王昀 著

建筑与斗栱

Architecture and Tou-Kung

Wang Yun

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内容提要

斗栱作为中国传统建筑中木结构的基本构件，目前已成为中国传统文化的重要组成和富有象征意义的部分。然而斗栱本身的意义其实并不仅仅局限于此，作为一种建造概念和杆件搭接关系的呈现，实际上斗栱本身可以具有更加广泛的内涵。本书紧紧围绕斗栱的建造特性，以从中所抽取出的搭接关系作为空间转化的基础，将斗栱的建造观念与现代建筑中新的可能性展现做一系列实践性尝试。本书为建筑学专业的师生思考如何从传统的视点向现代建筑文化转换提供了一个重要及宝贵的参考。本书适合从事建筑、设计及历史文化研究的师生们阅读。

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Abstract

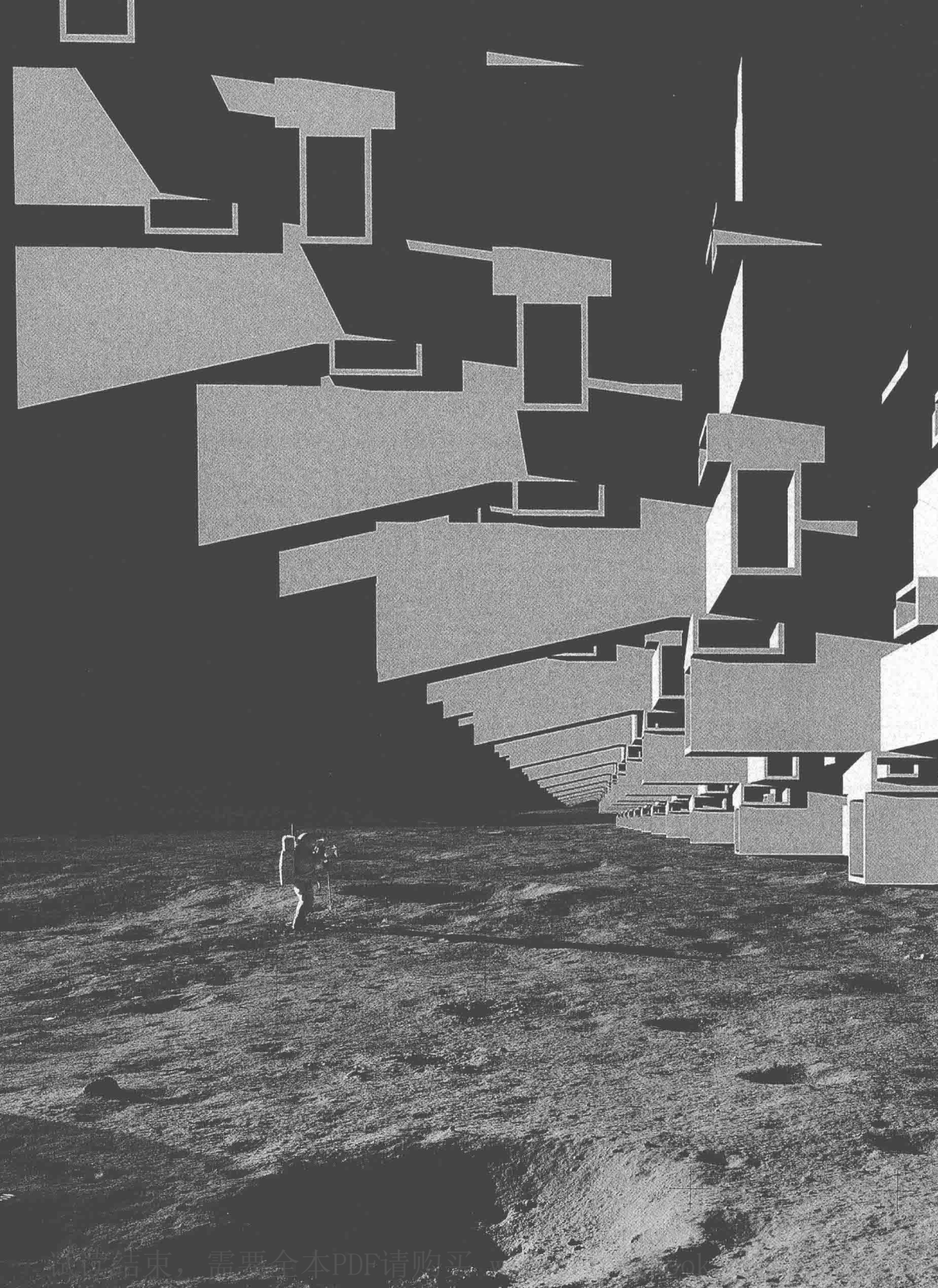
As the basic element of ancient Chinese timber construction, Tou-Kung (bracket set) has become one of the most important and significant components of traditional Chinese culture. Yet, its value is far more than that. Serving as the demonstration of building concept and bar joint, Tou-Kung actually can be of much wider connotation. Based on the joint relation drawn from Tou-Kung's structural characteristics, this book uses such spatial changes to conduct a series of practical experiments, to present the Tou-Kung's building concept and its potentials in modern architecture. This book provides valuable reference for architecture lecturers and students to think how to shift from traditional viewpoints to modern architecture culture. Its target readers include practitioners, teachers, and students in architecture, design, history, and cultural studies.

