

设计一处河流花园 ——瑞士日内瓦艾尔河修复

DESIGNING A RIVERGARDEN — RENATURATION OF RIVER AIRE, GENEVA, SWITZERLAND

Superpositions集团 / Group Superpositions

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摘要

在一处自古就用于农业生产的山谷中，艾尔河静静流过。自19世纪末起，其被逐步开凿为运河。2001年，日内瓦市政府举办了一场竞赛，旨在拆除渠化运河，使艾尔河恢复最初的形貌。我们却提出将运河与开阔的河流改道空间相结合，并将新河床与昔日运河中的一系列花园联系起来。整个设计最终呈现为一个线性花园，其将环境、视野与现状组织起来。而运河的痕迹则是构建必要的宁静氛围和内在价值的关键元素。

我们提出一种启动形态，这种形态强调河流流线与现有地形之间的相互作用。基于渗流原理，我们以一组菱形图案为基础，为水流开凿出一系列复杂而流向不定的河道。河水的流动带动了各种材料、碎石和沙子的位移，最初的菱形几何矩阵也转变为极其多样的河流地貌。

关键词

河流花园；叠加；启动形态；运河的痕迹

ABSTRACT

The River Aire flows through valleys historically devoted to farming. From late 19th century, it was progressively canalized. In 2001, State of Geneva opened a competition with the idea of restoring the river to its original shape by destroying the canal. We instead proposed to combine the canal with a vast divagation space for the river and associate the new riverbed and a series of gardens in the former canal. The whole design becomes a linear garden that organizes situations, views, and presences. The canal footprint is a key device for building the necessary calm and interiority.

We proposed a launching pattern whose form addresses the play between the river flow and the prepared terrain. This diamond-shape diagram based on the percolation principle opens a complex series of undetermined channels for the flows. The river flows displacing diverse materials, gravels, sand and the initial geometrical matrix of lozenges gives birth to an extreme diversity of the fluvial geomorphology.

KEY WORDS

Rivergarden; Superpositions; Launching Pattern; Canal Footprint

译 汪默英

TRANSLATED BY Moying WANG

在日内瓦南部一处自古就用于农业生产的山谷中，艾尔河静静流过。从19世纪末到20世纪40年代，为了控制洪泛，艾尔河被逐步开凿为运河。2001年，日内瓦市政府举办了一场非公开竞赛，旨在将艾尔河恢复到一种更自然的形态。事实上，这次竞赛所隐含的真正意图是通过拆除运河并重现河道原有的蜿蜒曲折，使其恢复原始的形貌和状态。而这—未言明的需求主要出于对不自然的直线型河道的厌恶。它代表了一种回归，这种回归源自于一个根深蒂固的理念——回归纯自然状态是必要的，也是可能的。归根结底，所有这些的根源是一种“对失乐园的追寻”。

但我们否定了这一建议方案，转而将现有渠化河道与开阔的、全新的、平行的河流改道空间相结合。在设计过程中，运河的形态成为了转变的标志，它标示出一条参考线，使人们可以区分和理解其转变前后的状态，同时也向人们展示了两种状态的叠加过程。

我们认为，任何项目都会改变场地既定的状态，但任何转变都不能使其回归之前的、所谓的历史或原生的状态。也正是这一主张，让我们赢得了竞赛。

20世纪80年代，在安德烈·科博斯和伯纳多·塞齐的影响和启发下，瑞士日内瓦大



1. 河流及运河总体鸟瞰
1. General view of the river and the canal



2-1

2. 艾尔河初始状态
3. 概念方案：现有运河及新的河流
4. 总平面图



2-2



2-3

项目地址：
瑞士日内瓦
项目面积：
50hm²
项目委托：
日内瓦市政府
项目团队：
Georges Descombes、Descombes & Rampini工作室
股份有限公司（建筑设计）；B+C工程股份有限公司、ZS
土木工程股份有限公司（工程施工）；Biotec股份有限公司
（生物咨询）
建设时间：
2001-2016年

LOCATION:
Geneva, Switzerland
AREA (SIZE):
50 hm²
CLIENT:
State of Geneva
PROJECT TEAM:
Georges Descombes, Atelier Descombes & Rampini SA
(Architect), B+C Ingénieurs SA, ZS Ingénieurs civils SA
(Engineers), Biotec SA (Biology)
CONSTRUCTION PERIOD:
2001 - 2016

