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时空雕塑

Timescape

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摘要 ……

时空雕塑通过对建筑衰退的过程和潜能的自然探索来对几何雕塑进行变形。项目利用计算机技术对互锁砖的几何结构进行了研究,并生成3D模型,其结构采用当地材料——泥土、软木、沙子和水泥——构筑而成。这些材料以不同比例进行混合,并可在高压水流的冲击下进行分解。材料的形态学构造可以使雕塑的部分结构以坚固的混凝土为基础,起到结构支撑作用,而其他部分则相对脆弱、多孔且具有纹理。这一做法能够使建筑具有更多样的景观外貌,创造出系列有趣且具不确定性的非正式空间。

关键词 ……

建筑衰退; 互锁砖; 当地材料; 形态学塑造

Abstract ……

Timescape is a project that morphs geometric sculptures with nature to explore the idea of the picturesque and the potential of architectural decay. The virtual side of the project explores the geometry of interlocking bricks, generated from 3D pieces cast from local materials, such as earth, cork, sand, and cement, that will decompose from exposure to high pressures of water mixed at different ratios. The shifting morphological shape means that some parts will maintain a concrete structural base, while others are more fragile, porous, and textural. During the process of exposure, the architecture is sacrificed to wider landscape, creating a series of informal spaces that are both intriguing and uncertain.

Key words ……

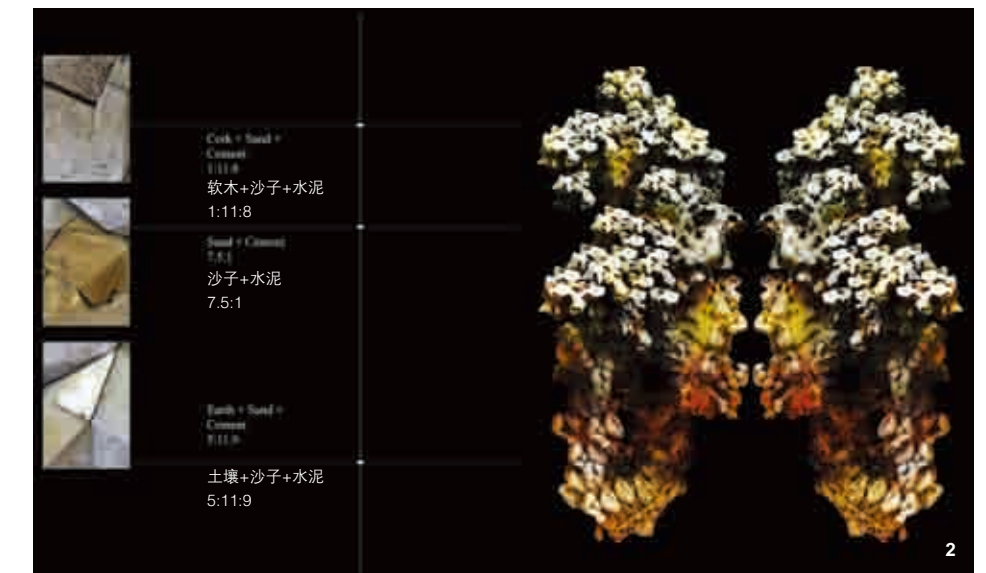
Architectural Decay; Interlocking Bricks; Local Materials; Morphological Shape

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Tutor: Daniel Widrig
School: Bartlett School of Architecture, University College London
Project Team: Bernardo Dias, Chiaki Yatsui, Qiuying Zhong
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1. 通过建筑对话的形式, 雕塑自身的衰退和残破也成为了风景中的一部分。
2. 材料说明: 3种不同类型的混凝土及其彩色降解图, 包括泥土—混凝土混合材料、软木—混凝土混合材料, 以及沙子—混凝土混合材料。

1. Own decay and imperfection are embraced through architectural conversation in scenery.
2. Material shortlist: three different types of concrete and coloured degrading map. Earth-mixed concrete, cork-mixed concrete, sand-mixed concrete.



