了特定的空间和结构，因此很难在跨越语言界限的同时确保语感的一致。同时，语言还是文化背景的表现。在一种文字语境中耳熟能详的细节，或许在另一种文字中需要给予铺垫才能被读者理解。介于文字翻译之间的复杂性，本书保证了内容和论述结构的相符以及两种语言自身的流畅，但不是中英文的逐字翻译。

每一本书都在讲一个故事。本书要讲的是一个关于空间的故事，开始于19世纪末。当时，现代建筑运动正在社会、技术、科学、艺术的蓬勃发展酝酿。在这个充满可能性的时刻，空间的故事也将拉开帷幕。带着怎样的意向去阅读和听取，就可能会有怎样的收获。

ground, and the intervention itself establishes a spatial relationship. The last chapter was co-authored with Dr. Brian A. McNeil who, from the perspective of comparative literature, elevated the discussion of the ground with philosophical investigations of the relationship between the body, the ground, and the origin of architecture.

Case studies will be structured in two layers as the discussion progresses in the book. On an introductory layer, examples across design, biology, philosophy, linguistic studies, and various forms of arts will provide illustrations of the ongoing argument. On a detailed and in-depth layer, John Hejduk's early work will be examined to exemplify the departure of design thinking from the formalist tradition to the metaphysical investigation of space. Hejduk's work uniquely weaves the topics of visual abstraction, linguistic analogy, and the return to the origin, revealing the mechanisms within spatial conceptualization and design strategies.

This book is bi-lingual in Chinese and English. The two languages define a space and a structure of their own. Across the boundary between the two arise inconsistencies and irreconcilable differences. As a language reflects the cultural context that supports it, common references in one language may need details in another to make sense. In order to compensate for the complexity in translation as well as maintain the fluidity of the writing, the two versions will present the same content and argument progression without being a word-to-word translation to one another.

Every book unfolds narratively, telling many stories. The stories here will unpack architectural space, painting space, linguistic space, and the concrete existence of space. These spaces were anticipated in the late nineteenth century when the modern architectural movement was about to explode into dramatic developments in society, technology, science, and art. At this moment of possibility, the story of space will begin.

图书在版编目 (CIP) 数据

空间内外：视觉抽象·语言类比·还原 = Space

Within and Around: Visual Abstraction, Linguistic

Analogy, and the Return to the Origin / (美) 贺玮玲

著. -- 北京：中国建筑工业出版社，2025. 2. -- ISBN

978-7-112-30845-3

I . TU-024

中国国家版本馆 CIP 数据核字第 2025ZW7401 号

责任编辑：焦 扬

空间内外 视觉抽象·语言类比·还原

Space Within and Around: Visual Abstraction, Linguistic Analogy, and the Return to the Origin

贺玮玲 著

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中国建筑工业出版社出版、发行（北京海淀三里河路9号）

各地新华书店、建筑书店经销

北京海视强森图文设计有限公司制版

建工社（河北）印刷有限公司印刷

*

开本：787 毫米 × 1092 毫米 1/16 印张：24¹/₂ 字数：462 千字

2026 年 6 月第一版 2026 年 6 月第一次印刷

定价：198.00 元

ISBN 978-7-112-30845-3

(44546)

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