序　Preface

中国传统建筑真正的精华部分并不仅仅是一种建筑形式上的表达，而是在于一种建筑方式的思考与表述。由于中国的传统建筑是以木结构作为主要建筑材料和构造方式所形成的，因此其建筑的整体构成除了拥有一般意义上的传统建筑所应该拥有的基台、柱身和屋顶之外，木材与木材之间的连接方式和节点构成——榫卯，以及建筑本身在竖向上连接其柱身和屋顶之间的方式及节点构成——斗栱，已经获得与古希腊神庙中所采用的爱奥尼克、柯林斯柱式同样的意义。几千年来，在建筑文化发展的过程中，斗栱作为中国建筑的一种传统文化的象征物，一直成为历代工匠攀比建造技艺及显示时代辉煌与否的标志，同时其自身还隐隐地展示着建造的技巧，也是工匠之间彼此展示其建造技艺含金量的秘籍。进入20世纪后，尽管建筑材料变化及不同于木结构的建造技术兴起，斗栱如同古希腊柱式一样作为一种传统装饰性要素不仅不断地出现在其后的古典建筑中，还频频地出现在中国近代与当代的建筑实践中，以此来作为体现中华传统建筑文化的要素，并用以表述中华建筑文化的思想。近年来，基于流行于国际的建构文化，斗栱作为构建搭接的形式表达来看待，一跃成为一种新的建筑表皮的构成方式和展示与传递历史文明资讯的方法。然而，如果从一个更加宏观的视角来看，这一切均不过是囿于一种建筑的装饰性的思考。如果我们将建筑视为一种空间性的对象物，同时将斗栱本身所拥有的空间性特性强调并抽取出来，或许一种极具现代性的空间表达方式和途径便脱颖呈现。而将“斗栱”这一拥有中国建筑文化之化身级别存在的对象物，进行空间性的建筑呈现，便是这本《建筑与斗栱》一书的真正的目所在。

The Essence of traditional Chinese architecture is not only an expression in terms of architectural form, but also thinking and presentation of architectural approach. Timber is major building material and timber construction constitutes most of traditional Chinese architecture. Its whole construction not only has the standard platform, columns, and roof, but also includes tenon-and-mortise-the connection and joints between timber components, and Tou-Kung (bracket set) as vertical connection and joint between columns and roof, which bears the same meaning of Ironic and Collins orders in ancient Greek temples. For thousands of years of architectural culture development, as the symbol of traditional Chinese architecture culture, Tou-Kung has been the token of craftsmen competing building techniques for generations and a symbol to demonstrate the building era. Meanwhile, itself also speaks for the building techniques. Entering into 21st Century, although building materials keep changing and building techniques other than timber structures continue booming, Tou-Kung, like ancient Greek orders, has been showing up in classical architecture as traditional ornament. It often appears in modern and contemporary Chinese architecture practice as an element, and to embody Chinese architectural culture. Recently, popular international tectonic culture encourages Tou-Kung to be a new architectural skin and historical approach, beyond its joint form expression. Seen from a more macro perspective, all these are just limited to architectural ornament. If we regard architecture as a spatial object, emphasize Tou-Kung's spatial characteristics and draw them out, maybe a spatial expression approach featured with modernity will stand out. To present the spatial expressions of “Tou-Kung”, the Chinese architectural culture object, is why I write this book.

