ILA&UD

International Laboratory
of Architecture
& Urban Design
国际建筑与城市设计实验室

Discontinuity in Contemporary Cities

The ILAUD Experience: Shanghai's Urban Voids as an Opportunity for Regeneration

当代城市的不连续性

ILAUD 经验：上海的城市空间及再生的机遇

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Discontinuity
in Contemporary City

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3. Learning with *GreenUP*. An Urban Design Strategy for Vertical Edible Green

Giacomo Pirazzoli
DiDA – Department of Architecture, University of Florence.

GreenUP is an applied cross-disciplinary research on vertical edible green infrastructure initiated at CrossingLab DiDA-University of Florence by professors Giacomo Pirazzoli (Dept. of Architecture) and Paolo Grossoni (Dept. of Agriculture), presented for the first time at Governing the Large Metropolis international conference in Paris, 2012. One year later, *GreenUP - a Smart City*, the first Internationally endorsed book, was published by Allemandi International (Turin-London-New York)(Pirazzoli & Grossoni, 2013). An early cross-media platform – including a video by Filippo Macelloni with drawings by Agnese Matteini: https://vimeo.com/87993255[1] – provides support for workshops, courses and seminars – mainly carried on internationally, from France to Germany, Australia, China, the US, Brazil etc. – besides being presented at a TEDx conference and the International Climate Change Conference in Rio de Janeiro, etc.

As a holistic urban farming design strategy, *GreenUP* has been developed mostly vertical due to the lack of horizontal farming land within metropolitan areas. Being an innovative way to design new buildings, *GreenUP* turned to be also a good way to interconnect existing horizontal and vertical green, create a new edible landscape across passages and walkways, and finally provide public, semi-public and private vegetable gardens within the existing urban fabric. *GreenUP*, a systemic and affordable edible urban infrastructure, may be better understood through keywords such as *biodiversity, food resilience, climate change, intergenerational dialogue, community building* etc.; it matches up to nine United Nations Sustainable Development Goals, including: No Poverty; Zero Hunger; Good Health and Well-Being; Clean Water and Sanitation; Reduced Inequalities; Sustainable Cities and Communities; Responsible Consumption and Production; Climate Action; Partnership for the Goals.

Presently we are implementing several strategic partnerships to face new challenges on biodiversity, mainly with Archeologia Arborea Foundation, Italy, as well as with Italian CNR-National Research Council; regarding nutrition issues and well-being, with the Italian Ministry of Health, as well as with EMBRAPA (Hortaliças

GreenUP启示：垂直可食用绿化的城市设计策略

Illustrations: All images are by the author

贾科莫 · 皮拉左里
意大利佛罗伦萨大学建筑系

GreenUP是有关垂直农业的绿色基础设施应用跨学科的研究，由佛罗伦萨大学建筑系贾科莫·皮拉左里教授和农业系保罗·格罗索尼教授尼在CrossingLab实验室发起，并于2012年首次在巴黎举行的国际会议‘治理大都市’上发表。一年后，Allemandi International（都灵-伦敦-纽约）出版了第一本获得国际认可的出版物GreenUP -a Smart City（皮拉左里和格罗索尼，2013年）。除了在TEDx 会议和里约热内卢国际气候变化会议等上发表之外，还在早期的跨媒体平台（包括Filippo Macelloni的视频和Agnese Matteini的绘画讲习班）传播，同时在法国、德国、澳大利亚、中国、美国、巴西等国家获得一定的知名度。

作为一种整体的城市农业设计策略，GreenUP垂直开发主要针对大都市地区缺乏横向耕地的问题。作为设计新建筑的创新方式，GreenUP 很好的衔接了水平和垂直绿化，在步行通道空间创造可食用绿化景观，为现有的城市肌理提供公共、半公共和私人蔬果园。 GreenUP 的可食用城市基础设施，更系统性更低成本，能更好地从生物多样性、粮食顺应力、气候变化、代际对话、社区建设等方面理解；并符合九个联合国可持续发展目标：无贫困；零饥饿；身体健康和幸福;清洁水和卫生设施; 减少不平等; 可持续城市和社区；理性消费和生产；气候行动；实现目标的合作关系。