葡萄牙科英布拉河沿岸坐落着一系列独立的雕塑和建筑。这些雕塑试图将城市肌理与当地国家公园连接起来,而这一点已被当地政府和规划者所遗忘。

本项目旨在探索自然环境中建筑衰退的过程和潜能。因为建筑必然会一步步衰退并渐渐不再完美,建筑真正的完结即是废墟。

特定的场地条件、轮廓鲜明/边缘明晰的城市结构,以及自然的形态建成为项目的数字化工艺界定了范围,并使人能够在这种过渡空间中感受到时间的变化。项目通过数字化技术对砖块的互锁性、结构性

和包覆性进行了探索。随后这些通过数字技术生产的砖由泥土、软木、沙子和水泥等材料铸造而成,这些材料以不同比例进行混合,并可在高压水流的冲击下进行分解。因此,原本边界清晰的变形接口也会逐渐模糊。由坚固的混凝土构成的部分保持其结构性作用,而就其他多孔的部分而言,由于它们的成分中含有一定量的软木并拥有具纹理的表层,水压冲击后会对其造成更加明显的分解效果。

砖块的铸造材料包括水泥、沙子、泥土或软木,生成材料的重量将取决于所添加的软木所占的比例。此外,这类融合材

料产生的肌理、结构、热工性能和空间品质开拓出了广阔的探索和研究领域。值得一提的是,与软木混合后,混凝土的热工性能将会显著提高。

铸造过程根植于建立在对传统的透彻理解基础之上的手工工艺与现代计算机概念的结合。这种具有创造性的新环境使我们能够通过技术和材料的运用开发出特定制造过程,然后将其体现在最终设计的各个层面上。

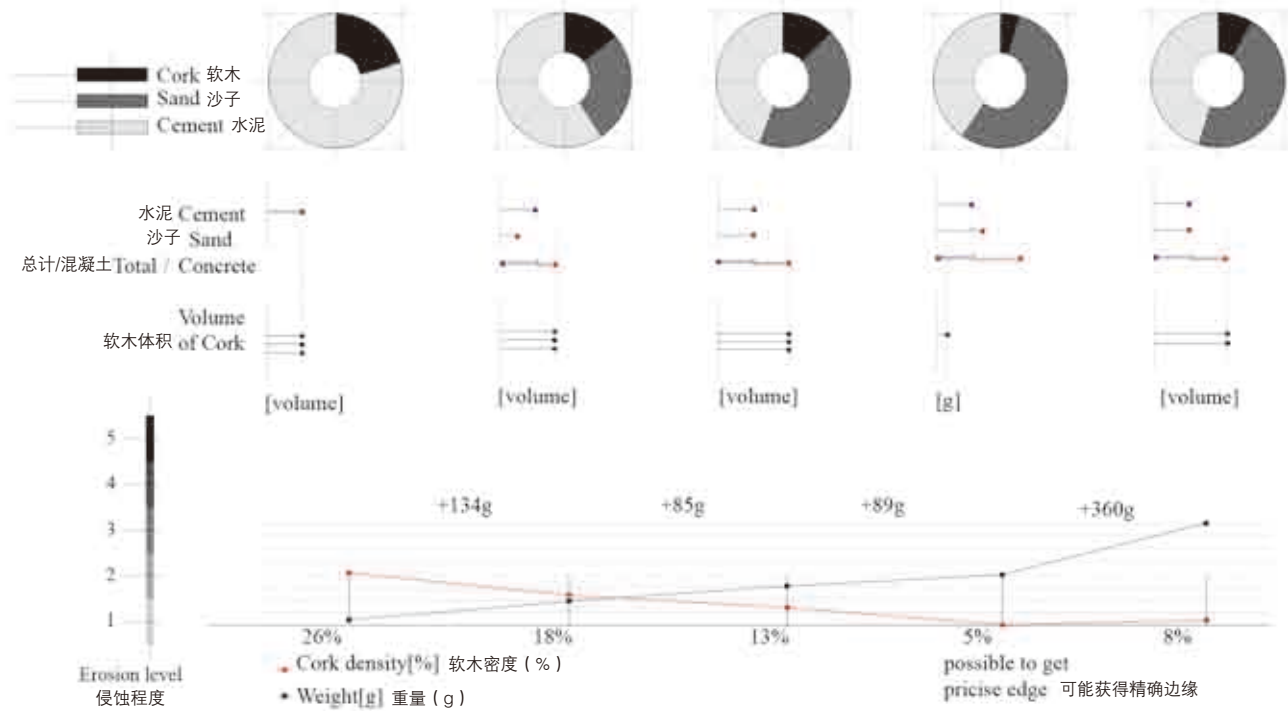
通过考虑对材料能量的控制能力,此项目专注于由手工工艺、数字制造和雕塑间的相互作用所产生的结果。我们意在创

