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应对人口流失的景观设计改进方法：以美国宾夕法尼亚州约翰斯敦的城市更新为例

DESIGN FOR THE DEPOPULATING LANDSCAPE: A RETROFIT APPROACH TO URBAN REGENERATION IN JOHNSTOWN, PENNSYLVANIA, USA

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摘要

在过去50年里，世界范围内有370座大城市的人口缩减了至少10%。宾夕法尼亚州约翰斯敦的收缩速度位居全美第三，人口减少使这座深受去工业化影响的城市面临严重衰退，社会乱象频发，居民生活质量下降。本项目提出了一个针对收缩型城市的城市设计框架，即将永久性功能布局于高开发潜力区域，临时性功能则安排在衰退区域，待未来城市恢复活力后，开发活动也将随之兴起。项目通过利用地理信息系统建立的加权叠加模型评估约翰斯敦不同区域的衰退威胁等级，从中选出4个场地为其分别制定策略，为空置 / 废弃物业赋予新功能以回应居民的期望和需求，从而形成为各场地量身定制的总体规划。相较于投入高、见效快的开发激励措施，这种规划方法更注重培育经济基础的多样性，以期为城市创造新的长期经济增长点，并引发生活方式变革，同时也为推动收缩型城市的社会公平与公正提供了一种路径，丰富了城市更新规划中社会维度的内容。

关键词

城市衰退；城市人口流失；城市更新；适宜性建模；城市收缩

ABSTRACT

Over the last 50 years, 370 large cities worldwide have severely depopulated, or shrunk, by at least 10%. Johnstown, Pennsylvania, is the third fastest U.S. shrinking city. Primarily a victim of deindustrialization, Johnstown faces severe decline issues related to depopulation, including social disorder and lowered quality of life. This project develops a framework for urban design for shrinking cities, integrating permanent functions into high development potential areas but temporary functions into declining areas. This approach allows for future development to occur through time as the city recovers. Using a GIS-based weighted overlay model to assess the threat level of decline, 4 sites were identified and strategies for each were developed. Master plans to retrofit new functions integrating residents' desire and demands into vacant / abandoned properties were then generated for each site. Rather than chasing hefty attempted quick-hitting developmental incentives, this approach will bring new long-term economic engines and lifestyles to the city due to a diversity in the economic base; it also pays attention to the social dimension of urban regeneration by providing a structured way to promoting social justice and equity in shrinking cities.

KEYWORDS

Urban Decline; Urban Depopulation; Urban Regeneration; Suitability Modeling; Urban Shrinkage