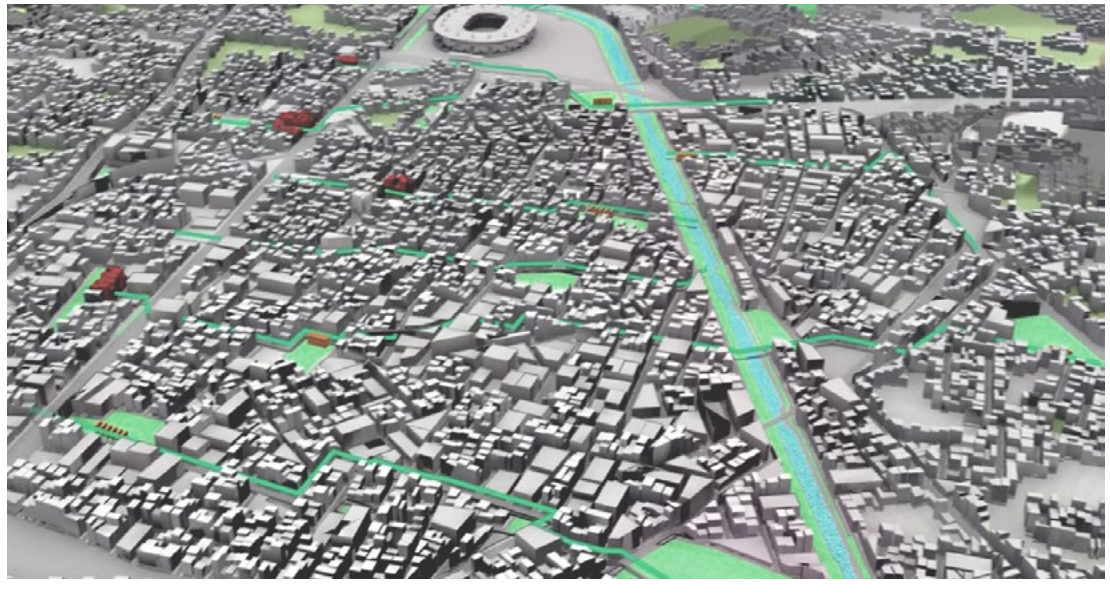
目前，为了应对生物多样性带来的新挑战，我们正在实现以意大利Arborea考古基金会以及意大利CNR国家研究委员会为主的多项战略合作伙伴关系，以及与意大利卫生部以及EMBRAPA（巴西霍塔利萨斯国家农业局，作物和蔬菜部门）关于营养问题和福利进行合作。迄今为止，已有超过200名研究人员、学生和专业人士参与了GreenUP项目。

景观建筑：一个美学驱动的议题?

事实上，GreenUP可能被（误）理解为西方历史中的风景园林，或是类似于从圣经中的传说所罗门神殿的空中花园开始，到文艺复兴时期的花园以及著名的法国十七世纪风景设计师如安德烈·勒诺特尔，到布雷·马克斯在的巴西作品等。

Fig. 1 - GreenUp design strategy. Image by Agnese Matteini included in the video GreenUp / a Smart City (CrossingLab) by Filippo Marcelloni
图例1 - GreenUp 设计策略

Fig. 2 - GreenUp systemic network
图例1 - GreenUp 系统网络



National Agriculture Agency of Brazil, Crops and Vegetables Unit), to mention a couple. To date, more than 200 researchers, students, and professionals have taken part in *GreenUP.*

Landscape Architecture:
An Aesthetics-only Driven Issue?

As a matter of fact, *GreenUP* may be (mis) understood as something dealing with Western history's landscape architecture, which generally starts from legendary hanging gardens of Solomon's Temple, actually mentioned by the Bible, to include Renaissance gardens plus French XVII Century *Paysagisme* by famous architects such as Le Nôtre, to reach Roberto Burle Marx' Brazilian works etc.

For sure, the mid-concept Landscape Architecture helps understanding how difficult it is for us, the architects, to merge a natural/ living issue – as *landscape* actually should be thought – with an artificial/death one, as *architecture* – using its components – is. Being educated and trained with "death materials" (concrete, iron, stone, glass etc.) supposedly eternally keeping the way we designed them, when dealing with "living materials" (trees, shrubs, crops and vegetables in general), we fail badly. Cult-book *Trees Architecture* by Cesare Leonardi and Franca Stagi helps to reflect on this paradoxical issue the other way round: any tree or living material cannot be drawn appropriately, since it constantly grows or dries or even dies, albeit certainly, it does not keep the same shape and size, as a concrete slab does, instead. Thus, whenever we realise that it is actually impossible to survey living materials, we get clear that dealing with nature/ living materials involves a profound paradigm shift from a regular (dry) architecture mindset. As for Leonardo Da Vinci, when self-training drawing fire, smoke or clouds, we need to be conscious of the impossibility of drawing right and correcting any natural material. Designing nature needs to learn thinking in terms of changing forms, colours and shapes; in other words, it is mostly about un-controlling. In this regard, Gilles Clement's research is brilliantly pivotal when radically self-distancing from the currently obsessive hyper-design of landscape architects who cut and shape plants and gardens, treating them as death/artificial materials instead.

当然，景观建筑这一概念，有助于理解建筑师将自然/有生命的问题（景观）与人造/物质的问题（建筑）组合起来。从教育和实践上理解，在设计中“物质材料”（例如混凝土、钢铁、石材、玻璃等）是永恒的，但是“自然材料”（例如树木、灌木、庄稼和蔬菜）却不然。Cesare Leonardi 和 Franca Stagi 的 建筑书Trees Architecture 让我们反思了这个矛盾：任何树木或自然材料都不可能被精确的绘制，也不会保持类似混凝土板的常规形状和尺寸，因为它们在不断地生长或干枯甚至死亡。因此，由于不可能精确测绘自然材料，处理自然/ 有生命的材料意味着，常规建筑思维方式需要转变。像达芬奇在自学画火、烟或云的自然现象时，我们应该认识到，精确地绘制和修改任何自然材料是不可能的。在设计自然元素时，需要运用发展和变化的思维，例如造型、色彩、形状的变化；换句话说，不去刻意控制变化。在这方面，吉尔斯·克莱门特的研究非常有价值，因为它彻底摆脱了当前景观设计师将植物和花园视为人造/物质材料并过度设计的痴迷。

垂直化

自然与人工结合及启发，有少数富有远见的建筑参考，如 James Wines 的 Highrise of Homes (1981)，Lina Bo Bardi为圣保罗州设计的开创性垂直花园（1990，未建成），埃米利奥·安巴斯的福冈县绿色屋顶 (1993)，让·努维尔为雅克·希拉克与米兰的Bosco Verticale（博埃