Combination 组合
Cork + Sand + Cement 软木+沙子+水泥

10cmx7cmx21cm



1:0:3 (volume)	1:0.5:3 (volume)	1:1:3 (volume)	8:11:1 (g)	1:1:2 (volume)
300+0+80 (g)	300+150+80 (g)	300+300+80 (g)	320+440+40 (g)	480+480+85 (g)
78:21 (%)	56:28:15 (%)	44:44:12 (%)	40:55:5 (%)	46:46:8 (%)
380 g	514 g	599 g	688 g	1048 g



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造一种特定的、能够被其自身的残片和衰退所改变的建筑物；这种建筑物中积累着多种材料能量，部分已经耗尽，而另一部分依然充满活力。本项目中的结构衍生出了这个项目的形式，但随着时间的流逝，一种材料能量逐渐削弱，其他材料将取而代之，建筑可能开始变得倾斜扭曲，但无论其形状如何，都会在景观中显现其原貌。采用这种方法，空间将最终被改变以呈现出更多样的景观。这种非正式空间结构是颇为有趣且具不确定性的。目前尚

无法得知哪一种结构何时将瓦解，或被其他自然结构所取代。LAF

注释

- ① 本项目使用的所有材料由葡萄牙软木公司（阿莫里姆软木 <http://www.amorim.com/home.php>）提供。
- ② 伦敦大学学院巴特莱特建筑学院2013年3月建筑专业硕士毕业作品，第8研究小组（2012年9月-2013年8月）/第6研究小组（2013年9月至今）导师：丹尼尔·维德瑞格。（相关信息参见：<https://www.bartlett.ucl.ac.uk/architecture/programmes/postgraduate/units-and-showcases/march-architectural-design/cluster8/2012-2013/index.>）
- ③ 贝尔纳多·迪亚斯、谷井千晶、钟秋莹毕业论文《时空雕塑》阅览地址：<http://issuu.com/chiakiy/docs/pqchiakiyatsui10242013timescapebook>。



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3. 软木—混凝土混合材料的混合过程分析
4. 原始几何结构和经水压冲击实验后的结构
5. 3D打印模型、互锁部件和单独部件
6. 场地中沿河岸分布的3D打印模型
7. 沿河岸分布的空间场景模拟
3. Material analysis for cork-mixed concrete
4. Water jet experiment with primitive geometry
5. 3D printed models, interlocked pieces and singular pieces
6. 3D printed model in the site along a river
7. A scenario for space along river

