

中外棕地再生案例比较中的环境伦理

Perspective of Environmental Ethics in Brownfield Regeneration through Comparative Case Studies between China and Abroad



曾颖 Ying ZENG

美国宾夕法尼亚大学景观设计学硕士，中国美术学院建筑艺术学院景观设计系讲师、博士候选人
Master of Landscape Architecture, University of Pennsylvania; PhD Candidate and Lecturer of Landscape Architecture, China Academy of Art



郑晓笛 Xiaodi ZHENG

美国注册景观设计师，美国哈佛大学景观设计学硕士，清华大学建筑学院博士候选人
Registered Landscape Architect, USA; Master of Landscape Architecture, Harvard University; PhD Candidate at School of Architecture, Tsinghua University

翻译 Translated by / 张凌 Ling ZHANG
校对 Proofread by / 曾颖 Ying ZENG

摘要

随着我国城市化的不断发展，过度开发自然资源及粗放的工业活动导致了土地污染与环境恶化，引发了一系列涉及棕地再开发的环境安全事件。在景观行业内，中外均已开展了相当数量的实践活动。应对棕地问题，迫切需要我们建立协调人与自然环境关系的环境伦理意识。通过对国内外棕地再生案例中的环境伦理观进行比较研究，分析其异同，本文希望从环境伦理角度为应对当前和未来的棕地再开发中面临的挑战提供一些借鉴。

关键词

景观设计；棕地；环境伦理；环境公正；再生；比较研究

Abstract

With the continuous development of urbanization in China, excessive exploitation and use of natural resources and extensive industrialization have resulted in land pollution and environmental degradation, and triggered a series of environmental safety issues associated with brownfield regeneration. A considerable amount of practice has been carried out across the world in the field of landscape architecture. Brownfield regeneration urges us to recognize environmental ethics in seeking harmony between human and nature. By comparing and studying the similarities and differences between Chinese and foreign brownfield regeneration projects, this paper aims to provide insights from the perspective of environmental ethics to help us confront with the challenges from current and future brownfield regeneration practice.

Key words

Landscape Architecture; Brownfield; Environmental Ethics; Environmental Justice; Regeneration; Comparative Study

1 引言

伴随着我国工业化和城市化的快速发展，出现了一系列触目惊心的土壤污染事件。在苏州，一块面积达40hm²的化工厂原址地块因土壤遭农药污染而无法开发，已闲置5年^[1]。在武汉，一个曾被评为国家康居示范小区的经济适用房居住区被发现是建造在一片埋藏着污染物的“毒土地”上^[2]。由土壤污染引起的一系列涉及居住、水源、粮食及食品等的安全事件，自2008年以来在全国已发生百余起^[3]，对人们的身体健康、农业的健康运转以及城市土地的可持续循环利用构成了严重威胁。不断发生的污染事件告诉人们，缺乏对自然、土地和其他物种的尊重和关心，人类终将为此付出代价。而“伦理”作为处理人与人，以及人与自然关系的准

则，再一次引发我们的思考与反省。

2 棕地再生与环境伦理

曾长期作为“世界工厂”的中国随着新经济形势下产业的升级与转型，过去一些污染严重、技术粗放且消耗大量能源和劳动力的产业逐步退出历史舞台，由此产生了大量的闲置地、废弃地和污染场地。过去曾发生在欧美等发达工业国家的困境，今天正在中国上演。如何处理这些棕地是我们在当下和未来都面临的重要问题。

在美国，“棕地”概念的出现以多起环境污染事件为导火索，其明确定义为：“一块不动产，其扩展、再开发或再利用

1 Introduction

A series of shocking soil pollution incidents have happened during China's rapid industrialization and urbanization process. In Suzhou, a 40 hm² site has sit idle for five years due to pesticide contamination from a former chemical plant^[1]. In Wuhan, an affordable housing project that was awarded National Exemplary Community was found to be built on toxic land with buried contaminants^[2]. Since 2008, there have been more than a hundred soil pollution incidents associated with housing, water, and food safety in China^[3]. Soil pollution has been threatening the health of people, the safety of agriculture and the regeneration of land. These constantly happening pollution incidents have shown that we will pay for disrespecting and ignoring the nature, the landscape and other species. "Ethics" as the criteria in dealing with man / man and man / nature relationships, has once again called us to rethink our actions and the consequences.