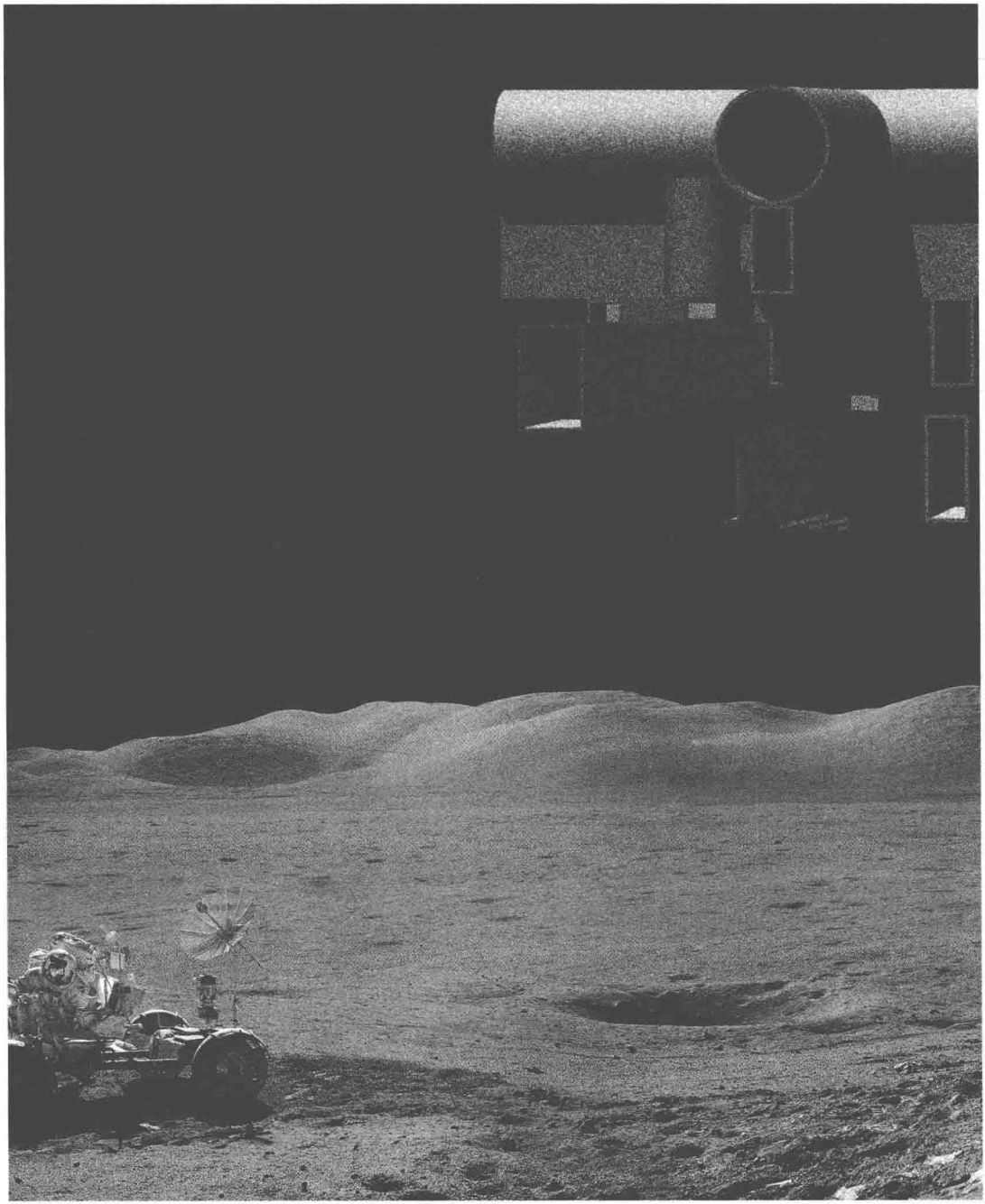
王昀
Wang Yun
2015年05月



如果我们放弃对于斗栱本身在微观和中观层面的功能性、象征性及实体性的理解，斗栱本身在宏观的空间性层面的能量将会得以完全释放

If we give up the obsession of understanding Tou-Kung's functionality, symbolism, and reality on microscopic and intermediate levels, the energy on the macro space level of Tou-Kung itself will be released completely

左图：斗栱本身所拥有的空间性特征呈现着一种未来性的指向
Left: Tou-Kung's own spatial features indicate future



