能量与热力学建筑书系
Energy & Thermodynamic Architecture

热力学建筑的视野下空气提案

设计应对雾霾

李麟学 周渐佳 谭 峥 著

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Air through the Lens of Thermodynamic Architecture

DESIGN AGAINST SMOG

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同济大学人居环境生态与节能联合研究中心资助（项目名称：能量形式化与热力学建筑前沿理论建构）
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序言

伊纳吉·阿巴罗斯

“设计应对雾霾”是个令人兴奋的标题，它使我们即刻开始重新思考设计在当代城市中扮演的角色。“热力学建筑视野下的空气提案”更是恰到好处地打消了人们最后的疑虑：这是在热力学原理基础之上设计空气，或是用空气进行设计。

李麟学教授为同济大学国际暑期课程提出的方案直截了当，激动人心。一些来自世界各地最权威建筑学校的优秀学生受邀，重新思考那个与时间密切相关，被现代人粗略定义为“空间”的概念，正在向物质性方向转变：空气是挥发性材料，而这种不稳定的物质，不过是由微小的颗粒构成。因此对它们的处理，可以通过物理和化学原理得以完成，也就是当代科学所描述的，能够最终决定生死和时间的热力学原理。

因此，“设计应对雾霾”可以说是一次从非材料化的情形出发，与生活和财富息息相关的设计邀请。这一方法对于上海来说尤为重要；在中国，热力学理论的应用已经不再是假设性的建议，而是与社会政治生活紧密关联的事件。如今，形态恢宏，装饰独特的花纹或肌理不再意味着建筑的品质。恰恰相反，品质存在于一种强烈、愉悦而多样的生活体验，以及一座将人们日常生活变得坦诚而亲切的城市中。

“中国城市向新常态回归”口号的提出，向保守主义和怀旧之情打开了大门。在对“旧日美好时光”的渴望和呼唤中，许多人从中受益。常态——假如如今还存在所谓常态的话，只能通过现实生活质量进行表达，并在物质文化中得以呈现。我们周围的物质，支持着我们的日常活动，并使它们成为一条引领人类进步的康庄大道。

对李麟学教授来说，热力学意味着更好的生活。既是一种建筑特质的别样呈现方式，又是一条建筑教学的独到路径，更是一种注视学科过去并对其现代性进行评价的方法。同时也是面对未来，寻找我们的科学知识何去何从的另一种方式，当我们在一个日新月异的城市发展环境中进行设计，城市发展速度和尺度已经将一切回头路和怀旧可能性断绝，既非过去，也非现代。我们就像一位孤儿失去了双亲，孑然而立，面临着没有传统也没有现代的矛盾二元对立状态。但是现在我们开始知道如何处理这种建筑材料，如何用空气建造我们的建筑。这种物质包含了一切潜力和维度，既是答案又是问题。

诚如所见，工作坊主题的提出及参与者的遴选非常高瞻远瞩。但是，用这种快速的学术模块化的暑期工作坊回应如此艰深的跨学科问题是否可能？手捧本书的读者也有权利质疑。作为一个聆听并广泛讨论过各个展出团队作品的评委会成员，我的观点是完全肯定的。学生们的热情、高水准和对知识的渴望，加上李麟学教授炉火纯青的团队管理技巧，催生了工作坊和著作的雏形。读者们也可以提前体会到未来时代的真实示例。在我看来的确如此，极富竞争力的一代人构想出可以象征室内和室外空间特质的设计形态，并且重新思考在新的公共边界中如何构建建筑类型和街道生活。这一切创意的集合表明，将热力学应用于设计是一种强大的工具，可以用其重新定义城市规划和设计中的失败过程，以及仍被人们广泛采用的技术。

Preface

Iñaki Abalos

DESIGN AGAINST SMOG is a provocative headline. It makes us immediately rethink the role of Design in Contemporary City. AIR THROUGH THE LENDS OF THERMODYNAMIC ARCHITECTURE, dispels any last doubt: It is about designing air or with air on a Thermodynamic Principles basis. No more, no less.

Professor Li Linxue's proposal for Tongji University International Summer School can't be any more thrusting or pertinent. What is he suggesting? A number of chosen students from some of the most prestigious Architecture Schools are invited to rethink that bastardly defined thing moderns called Space, subtly related to Time, now turned into a materially qualified something—Air, that volatile material, constituted however of particles and corpuscles, whose handling may attend to physic and chemical principles, described by contemporary sciences as the thermodynamic principles governing life and death, time in the end.

DESIGN AGAINST SMOG is therefore an invitation to broach Design from its most immaterial condition, those directly linked to Life and Wealth if I dare say. The approach is specially relevant to be developed in Shanghai and China, where the application of scientific thermodynamic criteria is no longer considered an abstract intellectual hypothesis, but a basic social and political matter. This days spectacular shape, ornamental pattern or textural frenzy, does not mean quality anymore. Very otherwise, quality relies in the pure experience of a differential way of life, intensified and pleasant, in a not so merciless city asked to become conspiratorial with people daily life.

"The return to a new normality in Chinese cities" has been spoken, and many have taken profit of this open door to conservatism and nostalgia, in a longing cry for "better past times". Normality, if something like that still exists nowadays, could only be expressed in real-life quality terms, and throughout a material culture. Materials surround us, support our quotidian activities, allow them to be a dignified real path to progress.

To Professor Li Linxue, Thermodynamics means better life. An other architectonic quality, other way of teaching architecture, of gazing the past and judging Modernity. Other way to face the Future and find the place our scientific knowledge drives to, while designing in a context of ever faster urban growing, already reached speeds and scales that make unfeasible any way back, any nostalgic reaction, nor this of the old neither that of the moderns. Orphans, parentless children. Left alone, with no tradition or modernity, we face a paradoxical duality. But now we start to know how to handle this building material, how to make our buildings out of Air. Both the solution and the problem, the material contents all the potentialities and dimensions.

As we already said, the posed subject of the workshop and the participants selection is as ambitious as it can be. But, is it possible to respond to all this deep cross-disciplinary questions through this fast-kind academic modules summer workshops are? The reader that holds this book in his hands has the right to answer himself back. My opinion as a Jury Member, who listened and largely discussed the exhibited team's work, cannot be other than positive. Passion, quality, and thirst for knowledge, lent on Professor Li Linxue's team managing adroitness, gave birth to embryonic workshop and book edition. The reader can taste what in my opinion is a unique true example of a future time to come given in advance. An extremely competent generation figures out the designed shapes that may embody interior and exterior spatial quality, and rethinks building typologies and street life within new public boundaries. This whole ensemble of ideas demonstrate that thermodynamics applied to design is a powerful tool to redefine failed processes and techniques some keep on working within urban planning and design.

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Thermodynamic Architectural Prototypes

Thermodynamic Architectural Materialism

Theory on Natural System in Architecture

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