学建筑学院就这种设计观念进行了严格的实验。首先，他们就油画修复方法在建筑设计上应用的可行性进行了测试。随后，他们又将这一方法推广并应用于整个地形设计中，逐步形成了由艾丽莎·罗森伯格命名的“地形学猜想”，以使得对场地的描述及所提出的转变形式均经过深思熟虑和精确操控。这种方法为选择需要彻底改变或强化的地点提供参考。在这一对干预措施施行的背景进行深入分析的过程中，历史资料、规划方案、图像，以及对场地现状的观察和测绘都被考虑其中。

根据以上实验结论，我们首先在朗西花园进行了测试，花园中也包括了位于艾尔河流域的隧道和桥。我们的设计方案同时呈现并包含了花园的现有状态和预期转变。换句话说，解决方案并不是要抹去问题，而是将

现状条件与预期转变相叠加以凸显河流的变迁。在朗西花园，复杂的隧道和桥类装置就像一个长长的入口，贯穿河堤（隧道），横跨溪流（桥），同时唤起人们对项目实施前的场地原始状态的记忆。

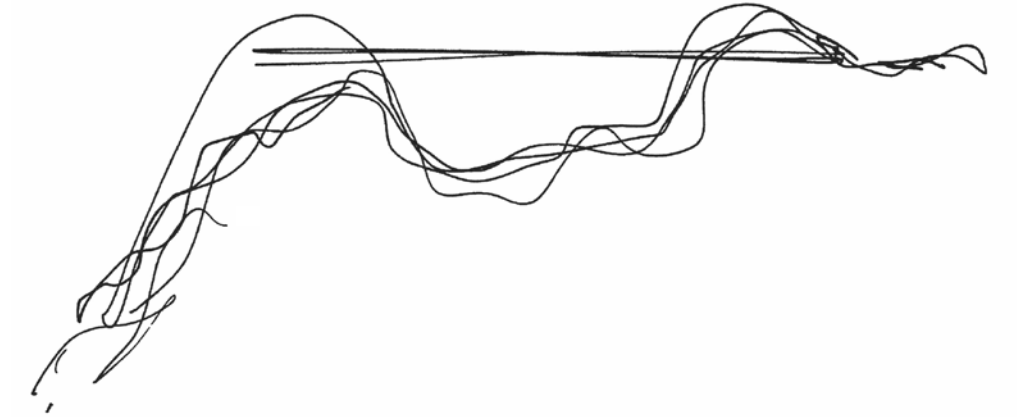
与此相类似，艾尔河项目试图推翻竞赛中所隐含的意图：纯粹的否定——对地域的否定，对自身历史的否定，以及对河流形成而后随时代变迁这一逐步积淀的过程的否定。我们的设计反对那些破坏文化、建筑遗迹及其环境形态之间联系的行为。

当然，“官方”对项目的评判存在纲领性的倾向，即对于生态的重视。在这一标准下，环境改善的合理的必要性盖过了所有其他考虑。将自然和文化对立起来成为了现今一种新的设计通病。

我们的项目试图另辟蹊径，将迫切的

生态环境改善纳入更大范围的文化变迁之中。设计方案通过复杂的组织结构，将新的河流空间与之前在运河旁排成一列的系列花园融为一体。设计最终呈现为一个完整的线性花园。

景观史学家约翰·迪克逊·亨特曾提出“三种自然”的观点，“花园”即为这三部曲之一。面对河流的整个流域、山地的原始地形，以及人类改造的痕迹，这个长长的河流花园组织起了场景、视野、冲突、现状及材料，并呼吁人们认识到与那些脆弱而值得珍视的地域相关的问题、忧虑和希冀。如果没有必要的宁静氛围和内在价值，这里就算不上实际意义上的花园。最终方案组织起了一系列不同的区域和路径，可合理地分流人群及组织动线。



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运河的痕迹是构建这种内在价值的关键元素。一处永久性的痕迹界定并塑造出了一系列情境，将场景引入某个复杂的瞬间，这个瞬间承载着过去和未来，记忆与愿望。（1998年，在设计阿姆斯特丹拜耳马纪念馆时，我们就曾尝试去揭示场地和在此发生过的事件的痕迹。我们保留了飞机在社区中坠毁后破坏建筑的痕迹——这一痕迹既是对过去记忆的唤醒，也代表了新的希望，承载着那些看似已被摧毁但仍然留存至今的内在。）如何对这种痕迹和场地的记忆加以利用却是一个非常棘手的课题。我们不能将之理解为对过去状态的复原，相反，它所代表的是一种由各类因素共同作用而带来的转变。