2 Brownfield Regeneration and Environmental Ethics

China has served as the "factory of the world" for a long time. However, with the upgrading and transformation of industries in the new economic trend, old industries that require a lot of techniques, resources and labors and cause severe pollutions have gradually faded away from the historic stage, leaving only large areas of underused, abandoned and contaminated land. The dilemma that once challenged the industrialized countries of Europe and the U.S. is challenging China now. Brownfield redevelopment is an issue that we are and will continue to deal with.

In the United States, the term "brownfield" first came into use due to several environmental pollution incidents. Brownfield sites are defined as "real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant"^[4]. Inappropriately redeveloped brownfield will continue to damage the environment and its ecosystem and threaten the safety, health and welfare of users. Therefore, it is essential to establish an awareness of environmental ethics in urban brownfield redevelopment. Environmental ethics is developed from long-term practice and experience. It is the order that was established to regulate human behaviors and coordinate the relationship of humans and natural environment. There have been concerns and discussions about environmental ethics for a long time in both Chinese and Western culture. Some of their points are strikingly similar.

There have been a number of successful brownfield redevelopment cases both in China and foreign countries within the field of landscape architecture, but interpretation of these cases from the perspective of environmental ethics is still very limited. After careful study of both Chinese and foreign projects, the same concerns and responses to environmental ethics can be found. On the other hand, due to different cultures, values and policies, differences can also be observed in their ways of treating "vulnerable" ecosystems and the approach of public participation in consideration of environmental justice.

2.1 Attention for Vulnerable Ecosystems in Brownfield Regeneration

2.1.1 Respect for Existing Vegetation in Brownfield

Brownfield often appears decayed and chaotic. One of the important elements that constitute such a landscape is the wildly growing weeds, shrubs and small trees. They grow through cracks in concrete and asphalt paving and structures, embrace the sun, and strive to announce forces of the nature. Most brownfield projects erase the existing vegetation and replace them with bosk of decorative trees and flowers to create a brand new scenario. In Duisburg-Nord Landscape Park, the German landscape architect Peter Latz expresses his respects to these vibrant forms of life. Although the site was once taken by industry, after the industry fell apart, nature has taken it back through the distinctive presence of honorable life.

Peter Latz showed his respects in a way that is more than simply preserving what was there. His design gives the public an opportunity to

1. 精致的花园与场地现有的野生植被并置，形成对比并互为衬托。© 郑晓笛
1. The juxtaposition and tension between the carefully clipped hedge garden and existing wild plants. © Xiaodi Zheng



可能会由于有害物质、污染源或污染物的存在或潜在而变得复杂”^[4]。棕地在再开发过程中如果处理不当，会对环境和生态系统造成持续的破坏，并将威胁到使用者的安全、健康和福祉。因此，在应对城市棕地问题时，环境伦理意识的建立尤为必要。环境伦理观是人类在长期实践过程中的经验总结，是为协调人类与自然环境的关系、约束自己的行为而建立起来的一种秩序。在中国与西方的文化背景中，对于环境伦理的关注与讨论都有着丰富的历史，部分观点存在着惊人的相似之处。

在景观设计领域内，国内外均已出现了多个成功的棕地再生案例，但从环境伦理的角度来解读这些案例的研究还十分有限。仔细研究可以发现，在这些经典的中外棕地项目中，都有着对于环境伦理共同的关注与响应。然而，也可以看出，由于文化、价值观和政策上的不同，中外案例在尊重“弱势”生态系统的角度上和基于环境公正的公众参与过程中还是有所差别的。