Going Vertical

In a stimulating hybrid intersection of the natural and the artificial lies the handful of visionary architectural references such as Highrise of Homes (1981) by James Wines, the pioneering vertical garden by Lina Bo Bardi for the Prefecture of San Paulo (1990, unbuilt), Emilio Ambasz' green roof of the Prefecture of Fukuoka (1993) passing through the priceless Patrick Blanc's green mask of the Parisian Musée du Quai Branly by Jean Nouvel for Jacques Chirac (2005), jointly with Milanese Bosco Verticale (Boeri, Barreca, La Varra 2009-14) – whose astronomical management costs are often criticised, rather forgetting its non-trivial alternative solution to the standard glass-mirror facade. As a common issue, all of these examples share (charming) aesthetics. That is to say, functional side effects such as capturing C02 and increasing air quality have only recently emerged to make urban green an appropriate tool among Nature-Based Solutions to environmental and health-related within metropolitan areas.

Nature-Based Solutions - a Brief Focus on

At any evidence, *GreenUP* itself is an NBS-Nature Based Solution. Then, it is worth knowing that NBS, in general, aim at being cost-effective to "provide environmental, social and economic benefits and help build resilience"[2]. Furthermore,

里、巴雷卡、拉瓦拉）共同创作的巴黎国家凯布朗利博物馆 (2009-14），并结合景观艺术家帕特里克·布兰克的大型绿色垂直装置，虽然其天文数字管理成本经常受到批评，但其代替标准玻璃幕墙的重要解决方案却不可否认。所有这些例子都具有（迷人的）美学，其附加功能性作用（例如吸收二氧化碳和提高空气质量）直到最近才引起关注，城市绿化成为大都市内，解决环境和健康相关问题的基于自然的合适工具。

基于自然的解决方案 - 简要关注点

GreenUP本身就是一个基于自然的解决方案 (NBS)，而且NBS致力于有效成本，以“提供环境、社会和经济效益并帮助建立复原力” 为目标。此外，正如欧盟声称的那样，NBS应该“通过因地制宜、资源优化和系统性的干预措施”，将自然和自然方法带入城市、景观和海景。从理论上讲，在农业方面的技术治理的替代方面，从转基因生物到大量使用的化学品和化肥（正如盖茨基金会与世界银行所倡导的那样）；相反，NBS则是理想的可持续并需广泛实施的方案。然而，例如，欧盟考虑为NBS研究提供大量经费时，提出“影响因素”仍然是一个学术为主的问题，而大量的研究产物，如网站、网络研

Fig. 3 - GreenUp concept, before and after
图例3 - GreenUp 概念，之前与之后

as European Union claims, NBS should bring nature and the natural approach into cities, landscapes and seascapes, “through locally adapted, resource-efficient and systemic interventions”[3]. Being theoretically the alternative side to technocratic approach – which, when about agriculture, spans from GMO-Genetically Modified Organisms to chemicals and fertilizers massive use, as advocated by Gates Foundation in connection with World Bank, instead – NBS might be ideally regarded as the most intrinsically sustainable approach worth being implemented almost everywhere. However, unfortunately, when considering, for instance, the significant amount of money that the European Union granted to NBS research, it turns clear that the so-called “impact factor” remains mostly an academic issue, while tons of research products such as websites and webinars, papers, e-books, guidelines and policies seldom get in touch with the real world. Lack of prototyping, and related monitoring activity, turned such a huge theoretical effort into a kind of fiasco when focusing on the applied/real outcomes.

Whenever considering worldwide known NBS actually designed and built, feedbacks are not better: for instance, the extensive hydroponic green walls installations in Sao Paulo, Brazil, after three years look mostly broken or in harmful conditions. Over there, the urban standards deal which is behind such expensive plus massive installation turned to be twice ineffective, unfortunately:[4] first because of the real CO2 extraction and Oxygen production by hydroponic green walls, which is hardly comparable with the average outcome produced by a regular tree – that is to say: the replacement of one single tree requires an extensive amount of hydroponic green walls; second because of the maintenance, which is absolutely expensive, actually unbearable by the public administration which was supposed to take care of the infrastructure right after its construction by the Real Estate players.

Among other NBS, algae have long been a research challenge to produce biomasses, hence energy; unfortunately, a few real interventions have been implemented while still waiting for a largely announced project at Milan Expo 2015, which was a certain point silently cancelled.[5]

Lots of NBS may also pop-up easily when googling the issue from a DIY perspective: lots of bloggers and YouTubers, sadly, tend to

讨会、文献、电子书、指导方针和政策与现实世界接触非常有限。缺乏原型设计和相关的监控活动，如果只关注应用/ 实际结果时，那么在理论上投入巨大努力将变成一场空谈。

设计和建立的世界知名的NBS，其反馈也不甚理想：例如，巴西圣保罗的大规模水培绿墙装置在三年后已大多已损坏或处于不利状态。很遗憾，在昂贵且大规模装置背后违背了两个方面的城市标准：第一，水培绿墙对二氧化碳的吸收和氧气的生产，远无法与正常的乔木相比。换句话说，取代一棵树则需要更大量的水培绿墙。其次是昂贵的维护费，在房地产公司在基础设施建设完成后，负责的公共管理部门通常无法承担。