斗栱本身的空间性表述具有未来指向
Tou-Kung's own spatial expression indicates future

导读 Introduction

纵观人类对于建筑的建造方式，大约可以归为以下五种。一是“编织”的做法。这种做法也是自然界中动物的建造本能之一，如鸟类筑巢所呈现的编织做法和形态，与人类的编织技术异曲同工。二是悬索的做法，蜘蛛和蚕蛹的成立或许可与此相类比。三是挖与凿的做法，这种做法可以与自然界中蚂蚁、蚯蚓的地下挖掘，兔子、田鼠等动物的掏洞筑窝相映照。四是砌筑的方式，这种方式与自然界中石蛾捡来沙子和贝壳等废物通过粘结而筑窝产生关联。五是夯土的方式，其过程与燕子筑窝产生联想，燕子用唾液来进行粘着的过程与人类的夯土技术惊人地一致，更指向未来的3D打印技术的基本原则。

中国传统建筑中的斗栱，作为一种柱身和屋顶之间的连接构件实际上是一种与编织体系相关联的杆件间搭接关系的体现。而在我看来，搭接关系作为一种观念存在的本身可以直接作为当代建筑的现代表现方式。本书也恰恰是依据这样的一种思考而做出的一种直接转换的实验和试做。为了直观地将我们的这种思考加以传递，具体地我们将宋代《营造法式》及清代《工程做法则例》中的斗栱做法进行重新整理，一共整理出56种斗栱的形态，根据这些整理后的斗栱搭接关系，进行进一步地单纯性整理，使得一种木制的斗栱关系成为一种具有抽象性的空间关系。在我看来，这种由于抽象而产生的空间关系本身，或曰：只有这种由于抽象而产生的空间关系本身，才是真正能够作为现代和未来的建筑空间构成要素得以传承的一切。本书将会根据斗栱的不同搭接形态，来重新抽象并作为空间的构成关系来进行展示。

Reviewing how we build architecture, there are generally five models. One is “weaving”, which is also one of animal’s building instincts. Weaving approach and form of birds nesting are similar to human’s technique. Second one, suspension, in a sense of spiders web and silkworm pupa. Then, digging and chiselling, which can be referred to ants and earthworm’s underground digging, and rabbits and field mice’s hollowing. Fourth, masonry, related to caddis fly sticking sands and shells. Last one is compaction, reminding us of how swallows build nests. The process of swallows using saliva to stick is exactly like human’s compaction technique, moreover, pointing to future 3D printing’s fundamental principle.

Tou-Kung in traditional Chinese architecture as a connecting component between column and roof, is actually a lap joint relation presentation of components connecting with woven system. To my view, lap joint relation as a perspective, can be used as contemporary architecture’s presentation. As it turns out, this book is a direct transfer experiment and test based upon the thinking. In order to intuitively deliver our thinking, we analysed Tou-Kung models listed in Song Dynasty *Ying-tsao Fa-shih* (Building Standards) and Qing Dynasty *Kung-ch’eng Tso-fa Tse-li* (Structural Regulations), and sorted out 56 Tou-Kung models. According to these Tou-Kung lap joint relations, we proceeded with collation, until the timber Tou-Kung relation became an abstractive spatial relation. To me, this abstractive spatial relation, or to be exact, only this relation can be regarded as modern and future architectural space components and legacy. This book will work on Tou-Kung’s various lap joint forms, and rethink space integration relation and showcase them.

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1

斗栱的搭接形态与搭接空间形态的转化方式

Tou-Kung's lap joint form and spatial converting approach

为了能够更加清楚地展示从斗栱到“搭接空间”形态的转化过程，这里我们针对斗栱本身所进行的空间表达过程加以展现。我们以“挑金造溜金斗科斗栱”为例。首先对其斗栱进行拆解，使其还原为一个个基本的构件（图1-1），并在此基础上，对其进行搭接组合，将斗栱的整体形态进行还原（图1-2）。