2.1 棕地再生中对于“弱势”生态系统的关注

2.1.1 尊重棕地内的现有植被

棕地看上去往往是破败荒芜的。构成这种荒芜景象的重要元素之一是杂乱生长着的野草、灌木和小树苗，它们顽强地从混凝土和沥青铺地及构筑物的裂缝里钻出来，吸收着阳光，努力地宣告着自然的力量。大多数的棕地项目都会选择将它们彻底清除，替换以整齐的、观赏性的树阵和花草，希望呈现出一种焕然一新的状态。然而，德国景观设计师彼得·拉茨在北杜伊斯堡景观公园中，却向这些顽强的生命致以了最大的敬意。在他看来，人类的工业活动曾经侵占了自然，但是当工业活动停止以后，自然已经以自己的方式重新夺回了其领土。这种生命力的体现是应该被

尊重的。

拉茨对自然的这种尊重并非简单的保留现状，而是通过设计的手段使参观者感知到自然界顽强生命的存在。在北杜伊斯堡景观公园项目中，他所追求的是呈现出一种“荒漠中的绿洲”，通过两者的共存与对比，使得两者的形象都更为鲜明有力。因此，公园中既有精美的观赏园艺花园，也有矿渣仓库的混凝土墙壁上顽强生长的野草和爬藤；既有整齐的樱花树阵，也有生长于铁轨缝隙间的白桦树丛。在精致花园的映衬下，自然生长的野草和灌木也具有了一种别样的美。

2.1.2 尊重普通物种与欣赏平常之美

中国中山岐江公园的设计虽然受到德国北杜伊斯堡景观公园的影响，但是其对于场地植被的处理却不尽相同。设计师俞孔坚对于项目构思的定位为“足下文化与野草之美”，强调尊重普通人的文化，欣赏平常物种之美（相对于稀有的、昂贵的、观赏性的物种），而并不特指场地现存的植物。设计师明确提出，“新的环境伦理在更理性的层面上告诉人们，乡土野草是值得尊重和爱惜的，它们之于人类和非人类的价值绝不亚于红皮书中的保护植物”^[5]。因此，项目中应用了大量的乡土物种，其中包括多种乡土野草。

与拉茨相同，俞孔坚同样强调通过对比的设计手法，即繁茂的乡土野草与精致的人工环境之间的对比，增强人们对于“野草之美”的感知。“并不是所有普通和平常的文化都可以成为艺术的，也不是自然和野草就是美的，设计才使它们成为艺术，成为美”^[5]。这个项目体现了“万物无贵贱之分，无价值大小之分”的环境伦理思想。

拉茨的设计思想与1915年法国著名的人道主义思想家阿尔伯特·施韦泽“敬畏生命”的伦理思想是一致的。施韦泽强调“敬畏生命不仅要求敬畏人的生命，而且要求敬畏动物和植物的生命”。他还指出“敬畏生命的伦理否认高级和低级的、富有价值和缺少价值的生命之间的区分”，这与2000多年前中国道家主张的万物平等论也是相一致的，即尊重天地自然，尊重一切生命平等。其代表人物庄子所说“以道观之，物无贵贱”就明确表达了道家思想中鲜明的反等级态度，即认为没有任何一个生命是无价值的，所有生物都应得到尊重。

2.2 棕地再生过程中的“环境公正”与公众参与

环境伦理中“环境正义/环境公正”（Environmental Justice）的思想最早可以追溯到1962年，美国生物学家蕾切尔·卡逊《寂静的春天》一书的出版，启动了现代环境运动的序幕。环境正义

2. 通过对于乡土野草的运用，中山岐江公园表达了对对于“足下文化”的尊重。© 郑晓笛
2. By using the local weed species, Zhongshan Shipyard Park expresses the respect of the culture being ignored. © Xiaodi Zheng



appreciate the resilience of life. Peter Latz aimed to design a landscape as “an oasis in desolate place” in Duisburg-Nord Landscape Park. The power of this place lies in the juxtaposition and tension between “the tame and the wild”. There are carefully clipped hedge gardens as well as weeds and vines growing on concrete walls of warehouse. There are aligned cherry trees as well as birch groves that pop up between rails. The naturally growing weeds and shrubs reveal a different kind of beauty against the exquisite gardens.