在其他的NBS中，藻类在生产生物质和能源方面的研究一直是一种挑战；一些项目的具体措施已经实施，并原本在 2015 年米兰世博会宣布，但很遗憾该项目最后被取消。从 DIY的角度检索时，会出现许多 NBS相关内容，但是许多网络博

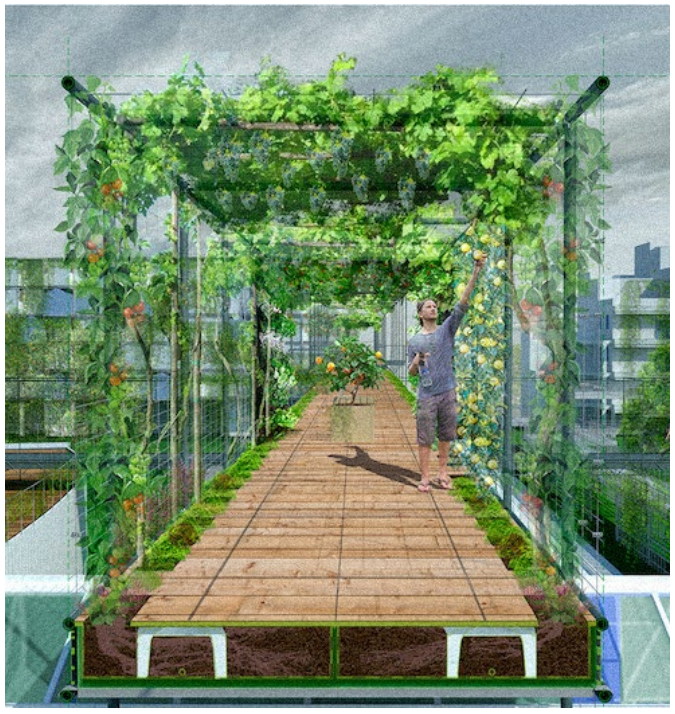


Fig. 4 - GreenUp, an edible green infrastructure
图例4 - GreenUp 可食用的绿色基础设施

circulate some “products” we can ironically label as *Nothing Based Solutions*; that is to say, the web is plenty of not-working projects or never-tested ones, often based on naive ideas about vertical gardens – either ornamental or edible – to apparently handle an issue which is technically not banal at all.

When about Startup-developed NBS, the world “greenwashing” also fits quite well to identify the majority of them; furthermore, such sub-financial environment usually looks towards hi-tech quick+expensive solutions, rather than affordable natural strategies to be implemented. In this case, being technocracy still fashionable despite any failure, a certain number of Sci-fi solutions – even GMO-based – are constantly aiming at entering urban NBS potential market to make money out of the nothingness.

主和 YouTube 用户将有些“产品”标签和讽刺为“解决方案是无中生有”的；这些说法是没有经过验证的，无论是观赏性的还是食用性的都是不成熟的评论。

初创发展NBS，以更好的地响应了全球绿能化；但是次级金融环境通常着眼于高科技快速但昂贵的解决方案，而不是采用低成本的自然战略。在这种情况尽管有不尽人意之处，但技术官僚主义仍然很流行，一些科幻解决方案（甚至是基于转基因的）也不断瞄准进入城市 NBS 潜在市场，以从虚无中获利。

从风景园林到菜园

“去殖民主义”观点及维特鲁威经典的“实用”观点，或有助于首先强调上述“景观建筑”和“菜园”之间的差异。对比与历史上起源于欧洲中心主义或殖民主义的花园和景观建筑共有的高端形象， GreenUP属于后者范畴，符合常理且

Fig. 5 - GreenUp, an edible green infrastructure
图例5 - GreenUp 可食用绿色基础设施

Fig. 6 - GreenUP participatory projects, Dergano Community Pavillions, Milan
图例6 - GreenUp 参与性项目，德甘诺社区馆，米兰

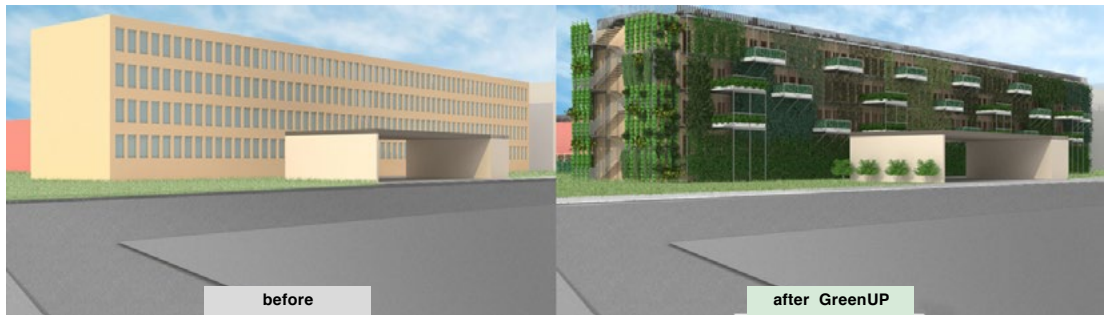


Fig. 7 - GreenUP participatory projects, Dergano School, Milan
图例7 - GreenUp 参与性项目，德甘诺学校，米兰