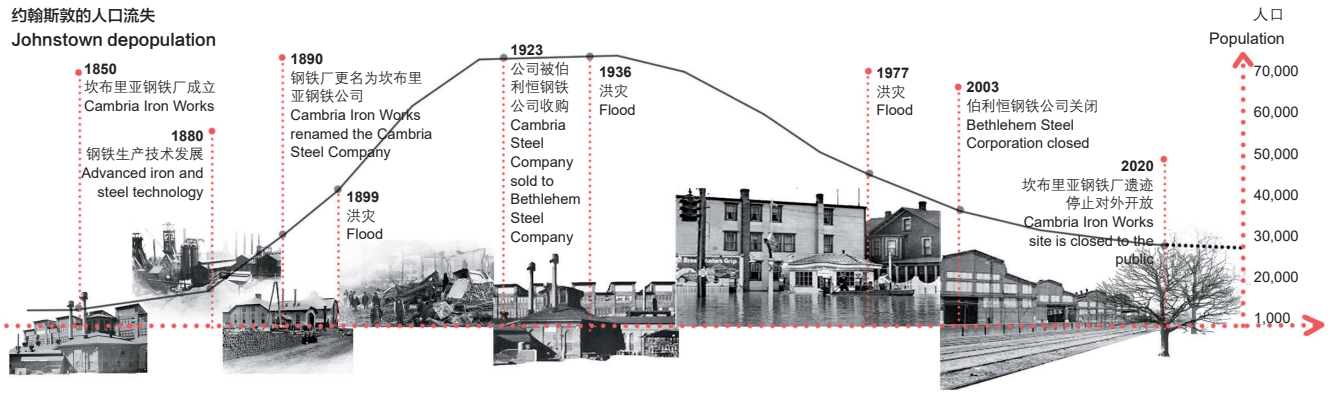
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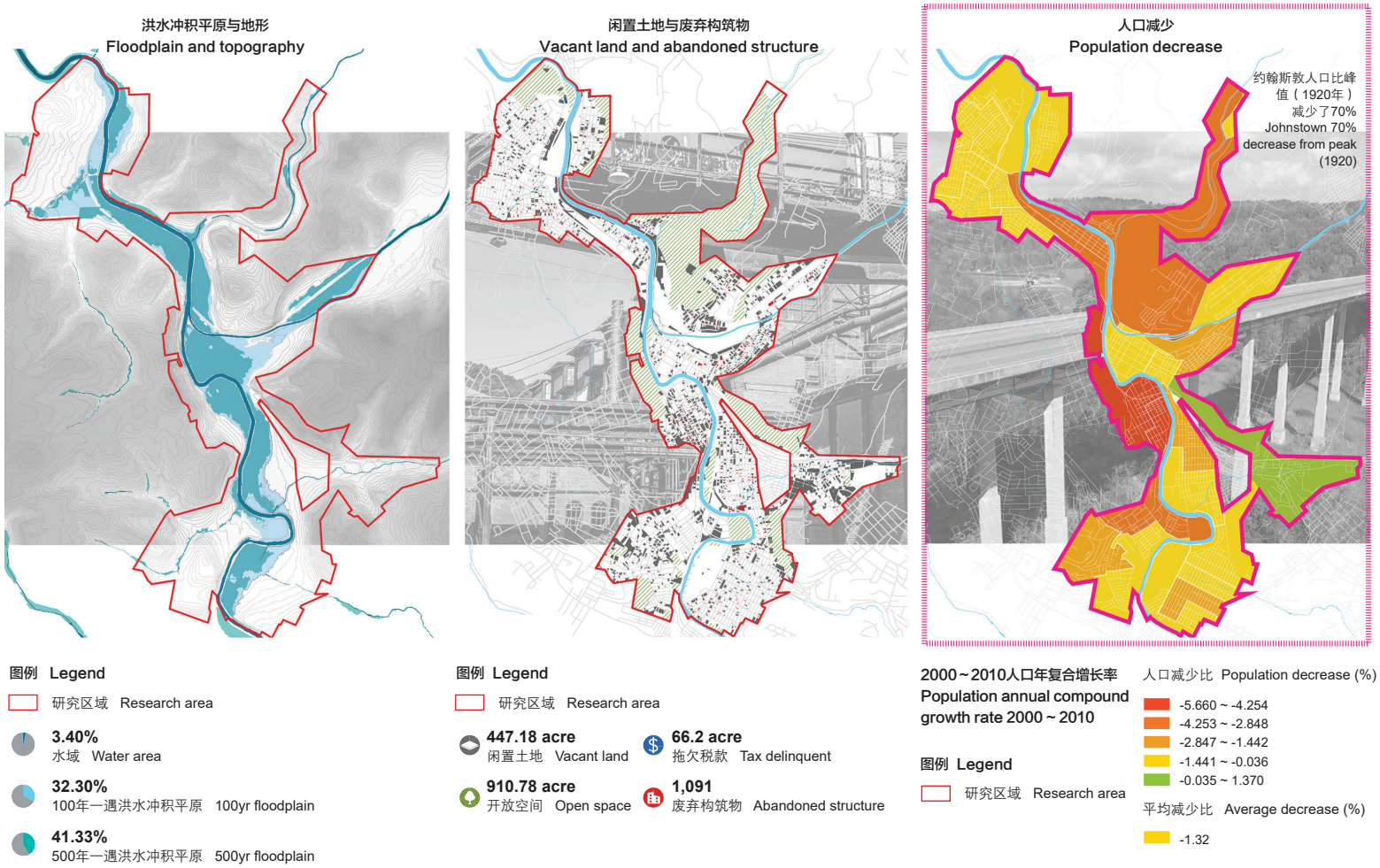
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1. 约翰斯敦人口流失的历史及现状条件