2.1.2 Respect Common Species and Appreciate the Common Beauty

Although the design of Zhongshan Shipyard Park in Guangdong, China was influenced by Duisburg-Nord Landscape Park, they had different approaches to the existing vegetation. The design concept of Zhongshan Shipyard Park is “to respect the neglected culture and admire the beauty of weeds”. The designer Kongjian Yu emphasized the respect to the culture of ordinary people and appreciation of the beauty of common species (versus the rare, expensive and decorative species), not necessarily the species found on site. The designer pointed out that, “the rationale of the new environmental ethics tells people the importance of respecting and cherishing native weeds. They are no less precious than any of the listed protected plants on the Red Handbook”^[5]. The project used a large number of xeric and aquatic native species as well as a large number of native weeds.

Similar to Peter Latz, Kongjian Yu also used contrast as a design method. The juxtaposition between lush native weeds and exquisite artificial environment enhances people’s perception of “The Beauty of Weeds”. “Not all common and ordinary cultures can become art. Nature and weeds do not necessarily equal to art, either. They only become art and beauty through the efforts of design”. This project embodies the environmental ethics of “There is no high and low and no difference in values among all things”^[5].

Peter Latz’s idea is consistent with the ethical thought of “reverence for life” proposed by Albert Schweitzer in 1915. This famous French Humanitarianism thinker emphasized that “reverence for life” requires not only the respect for human life, but also animal life and plant life. He also pointed out that, “The ethics of reverence for life denies the distinction between high and low, worthful and worthless among different creatures”. Similarly, more than two thousand years ago, the Chinese Taoism advocated for the equality of all things and the respects to nature and all life. Its representative Chuang Tzu’s opinion that

“Seeing through Taoism, there is no high or low” articulates the distinct anti-hierarchical attitude of Taoism. The belief is that there is no such life that is worthless. All creatures should be treated and respected equally.

2.2 “Environmental Justice” and Public Participation in Brownfield Regeneration

The root of “environmental justice” in environmental ethics and the beginning of the modern environmental movement extend back to 1962, when the American biologist Rachel Carson published “Silent Spring”. In 1982, protests against a controversial toxic waste dump in Warren County gave birth to the environmental justice movement^[6]. In today’s research around the subject of brownfield regeneration, environmental justice is also a hot topic for western scholars^[7]. In October, 1991, the First National People of Color Environmental Leadership Summit held in Washington D.C., which pushed the movement to a climax. Seventeen principles of “Environmental Justice” were agreed upon by attendees at this meeting. The seventh principle stated that, “Environmental justice demands the right to participate as equal partners at every level of decision-making, including needs assessment, planning, implementation, enforcement and evaluation.”^[8]

With the practice of contemporary environmental ethics entering into the 21st century, “Environmental Justice” movement resulted from the “Environment Injustice” that emerged from an unfair relationship between rights and obligations has received worldwide attention and responses. The U.S. Environmental Protection Agency (EPA) defines Environmental Justice as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies”. It further explains the definition of “Meaningful Involvement” as follows: Meaningful Involvement means that: 1) People have an opportunity to participate in decisions about activities that may affect their environment and / or health; 2) The public’s contribution can influence the regulatory agency’s decision; 3) Their concerns will be considered in the decision making process; and 4) The decision makers seek out and facilitate the involvement of those potentially affected^[9]. There is no doubt in the importance of public participation in today’s environmental justice movement. But we should also note that each country and each project has its own focus and distinctive ways to encourage public participation.



3, 4. 在美国清溪垃圾填埋场改造为公园的设计过程中, 纽约市举办了大量的公众参与活动, 设计师向市民讲解设计愿景并征求公众的意见。© Image by James Corner Field Operations, courtesy of the City of New York

3, 4. During the process of Fresh Kills landfill reclamation project, the New York City government organized many public events. the designers explained the project vision to public and asked them for advice. © Image by James Corner Field Operations, courtesy of the City of New York