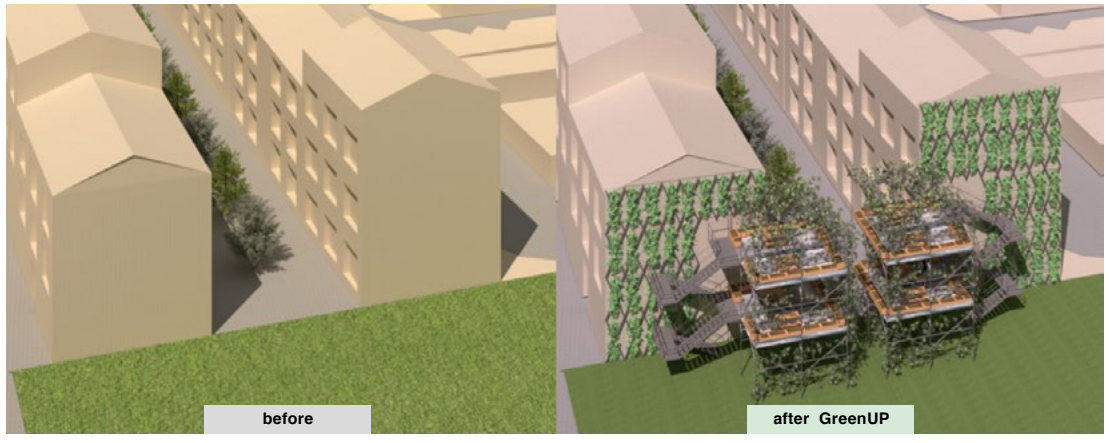


Fig. 8 - GreenUP participatory projects, Dergano Twin Houses, Milan
图例8 - GreenUp 参与性项目，德甘诺双子别墅细节，米兰

From Landscape Architecture to Vegetable Gardens

A decolonial perspective may help to underline first the very difference – whenever under the classical Vitruvian “utilitas” point of view – between above mentioned “landscape architecture” and “vegetable garden”. Belonging *GreenUP* to this second one, it sounds reasonable enough – far beyond the mythological narrative – to actually stress the *functional* focus of the vegetable garden; this, mostly when compared to the historical – then imposed, possibly Eurocentric and/or colonial, export way – upper-class profile that both garden and landscape architecture share. No doubt, they matter to rich land-owners eyes-only pleasure – just reminding the lawn as the “lasting symbol of how settlers appropriated Indigenous land and culture”[6], being kept un-productive to show stunning beauty after effective wealth coming from elsewhere (aka colonies).

Groceries are about, first and foremost, basic needs such as eating; salad and crops have less to do with aesthetics than the tragic story of the acanthus leaves written by Vitruvius about the girl who supposedly inspired the style of Corinthian architecture. Finally, about Western aesthetics and philosophy, there are plenty of coherent books about landscape architecture and gardening, rather than about edible gardens. Not to mention contemporary Western philosophy pays lots of attention to “pet plants”. Indeed, who cares about un-fashionable and un-sensitive edible plants beauty instead?

A Minor History Towards A Great Change

Finally, *GreenUP* vertical farming is about that special kind of nature called agriculture being brought back in town to deal with climate change – including handling the Heat Island effect –and food security and healthy nutrition. Instead of above-mentioned aesthetic issues typical of landscape architecture, *GreenUP* aims at re-conceptualizing references as the minor history of Middle-age convents vegetable gardens – as we did, for instance, when designing the green reconstruction of the demolished cloister colonnade in front of Filippo Brunelleschi’s Pazzi Chapel in Santa Croce sacred complex, Florence (Pirazzoli, 2020).

Other *GreenUP* references from the past include French Clos des Pêches (aka *Mur à*

强调了其菜园的实际功能。毫无疑问，他们（花园和景观建筑）对于富有的土地所有者来说很重要，因为不仅是视觉上的享受，也是传递了将草坪看作“殖民者占居土著土地和文化的持久象征”的信息，将其充分地定义为观赏性而非生产性，因为增加财富的生产可以从其他途径获得（又名殖民地）。

相反，虽然食品是满足最基本的生存需求，但蔬果和庄稼对美学的影响，远不及维特鲁威的关于科林斯建筑风格起源的悲剧故事。很多西方美学中的书籍是有关于景观建筑和园艺，而不是关于可蔬果花园。而当代西方哲学更关注与人互动的植物宠物。显然，谁会关注不时尚和不敏感的食用植物的观赏价值呢?

小历史走向大变革

最后,GreenUP垂直种植是将农业——种特殊的自然--带回城镇以应对气候变化的影响，这包括了处理热岛效应以及粮食安全和健康营养。与上述典型的景观建筑美学问题不同，GreenUP的目标是重新定义源于历史上中世纪修道院菜园的原型；例如，位于佛罗伦萨圣十字圣地的菲利波·布鲁内莱斯基设计的帕齐教堂，我们在拆除的回廊设计绿色重建时所做的那样 (Pirazzoli, 2020)。

过去的其他有关GreenUP参考资料包括法国蒙特勒伊的Clos des Pêches（又名 Mur à Pêches）可与英国的“围墙厨房花园”相媲美，以及英国的私用菜园和德国的社区农圃传统。Ebenezer Howard的花园城市影响对GreenUP的发展也至关重要，尽管Leberecht Migge 在城市农业和粮食恢复力方面的开创性愿景， 在概念上更接近GreenUP。