因此，若干野性而震撼的情境被引入

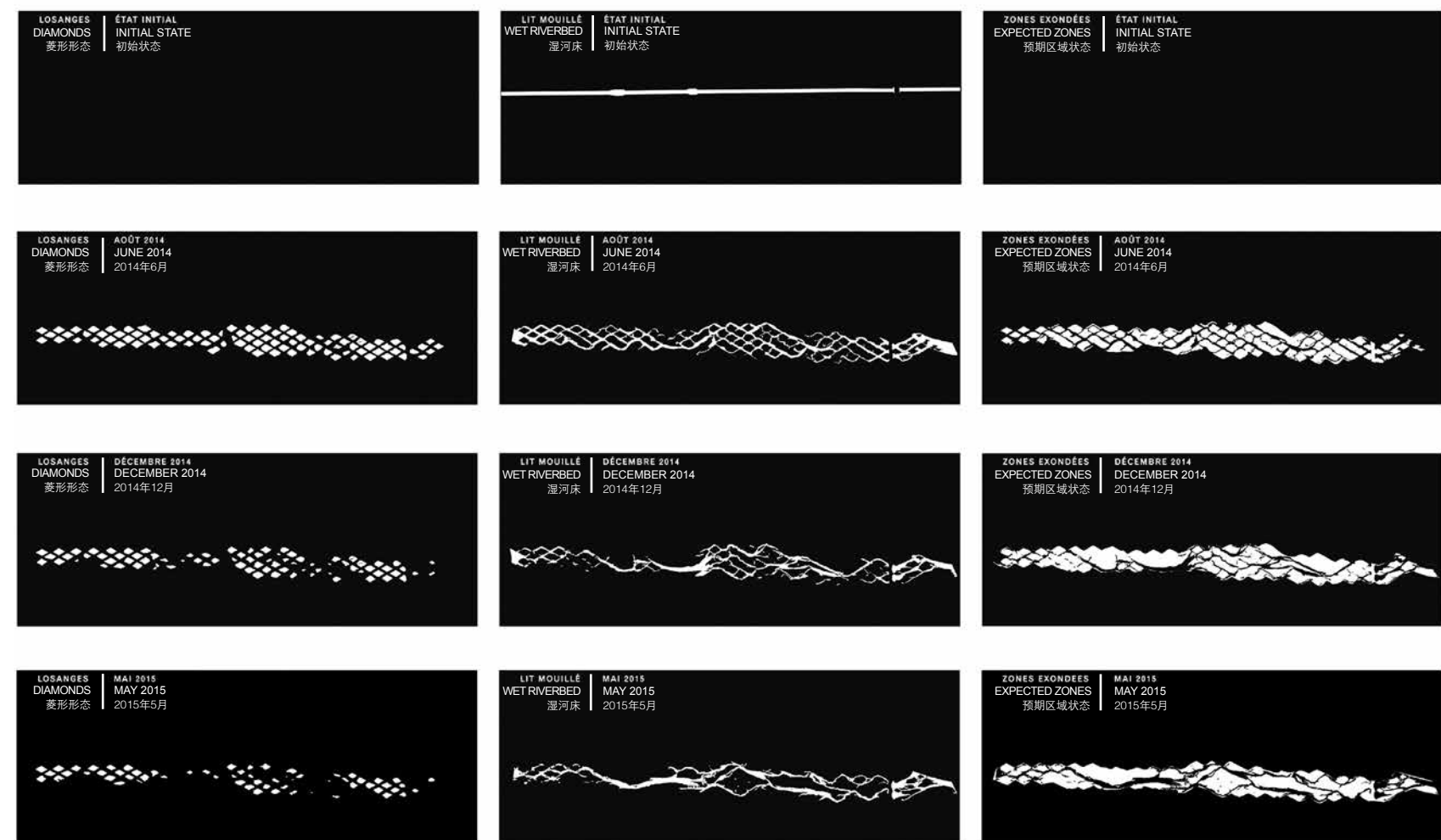
到所选地块中。通过塑造新的感觉和渲染情绪，我们期望能够不断地吸引参观者的注意，使他们对场地产生新的理解。我们试图创造一种自然而然产生的记忆过程，以连接时间和空间。这些刺激点激发了人们对未来的预期，同时也唤起其心底被掩盖和遗忘的经历。混凝土板悬伸于水面上，邀请人们“走近去听、去闻、去触碰水流”。我们的设计力图唤醒人们所有的感官，“当一个小男孩屈膝触碰水流，兴奋地叫道‘河！’，这幅画面多么美好。”

在整个长达5km的项目中，我们构建了大量的调控机制和设备，以确保对河流的控制，保障附近的日内瓦市中心城区的安全。

该项目中由多学科组成的团队功不可

5. 针对运河形态的推衍展开的研究
6. 河流启动形态
7. 河水从塑造而成的地形中流过

5. Study of the evolution of the river morphology
6. The launching pattern of the river
7. Water flows through the designed terrain