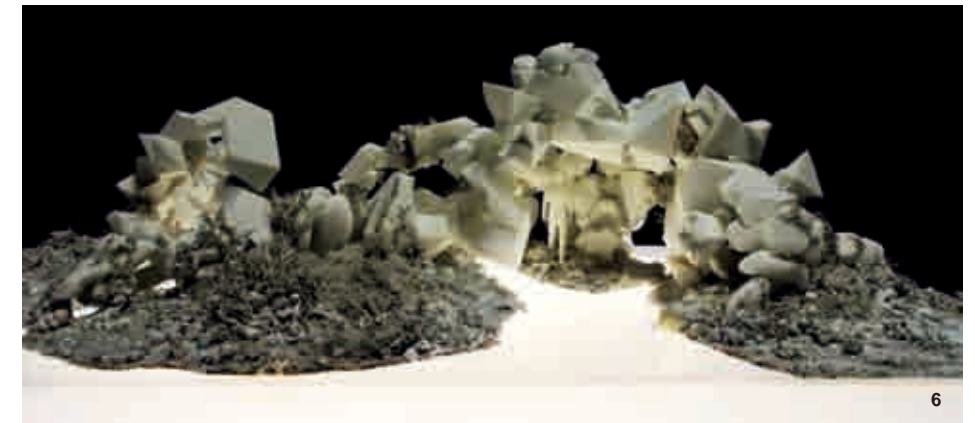
A series of autonomous sculptures and structures are located along the riverbank in Coimbra, Portugal. The sculptures work to connect the urban fabric with the local National Park, which has largely been ignored by local authority and planners.

The project explores the idea of the picturesque and the potential for architectural decay in an immersive natural environment. Architecture must embrace its own temporality through a release from perfection that limits the affects of change over time. The only truly finished building is a heap of rubble.

The project site conditions, the sharp / edgy urban fabric and the morphogenesis of nature helped to define the boundary for developing a digital craft able to interface the transitory moment created in this in-between space. The digital aspect of the project explores the idea of a brick able to



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interlock, be structural, and clad. The digitally generated pieces are cast with materials like earth, cork, sand, and cement which, used in different ratios, led to new kinds of textures and material constructs through deliberate decomposition by water jets. The transitions between clearly defined and morphing junctions are achieved within the same

system. The concrete-based parts maintain their structural integrity while more porous parts, because of the amount of cork in their composition, break down when exposed to water pressure.

Using cement or sand, together with either earth or cork, the density of material changes depending on the amount of cork added.



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Moreover, the texture, structure, thermal potential, and spatial quality generated by this kind of materialization opens up a broad field of exploration and research. It is important to note that mixing cork with concrete can increase the thermal performance of concrete.

Casting also allows for a hands-on craft rooted in an understanding of both traditional and contemporary computational concepts. This type of creative environment allows us to develop a process specific to the technology and materials available, a practice that is reflected in the final design.

By considering how to control material energies, the project is interested in the debris created from the relationship between handmade, digital fabrication, and sculpture. We seek to generate a particular architecture that is transformed by its own debris and decay, an architecture of accumulation of varying material energies, some spent and

others vital. It will have structures that initiate the form, but over time give way to other structural components. As one material energy saps away and others take over, the architecture may begin to rake and twist, whatever shape it takes, to reveal its origins in the landscape. In this way, the space may eventually be sacrificed to the wider landscape. What is left is an architecture of informal space, intriguing and uncertain. It is not known when one structure will collapse or be taken by other natural structures. **LAF**

NOTES

- ① Portuguese Cork Company (Amorim Cork <http://www.amorim.com/home.php>) for all the material support.
- ② The Bartlett School of Architecture, MArch Graduate Architectural Design, University College London, Research Cluster 8 (September, 2012 ~ August, 2013) / Research Cluster 6 (September, 2013 to present) Tutor: Daniel Widrig. <https://www.bartlett.ucl.ac.uk/architecture/programmes/postgraduate/units-and-showcases/march-architectural-design/cluster8/2012-2013/index>
- ③ *Timescape*, the thesis by Bernardo Dias, Chiaki Yatsui, Qiuying Zhong: <http://issuu.com/chiakiy/docs/pqchiakiyatsui10242013timescapebook>.



8. 如画的景观和雕塑的有机形式，人们通过对自然的体验来感受雕塑的变化。
9. 时空雕塑内部景观
8. The picturesque landscape and organic forms indicate that the way they are perceived through the experience of nature.
9. Interior scene of Timescape