更多当代参考文献主要涉及移民、当地人和“草根阶级”的城市激进主义。值得一提的是Incredible Edible Todmorden，一小波入驻英国Todmorden小镇的女性团体，决定在任意地方耕种，从周围可用的土地开始，然后组织跨文化和代际社区聚会和聚餐。同样令人振奋的是柏林公主园，从架高的种植床上采集的蔬菜（在这种情况下，水果盒）中提取果汁；或是多伦多瑞尔森大学的胡萝卜城，一个与众不同的学术倡议，类似阿拉巴马州纽伯恩著名的Rural Studio在校园中设计和建造的温室花园。

还值得一提的是 Majora Carter在纽约布朗克斯区的长期“贫民区绿化”计划的联系和以分析设计为基础的研究纽约市稳态经济（2010年），致力于纽约曼哈顿的食物和能源自给自足，由建筑师、理论家（和朋友）Michael Sorkin 与 Terreform 共同开发和制作。以及最近在巴黎 Pavillion de l’ Arsenal 举办的 Capital agricole - Chantiers pour une ville

Pêches) in Montreuil – comparable to Walled Kitchen Gardens in the UK and Allotment Gardens from the UK and Schrebergartens pivotal tradition from Germany. Ebenezer Howard's Garden City influence also has been crucial to developing GreenUP, although Leberecht Migge's pioneering vision on urban farming and food resilience sounds conceptually closer.

More contemporary references are significantly dealing with urban activism from immigrants, locals, and grassroots groups. Among those, it is worth mentioning Incredible Edible Todmorden, a handful of formidable women who invaded Todmorden town in England, to decide to farm anywhere, starting from the available relics of land around, to then organize community gatherings and dinners to enjoy food together, under a cross-culture and intergenerational perspective. Also inspiring is *Berlin* Prinzessinengarten, with the celebrated juices extracted from vegetables grown on raised beds (in this case, former fruit boxes); or Carrot City of Ryerson University in Toronto, a differently academic initiative, like the greenhouse garden in the Rural Studio well-known design & build campus in Newbern, Alabama.

Cannot skip the contact with Majora Carter's Greening the Ghetto long-time action in NYC-Bronx, nor the rightly extreme analytical-design research *New York City (Steady) State (2010)*, dedicated to food and energy self-sufficiency of Manhattan, New York, developed and produced by the extraordinary architect, theorist (and friend) Michael Sorkin together with Terreform.

Recently achieved exhibition Capital agricole - Chantiers pour une ville cultivée at Pavillion de l'Arsenal in Paris has been a valuable source of spots from the core Europe.

Two other *GreenUP* applied references are the Michigan Urban Farming Initiative, a world-renowned former-industrial case whose mission is to reclaim the city of Detroit, and Dickson Despommier's cult book *The Vertical Farm: Feeding the World in the 21st Century* – flanked by the case study Sky Greens, a global vertical farming industry based in Singapore that claims to "accommodate different means of soil or hydroponics"[7]. Paradoxical issues as the overgrown ornamental plants at Qiyi City cultivée 展览是欧洲核心资源。

另外两个 GreenUP 应用参考的文献是密歇根城市农业倡议，第一个世界是著名的前工业案例，其使命是收回底特律市，第二个是Dickson Despommier的邪教书《垂直农场: 在21世纪养活世界》。Sky Greens 是一家位于新加坡的全球垂直种植企业，声称“适应不同的土壤或水培方式”；而中国成都七一城市森林花园中观赏植物杂草丛生的矛盾问题，也是 GreenUP 批判性研究背景的一部分。

GreenUP 作为特定场景的策略

巴西和中国案例

不同于世界知名公司将全球建筑诠释为风格问题，GreenUP是一种自下而上的工具，实际上受当地条件的滋养，包括农业技术。举个例子，在巴西，我们发现了一种独特且高度可持续的农业方法，称为 agrofloresta，这是由几位著名研究人员（如 Ana Primavesi 和 Ernest Goettsch）实施本土技术和传统技术的完美结合：我们改变了 GreenUP 。再举个例子：当需要在中国实施GreenUP时，开始做中国营养金字塔是关键，特别是“五果为助，五菜为补”与当地文化密切相关，具有潜在的吸引力。关于吸引力，值得强调的是，即使是人工智能、应用程序开发和Arduino硬件等也会使整个GreenUP申请发布变得更加人性化。

GreenUP 作为研讨会学习工具

作为最后的闭环，我们把GreenUP作为研讨会学习工具，很高兴在这里分享佛罗伦萨大学建筑学院2015年iCad国际建筑设计课程（以及2021年第四学期设计课程的成果，他们都强调了GreenUP项目的长远意义。

Notes

1 See: http://www.crossinglab.com/greenup/

2 See: https://ec.europa.eu/info/research-and-innovation/research-area/environment/nature-based-solutions_en

3 *Ibid.*

4 A typically critical public-private deal has allowed real estate investors to replace the number of trees they have cut down for their housing business elsewhere with hydroponic green walls in certain downtown areas.

5 The mentioned project was by Carlo Ratti and Cesare Griffa.

6 See: https://www.theglobeandmail.com/canada/article-globe-climate-some-of-albertas-oil-sands-tailings-ponds-are-leaking/

7 See: https://www.skygreens.com/technology/

8 Agrofloresta may somehow be regarded as a kind of permaculture practice, although under a precisely Brazilian site-specific point of view.