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没，其成功地实现了安全保障及在生物、生态方向全面提升的目标，包括对土壤质量精确而关键的控制，以及为避免场地基底大幅位移所做的尝试。此外，为修筑新河床挖掘出的材料几乎全部被回收利用于大坝改造中。

在河床本身的设计和施工过程中，两个连续阶段的设计成果创造了两种不同的途径。显然，“设计一条河”是一种颇有趣味的措辞，因为河流往往喜欢自由而完美地设计自己的路线。我们意识到，设计和建造固定的河床是徒劳的，尽管这是工程师（通过科学的计算）或者景观设计师（通过田园式的拟态映射）经常采取的方法。我们尝试着在第一阶段挖掉腐殖土层，而让河流本身自主完成剩下的工作。结果证明这是一项完美的河流设计。

然而，河流自身的设计过程显然主要依赖水流冲刷，因此需要经历一定的时间。但政府环境部门却并无耐心等待，催促我们去寻找一种途径，以更快获得更具多样性的新河床。

为了找寻解决方案，我们参考渗流现象（液体穿过多孔材料），并进行测绘和建模，最终设置了一组菱形图案，为水流开凿出一系列复杂而流向不定的河道。

我们沿着整个新的河流空间挖掘这些河道，并保持对河流纵剖面的精确操控。这些菱形岛屿的规模经过设置可“适应”河流原本的蜿蜒程度。

艾尔河呈现的最终状态令人惊叹，它彰显了土地艺术家的设计策略，明确地将人为干涉转化为自然状态，并将之后的工作交给自然本身的侵蚀作用。我们的项目展现出一种对于所有工作的融会贯通：我们只是创建了一个图案、一种启动形态，以此来激发河流流线与现有地形之间的相互作用。

新河流空间开始演变后的6个月，结果甚至超出了我们最理想的预期：河水的流动带动了各种材料、碎石和沙子的位移，菱形几何图案也随时间被显著改变。

我们必须接受这个悖论：给定的启动网格形态越分明，河流就越会自由地完成自身的设计。LAF



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The River Aire flows South of Geneva through valleys historically devoted to farming. From late 19th century to the 1940s, the river was progressively canalized to control flooding. In 2001, the State of Geneva opened a restricted competition to return the river to a more natural form. In fact, the general implicit idea of the competition program was really to restore the river to its original shape and settings, by destroying the canal and redirecting the flows into the former meanders. The main justification for this undeclared demand was the aversion for the unnatural straight line of the canal. It represented a kind of return, based on the well anchored conviction that it is necessary and possible to go back to

a state of pure Nature. A search for a lost paradise was, in fact, the narrative behind all this.

Refusing this suggested solution, we instead proposed a plan which combined the existing canal with a vast, new, parallel divagation space for the river. In the process, the canal becomes the pointer for the transformations, a reference line giving the visitor a possibility to understand, to feel the before and after, and becoming which superimposes both situations.

We won the competition with the assertion that any project shifts the given situations, and is not a return to the former so called historical, original state of the things.

8. 2013年10月至2015年8月拍摄的一系列航空照片
9. 河流鸟瞰图
10. 在河边嬉戏的人们

8. A series of aerial photographs taken between October 2013 and August 2015
9. Bird's eye view of the river
10. People playing on the river



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In the 1980s, this design attitude was seriously experimented at the School of Architecture at the University of Geneva, Switzerland, under the illuminating influences of André Corboz and Bernardo Secchi. At the beginning, possible applications of painting restoration methods were tested on architectural designs. Then, enlarged and applied to the whole territory, it progressively gave birth to what Elissa Rosenberg named a topographical imagination, where the description of situations and the proposed transformations were carefully thought out and controlled. This approach became the basis on which selected points of radical modifications or intensifications



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were chosen. In this patient examination of the context of the interventions, historical documents, plans and images were taken into consideration as well as the existing on-site observations and measurements.

Tested first at the Lancy garden, with the tunnel and bridge in the watershed of the Aire river, the design proposals evoke and contain both the given situation and the proposed shift. In other words, the solution does not erase the problem, but the superimposition of the given and the transformed makes the displacements more apparent. In Lancy, the complex tunnel and bridge device functions like a long threshold, penetrating the embankment (tunnel), and crossing the stream (bridge), and an evocation of the existing situation before the project was implemented.