运动真正起源的标志是1982年爆发的美国瓦伦县垃圾填埋场抗议事件^[6], 在当今棕地再生的过程中, 环境正义也是西方学者研究的热点问题^[7]。1991年10月, 在美国华盛顿召开的“有色人种环境领导峰会”则将美国环境正义运动推到了高潮。在这次会议中, 达成了有关“环境正义”的17项基本原则, 其中第7条明确指出“环境正义要求在包括需求评估、计划、执行实施和评价在内的所有决策过程中享有平等参与权”^[8]。

进入21世纪, 在当代环境伦理的实践中, 由权利与义务的不平等关系产生的“环境不公”所引发的“环境正义/环境公正”运动得到了全球范围内的广泛响应。美国环保局对于环境正义的定义是: “在环境法律、法规 and 政策的制定、适用和执行等方面, 全体国民, 不论种族、肤色、国籍和财产状况差异, 都应得到公平对待和有效参与环境决策”。在其定义的具体解释中, 对“有效参与”(Meaningful Involvement)作了进一步的阐述。“有效参与”意味着: 1) 可能受到影响的社区居民都有适当机会参与将影响其环境或健康的议案的决策; 2) 公众的意见能够影响立法部门

的决策; 3) 决策过程中应当考虑所有参与者的意见; 4) 决策者为潜在受影响者的参与提供便利。^[9]从这一点可以看出公众参与在今天的环正义运动中的重要地位, 然而公众参与在不同的国家、不同的案例里的侧重与贯彻方式是有所区别的。

2.2.1 棕地项目规划与决策过程中的公众参与

美国纽约州清溪垃圾填埋场的改造项目因其巨大的尺度以及与911事件的密切联系而备受瞩目。这一垃圾填埋场项目从环境伦理的角度来看, 对常年生活在垃圾场周边的居民是不公正的, 政府多年来在他们的“后院”倾倒垃圾, 巨大的垃圾山使其生活环境恶化。他们承受了几乎全纽约市的生活垃圾所造成的负面影响, 却享受不到人人都应享有的新鲜空气、洁净水源和城市绿地, 所以很多附近的居民在项目开始时期持有抵触情绪。

2001年, 在将清溪垃圾填埋场改造为清溪公园的国际竞赛中, 纽约的James Corner Field Operations景观设计事务所获得头奖。在其后的项目推进过程中, 参与者不仅是政府、设计师和投资人, 纽约政府还组织了大量的公众参与活动, 希望让广大人民群众感受到自己在项目的决策过程中是具有发言权的。参与的人群不仅包括场地周边的居民, 还包括很多非盈利组织及各种民间团体, 以及对项目感兴趣的纽约居民。清溪公园总体规划阶段的公众参与过程为期两年, 为了促进和转变公众对垃圾场的传统认识, 纽约政府举办了各种宣传和研讨活动, 积极努力地与公众进行交流, 设立官方网站并将所有涉及项目的政策、法规及其采取的措施, 以及设计成果和过程、公众会议的阶段性总结都公布在官方网站上^[10], 保证项目的透明度和清晰性接受公众的监督。目前, 清溪公园的项目仍在推进过程中, 曾经深受垃圾场之害的民众终于可以参与到自己所生活的城市空间的塑造与决策过程之中。

2.2.2 棕地项目竣工后的公众参与和科普教育

中国杭州天子岭生态公园是杭州第一个建在垃圾场上的生态公园, 总绿化面积约8hm²。与生态公园相配合, 垃圾填埋场区域范围内建设了中国固废博物馆环保小剧院以及天子岭环境教育基地, 开展了多种与垃圾相关的科普教育和公众参与活动。该生态公园和小剧场的参观与使用必须通过预约的方式并由专人带领, 虽不完全自由开放, 但不收取费用。同时, 杭州市环境集团有限公司与中国城市环境卫生协会已经共同成功地举办了三届垃圾与文化论坛。2011年, 杭州市环境集团还推出“跟着垃圾去旅游”项目, 成为国内首条以生活垃圾为主题的市民生态旅游活动。

与美国清溪垃圾填埋场相比, 两者虽然都是将垃圾填埋场造成公园的案例, 但从环境伦理学中环境公正的角度来看是不尽

2.2.1 Public Participation in the Planning and Decision-making Process of Brownfield Projects

Fresh Kills Landfill reclamation project in New York State has drawn much attention due to its huge scale and its linkage with the WTC / 911 tragedy. From the perspective of environmental ethics, it has been quite unfair for people who have lived next to the landfill for years. The government had been dumping garbage into their “backyard” over the years and the huge garbage mountain had worsened their living conditions. They were the ones paying for the negative impact caused by garbage of the entire city, but had no opportunity to enjoy the deserved fresh air, clean water and urban green space like everyone else does. That is why a number of residents around Fresh Kills Landfill were suspicious about the project and the government at the beginning.