9 Glad to thank Sao Paulo's Mackenzie University for inviting me in 2017-19; currently working on a book to present

GIACOMO PIRAZZOLI / LEARNING WITH GREENUP. AN URBAN STRATEGY FOR VERTICAL EDIBLE GREEN

Fig. 9 - GreenUP participatory projects, detail of Dergano Twin Houses, Milan
图例9 - GreenUp 参与性项目，德甘诺双子别墅细节，米兰

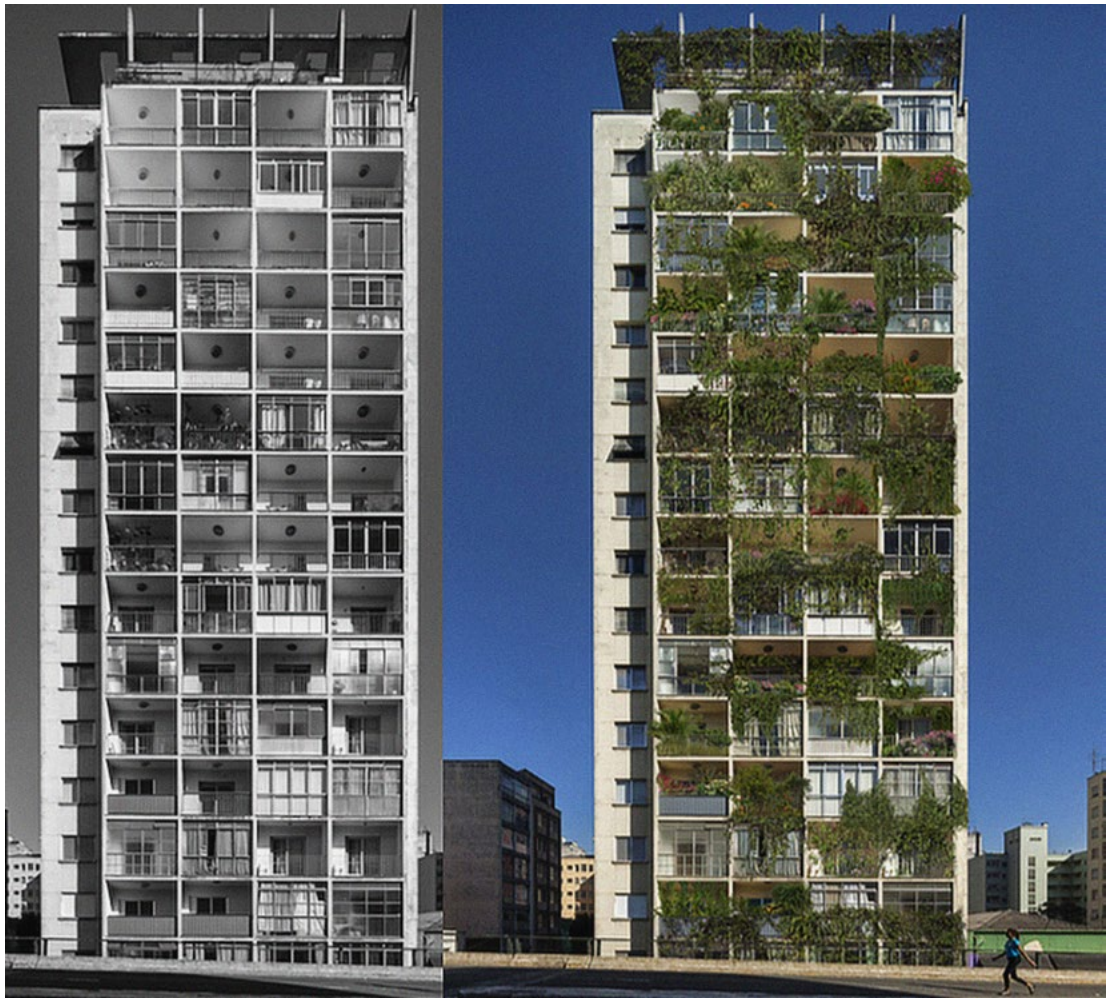


Fig. 10 - GreenUP design strategy, Sao Paulo, Brazil
图例10 - GreenUp 设计策略，圣保罗，巴西

Forest Garden in Chengdu, China, have also been a part of *GreenUP*'s critical research background.

GreenUP as a Site-specific Strategy
A couple of examples dealing with Brazil and China

Unlike global architecture imposed by world-*renowned* firms as a stylish issue, *GreenUP* works as a bottom-up tool nourished by local issues, including farming techniques.

To mention an example, in Brazil, we found a distinctive and deeply sustainable approach to farming called *agrofloresta*,[8] a brilliant blend of indigenous and traditional techniques implemented by several notable researchers as Ana Primavesi and Ernest Goettsch: we changed *GreenUP* strategy in order to welcome that valuable knowledge.[9]

To give a further example: when required to implement *GreenUP* in China, it was pivotal to start working on the Chinese Nutrition Pyramid, in particular 五果为助, 五菜为充 (Five Fruits to Help, Five Vegetables to Fill)as powerful references deeply linked with local culture, then potentially attractive. Regarding attractiveness, it is worth to underlining that even global issues such as AI-Artificial Intelligence, App development and Arduino hardware may play a crucial role in turning even more people-friendly the whole *GreenUP* applied for release.

GreenUP as a Workshop Learning Tool

Finally, to close the circle according to this book task, let us take a look at *GreenUP* as a workshop learning tool: glad to share here the outcomes of the iCad-International Course on Architectural Design (2015)[10] as well as 4th Semester Design Studio (2021)[11] both at the School of Architecture, University of Florence, both stressing the visionary side of this effective work.