Similarly, the aim of the Aire river project is to try to reverse what was implicitly planned in the competition: merely negations — negation of the territory, of its history, of the gradual sedimentation of its formation and transformation through the ages. The design opposes the destruction of all connections between the cultural and architectural traces and the overall morphology of their context.

The “official” justification for this programmatic inclination was, of course, an ecological one, in which the legitimated necessities of environmental ameliorations submerge all other considerations. It is a very common new disease nowadays, which implies an opposition between nature and culture.

Our project attempts to propose an alternative path, where the urgent ecological shifts are incorporated into a larger cultural change. The complex organization of the design associates the new river space and a linear series of gardens in the former canal. In reality, the whole design becomes one linear garden.

Garden understood as one part of the trilogy of the three natures, as recalled by John Dixon Hunt, a landscape historian. Facing the whole watershed, the original morphology of the mountains and the traces of the human modifications, this long rivergarden organizes

the situations, views, confrontations, presences, and materials, aiming at introducing into these fragile and precious territory questions, worries, hopes. The necessary calm and interiority, without which there is no real garden, yields organized sequences of differentiated places and paths allowing a reasonable distribution of people and movements.

The footprint of the canal is a key device for building this interiority. A permanent trace, which limits and frames a succession of situations, introduces a complex temporality, both past and future, memory and desire. (In 1998, we tried to reveal the traces of the site and its events in the design of the Bijlmer memorial, in Amsterdam. After the crash of an airplane into a housing complex, we kept the footprint of the destroyed building — this trace, as both an evocation and a new hope, bears something which has disappeared and yet still remains.) This use of traces, this memory of the places, is a very delicate task to manipulate or use. It must not be understood as a return to the past, but instead the becomings suggested by these encounters.

For that reason, a certain number of brutal, shocking situations have been introduced at certain chosen places to continually renew the attention of the visitors, to impose a new understanding of these places, through a new feeling and an emotional impact. We try to launch an involuntary memory process, the one able to shortcircuit time and space. Such provocations divert expectations, and also wake up deeply covered, forgotten sensations. A concrete slab cantilevered above the water asks you to “come near and hear, smell and touch the flow.” This is an attempt to awake all senses and “what a joy, when a young boy kneels and touches the flow and says ‘river!’”

All along the five kilometers of the project, one encounters a great number of



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constructed interventions and devices that guarantee the control of the river and provide security against the floods for the nearby city center of Geneva.

The necessary multidisciplinary composition of the team in charge has successfully achieved this goal of security, as well as the full range of the biological and ecological improvements, including a precise and decisive control of the soil

- 11. 运河鸟瞰图
- 12. 孩子们向运河中掷石子
- 13. 人们在运河花园中骑行
- 11. Bird's eye view of the canal
- 12. Children enjoying throwing stones to the canal
- 13. People biking in a canal garden



14. 运河水花园中的植物群落
15. 堤坝内侧

14. Flora of water gardens in the canal
15. Dikes interior

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quality and an effort to avoid any major displacement of the substrates. A nearly perfect equilibrium has been achieved between the material excavated for the new riverbed and their reuse for the construction of the different dams.

As for the design and construction of the riverbed itself, two successive phases of realization have produced two different manners. Obviously, "to design a river" is an intriguing term, as a river usually loves to design itself freely and perfectly. Conscious of the useless efforts to design and build a fixed riverbed — an approach often taken by engineers (through scientific calculation) or landscape architects (through pastoral mimetic reflex) — we try, in a first phase, to excavate the layer of humus and let the riverflow do its job. And the result was a perfect river design.

But, of course the river designs mainly during floods and consequently the process can take, certainly will take time. Impatient, the state environmental department urged us to find a way to get more quickly a more diversified new bed.

Fishing for an answer, we took into consideration the phenomenon of percolation (a liquid passing through a porous material) and we made drawings and models and finally designed a diamond-shape pattern which opened a complex series of undetermined channels for the flows.

These channels were excavated along the entire new river space, maintaining a precise control of the longitudinal profiles of the river. The dimensions of these lozenges islands were configured to be able to "accept" the sizes of the former meanders.

The result is spectacular and suggests the devices of land artists, effecting clearly artificial interventions into a natural situation, thereafter left to the mercy of natural forces of erosion. In our project, there is a familiarity with these works and an intersection: we just created a diagram, a launching pattern, whose forms address the play between the river flow and the prepared terrain.

Six months after the opening of the new river space, the results are beyond our most optimistic expectations: the river flows, while displacing diverse materials, gravels, sand and over time the geometrical matrix of lozenges is significantly modified.

We must accept this paradox: the more defined the launching grid given, the more the river will be free to design. **LAF**



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