The New York landscape architecture firm, James Corner Field Operations won the first place in the 2001 international competition of Fresh Kills landfill reclamation project. The government, the designers and the investors, as well as the public were all involved into the subsequent development of the project. The New York government organized many public events for the concerned people to have a voice in the decision-making process of this project. The public participants included not only local residents near Fresh Kills, but also a lot of non-profit organizations and various non-governmental organizations, as well as New York residents who were interested in the project.

Public participation at the planning stage of Fresh Kills Park lasted for two years. In order to promote and change the public’s common perception of landfills, New York City held a variety of campaigns and discussions, striving to actively communicate with the public. The project’s official website listed all the policies, regulations and actions that were taken^[10]. It also displayed the design process and results and time-to-time summaries of public meetings. The public can gain full knowledge of each step of the project, also putting the project under public scrutiny. Fresh Kills reclamation project is still ongoing. People who used to live under the shadow of the landfill now finally have the chance to participate in the decision-making process of shaping their own urban space.

2.2.2 Public Participation and Education after Completion of Brownfield Projects

Tianziling Ecological Park is the first park that was built on landfills in Hangzhou, China. The total area of this green space is around

8 hm². Along with the eco-park, Chinese Solid Waste Museum and Environmental Protection Theater, as well as Tianziling Environmental Education Base are built on site, providing a variety of garbage-related science education and public participation opportunities. The ecological park and the theater can only be visited by appointment with a guided tour. Though not freely accessible by the public, there is no entrance fee. Hangzhou Environmental Group Co., Ltd. and the China Association of Urban Environmental Sanitation have successfully held three forums on garbage and culture. In 2011, Hangzhou Environmental Group also launched “Travel Following the Garbage”, which was the first public eco-tourism featured in municipal solid waste in China.

Although both projects are landfill reclamation projects, they are not quite the same from the perspective of environmental justice defined in environmental ethics. Fresh Kills reclamation project encouraged public participation in the preliminary planning and decision-making process, and allowed the public to get more involved in the decision-making process through project announcements and design workshops. The public opinions did influence the final results of the design. While Tianziling project has emphasized the public participation only after the completion of the project. There was not much public involvement during the preliminary planning and design of the project. It focuses on providing public education and participation through a series of educational events.

The different implementations of public participation in these two projects are largely a result of different legal requirements of “public participation” in these two countries. In the U.S., public participation is required and protected by legal regulations. The designers and the government must meet the obligation of implementing “public participation” in the same way as implementing other legal processes. In China, although importance of public participation has been greatly improved in recent years, it is mostly conducted through the simple form of asking for “public opinions”, and design of the project is only on show after its completion for a short period of time. Sensitive projects such as the reclamation of landfills are often promoted only after the projects are already completed. More in-depth and influential “public participation” in the decision-making of projects can only be achieved with legal support and protection.

3 Conclusions

Because soil pollution is often not noticeable and can last for a

相同的。纽约清溪垃圾填埋场强调的是在项目前期规划与决策过程中的公众参与，通过公布设计方案和设计研讨方式进行交流，让市民参与更多的决策过程，市民的建议部分地影响了设计的最终结果。而杭州天子岭第一垃圾填埋场在项目的前期规划和设计中并没有开展全面的公众参与过程，其重点在于生态公园建成后，通过开展一系列的科普活动来引导公众参与。