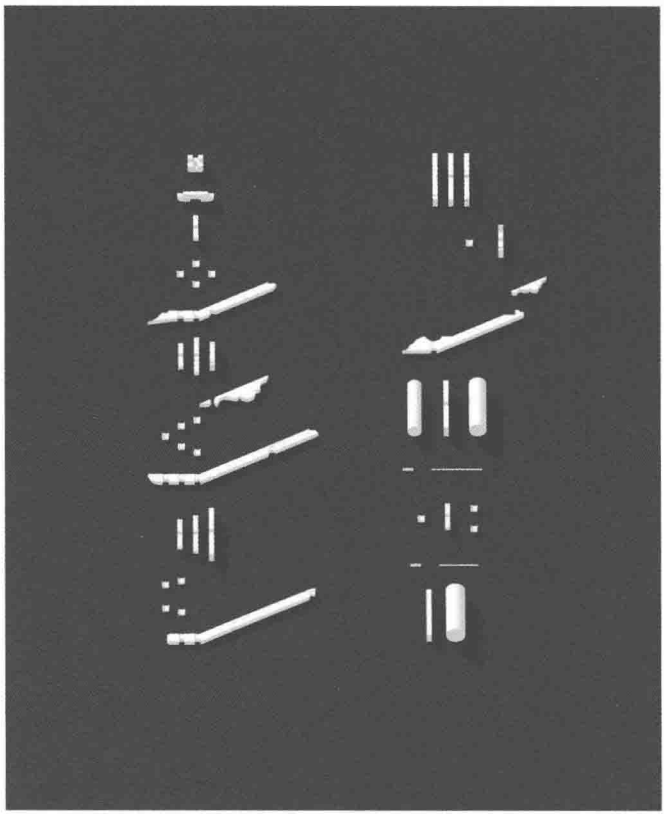

图1-1：将“挑金造溜金斗科斗栱”进行拆解，使其还原为一个个基本的构件
Figure 1-1: Disassemble “Tiaojin set Liujin tou set Tou-Kung” to basic components

Tou-Kung's lap joint form and spatial converting approach

In order to clearly showcase how Tou-Kung transfers to lap joint form, we're presenting Tou-Kung's spatial expression process in details. Take "Tiaojin set Liujin tou set Tou-Kung" as an example. First of all, disassemble Tou-Kung to basic components (Figure 1-1), then combine lap joints, and restore Tou-Kung's complete form (Figure 1-2).

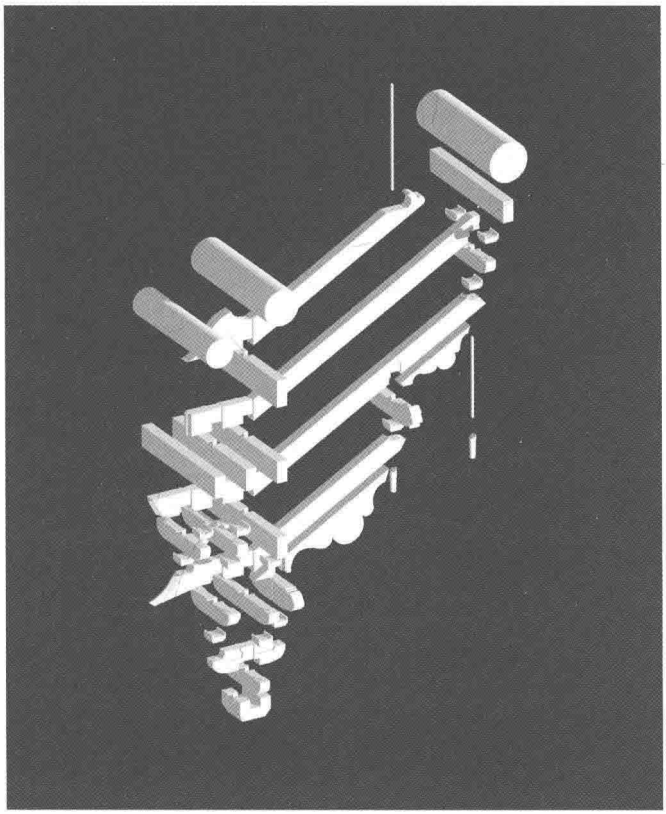

图 1-2：将斗栱的整体形态进行还原
Figure 1-2: Restore Tou-Kung's complete form

在上述步骤完成之后，我们重新对拆解后的斗栱的基本部件进行了空间化处理，即将每一个原有实心的斗栱的构件进行空间化处理形成有空间内容的（图1-3），继而将这些空间杆件依照斗栱的构成方式，再次重新加以组合，从而便形成了一种依据斗栱构成的逻辑关系而构筑的、拥有搭接构成关系的空间形态（图1-4）。这样的空间形态可以与建筑的空间之间形成明确的互换关系，并直接指向建筑本体。