GreenUP work done over there together with colleagues prof.Valter Caldana (director of LPP-Laboratorio Projetos e Politicas Publicas) and Prof. Maria Augusta Justi Pisani.

10 Multidiscipline studio coordinated by prof.Giacomo Pirazzoli with Irene Giovannetti (Architectural Design), jointly with professors Giulio Giovannoni (Urban and Regional Planning) and Antonella Valentini (Landscape Architecture). *GreenUP* participatory projects have been developed at Le Piagge neighborhood, Florence by students Fatemeh Alibolandi, Parisa Ahmadi, Parisa Bahnamnia, Ziba Bandpey, Azzurra Banti, Federica Bilotta, Ettore Catani, Lucia Chirichiello, Simone Cimadamore, Yasamin Daei, Eleonora Danesi, Niccolò De Ruvo, Sanaz Dehghani, Hengameh Daghighi, Anna Dorigoni, ParisaEmamirad, Melika Erabi, Mahdieh Farahani, Atefeh Fahrangian, Ardjana Gjinaj, Aida Ghaidarpour, Behzad Gharajanloo, Luca Guercio, Maryam Jabbar, Rna Kanynia, Shiva Khoshtinat, Sofia Lalli, Avi Hen Levi, Alessandra Marchetti, Jovana Markovic, Camilla Meciani, Karimpourfard Mahrdad, Mahmoudi Far Morvarid, Golrokh Niki, Erica Passavinti, Christina Patiniu, Ettore Petrioli, Antonio Pieralli, Parviz Polukhzada, Noel Preka, Timor Qayoomi, Giulia Rossi, Atena Sabetghadam, Arokia Gracy Sagayam, Annahita Savadjan, plus Final Degree student Fereshteh Azadi.

11 Undergraduate studio coordinated by prof.Giacomo Pirazzoli with Georgina Lalli and Irene Giovannetti. *GreenUP* participatory projects have been developed at Dergano neighbourhood, Milan by students MariannaGalardi, Marta Arrighi, Joni Dahriu, Enrico Vergari, Elisabetta Di Foggia, AliceBeconcini, SaraCorezzi, AlessiaGueli, GiacomoCardelli, ChiaraCollotti, CaterinaBettmann, ChiaraCosci, SimoneAlinari, FrancescoCiabatti, GiovanniAmaducci, AlessioChicca, AliceChiuppi, ChiaraBaggiani, TeresaCantini, LorenzoArena, MartaCappelli, ViolaCorsinovi, KevinFrancoletti, FrancescoCampolmi, ElisaGualtieri, EdoardoFinucci, ElenaAgostini, SaraCeccotti, ArturoBussani, AndreaBenocci, GaiaPucci, GaiaBartoli, DarioSantini, Lorenzo Quadrelli, Lorenzo Di Gloria, Tommaso Casarosa, Renata Rinaldi, Livia Lopomo, Caterina Tatti, Jessica Lattanzi, Lorenzo Marconi, Vanessa Mancini, Filippo Daini, Silvia Frassineti, Ilaria Razzolini, Maria Pica, Elia Orlandi, Luana Giugno, Florencia Mazzarello, Svevasofia Ubaldini, Ennio Miciluzzo, Lucrezia Menicucci, Alessia Paolini, Pietro Calabrese, Angelo Fornaciari. The projects have been edited and post-produced by ViDA LAB - Laboratorio Video per il Design e l'Architettura, then displayed at Youth4Climate International Event, Milan September 28th, 2021 organized by ILAUD-International Laboratory for Architecture and Urban Design.

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International Laboratory
of Architecture
& Urban Design
国际建筑与城市设计实验室

This volume collects ideas and conceived during the 2019 ILAUD Workshop entitled “Discontinuity in Contemporary City” held in Shanghai. The significant amount of knowledge produced during three days of intensive work has been subjected to an equal consistent review due to the Covid-19 pandemic.
Nevertheless, the lockdown period has stimulated new interesting insights regarding discontinuity as an intrinsic feature of contemporary urbanization. Indeed, Part I of the contribution reports five essays by Experts who have been invited to reflect and propose further argumentations on this issue.
In particular, the workshop was focused on analyzing an area of abandoned workers’ houses located in the Putuo District. Part II of the book reports the results of eight design proposals, exploring different architectural, urban, functional, social, and cultural solutions. These suggestions are the outcome of discussions between students and professors that have led to investigate the elements generating social and functional inequalities, trying to shape solutions to positively influence the site and its surroundings within the urban context of Shanghai.

本书收集了在上海举办的 2019 年 ILAUD 研讨会“当代城市的不连续性”期间的想法和思考。由于 Covid-19 大流行，三天研讨会中创造的大量成果在此期间也经历了沉淀。
疫情封锁期间，有关“不连续性视为当代城市化的内在特征”的新颖有趣的见解不断被激发。事实上，本书中的第一部分收录了五篇专家的论文，就这个问题进行反思并提出进一步的论点。
特别指出的是，研讨会的重点是分析位于普陀区的废弃工人住宅区域，并在第二部分针对该场地展开了八项学生设计方案的汇报，探索了不同的建筑、城市、功能、社会和文化解决方案。这些提案是学生和教授共同讨论的结果，并启发了对产生社会和功能不平等的因素的深入研究，旨在制定解决方案，对上海城市环境中的场地及其周围环境产生积极的影响。

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