中美两个案例在棕地再生过程中公众参与的差别，很大程度上是由“公众参与”在法律中地位的不同而造成的。在美国，项目中的“公众参与”有明确的法律条文规定。在项目推进过程中，设计师和政府必须如同履行其他法律程序一样，来实施“公众参与”。在中国，“公众参与”过程在近些年已经有了很大发展，但很多情况下仅以征求“市民意见”的形式出现，而且通常都是在设计成果出来后进行象征性的展示，例如垃圾填埋场改造等敏感项目往往在建成后才进行宣传推广。更为深入的、能够影响决策的“公众参与”还需获得法律上的支持和保障。

3 结语

土壤污染由于其隐蔽性和长效性，会对公众造成巨大的危害。尽管已经出现针对棕地的多种治理措施和再生行动，但跳出技术圈，从环境伦理的角度来审视地球万物，为后世的生存环境进行反省和展开行动，应成为我们的责任。在棕地再生的过程中，对于平常的、普通的、现有的生态系统应平等尊重，对于因棕地而处于环境弱势的公众群体的需求应尽力满足。我们应通过不断提高环境伦理的认知，帮助全社会站在环境公正的角度来了解棕地的危害与改造的潜力，并唤起更为广泛的环境意识。LAF

long time, it has done extreme harms to the general public. Although a variety of management methods and actions have been taken in brownfield regeneration, we are responsible for not only seeking technical solutions, but also examining all lives on the earth from the perspective of environmental ethics and rethinking and acting for the living environment of future generations. During brownfield regeneration, common and ordinary existing eco-systems should be treated equally with respect. The needs of disadvantaged groups which are more vulnerable from the damage caused by brownfields should be listened and fulfilled. We should improve our understanding about environmental ethics and stand from the perspective of environmental justice to inform the public about the hazards and regeneration potentials of brownfields and spread environmental awareness to a broader public. LAF



注释

本研究受浙江省教育厅科研项目资助（项目编号Y201223782）。

NOTE

This research is a project supported by Scientific Research Fund of Zhejiang Provincial Education Department (No. Y201223782).

- 5, 6. 天子岭垃圾填埋场区内建设的“天子岭第二课堂”，布置了与垃圾相关的各种展览，并设有可供参观者互动的体验环节。© 郑晓笛
- 5, 6. "Tianziling Second Classroom" is built in Tianziling landfill. There are many related exhibitions, and the visitors could experience the interactive activities. © Xiaodi Zheng

REFERENCES

- [1] Cai, R. (2013). Soil Pollution: "State Secret" Buried in ground (in Chinese). *China Newsweek* (8): 36-37.
- [2] China Environmental Protection Union. (2012). Review of Recently Soil Pollution Event (in Chinese). Retrieved from <http://www.epun.cn/jiaoyu/zhishi/57364.htm>
- [3] Sun, B., Guan J. T., Lian, Z., Ji Z., Lou, C., Li, S. (2012, June 13). Elegy of Land (in Chinese). *Economic Information*.
- [4] U. S. A. Public Law. (2002). The Small Business Liability Relief and Brownfield Revitalization Act.
- [5] Yu, K., Pang, W. (2003). The Culture Being Ignored and the Beauty of Weeds — The Regenerative Design of an Industrial Site, the Zhongshan Shipyard Park (in Chinese). Beijing: China Architecture and Building Press.
- [6] Hartley, T. W. (1995, Fall). Environmental Justice: An Environmental Civil Rights Value Acceptable to All World Views. *Environmental Ethics*, 17, 277- 278.
- [7] Zheng, X. (2013). Review of English Dissertations and Publications on the Subject of Brownfield Regeneration (in Chinese). *Chinese Landscape Architecture*, 29(2), 5-10.
- [8] The People of Color Environmental Leadership Summit. (1991, October 27) The Principles of Environmental Justice. Retrieved from <http://www.Ejnet.org/ej/platform1.html>
- [9] EPA. (2013, March 28). Environmental Justice Basic Information. Retrieved from <http://www.epa.gov/environmentaljustice/basics/>
- [10] City of New York Parks and Recreation. (2013, March 28). Freshkills Park. Retrieved from <http://www.nycgovparks.org/park-features/freshkills-park/public-review#tabTop>