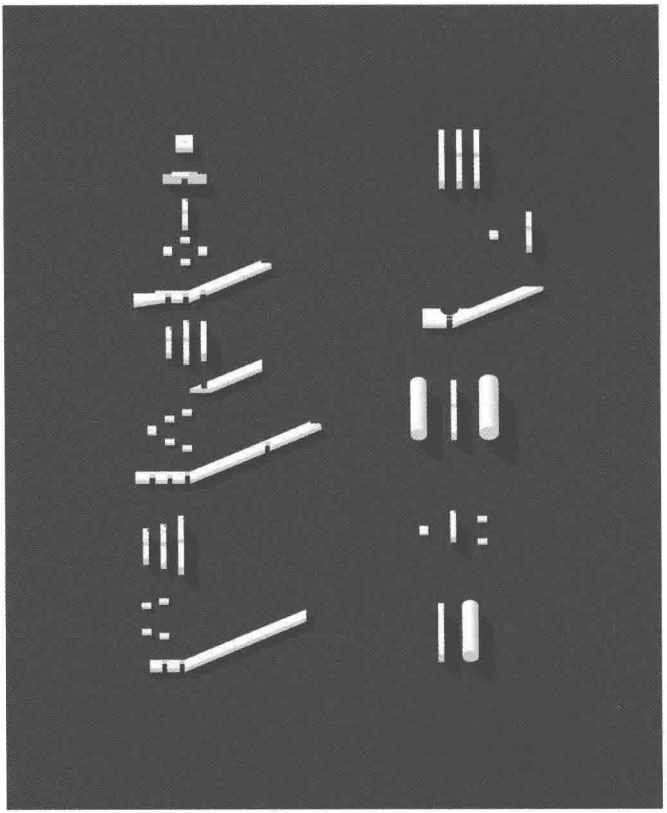

图 1-3：将每一个原有实心的斗栱的构件进行空间化处理形成空间杆件
Figure 1-3: Make the original solid Tou-Kung's components into spatial contents

We did spatial treatment to disassembled Tou-Kung's components, i.e. made the original solid Tou-Kung's components into spatial contents (Figure 1-3). After that, we regroup the components as Tou-Kung's integration, therefore built a lap joint relation spatial form out of Tou-Kung's logic (Figure 1-4). This spatial form echoes the architectural space, and directs to the building itself.

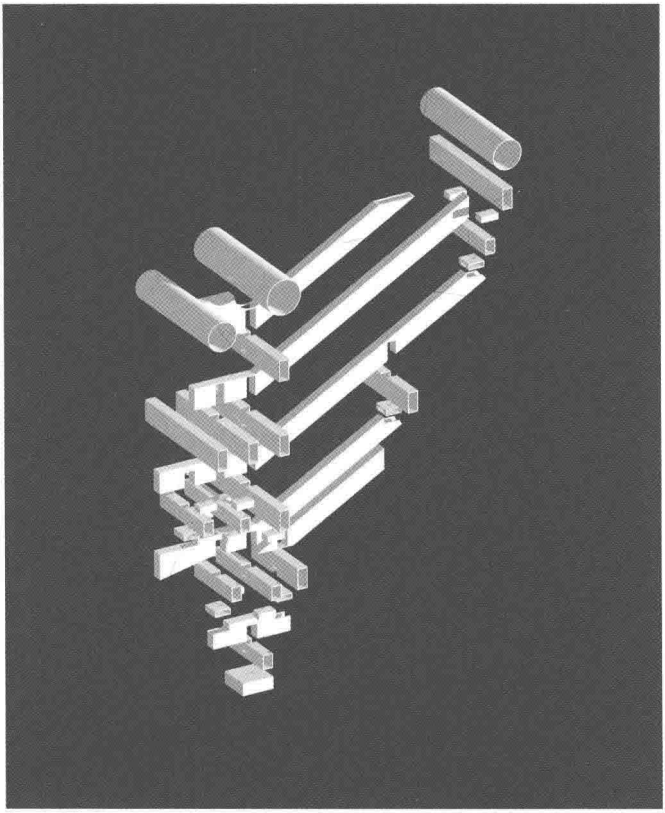

图 1-4：将空间杆件依照斗栱的构成方式重新组合
Figure 1-4: Regroup the components as Tou-Kung's integration