1. Timeline of depopulation and current conditions of Johnstown





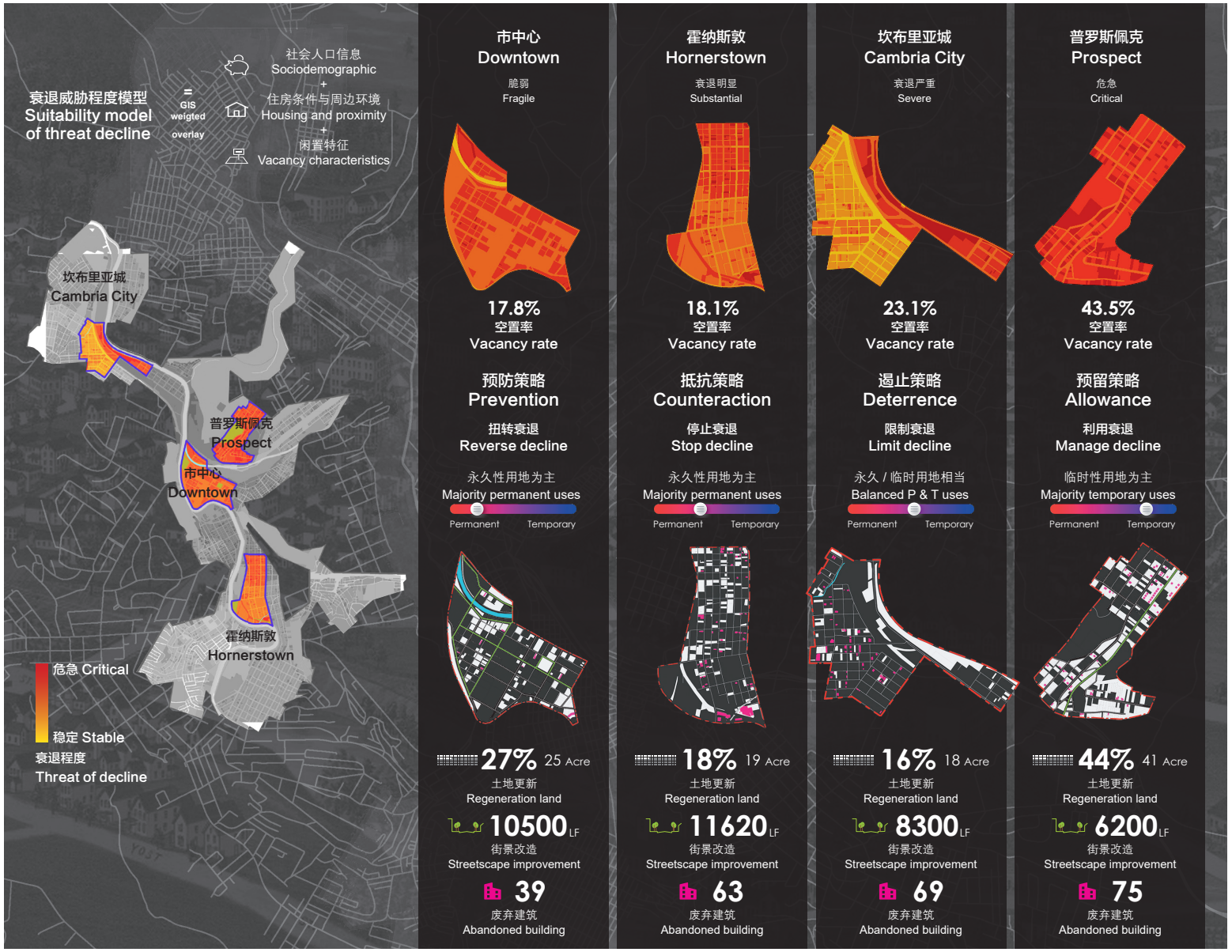
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1 背景与问题

在过去50年里，城市化在世界范围内迅速推进。与此同时，部分高度城市化的地区（如众多欧美大城市）却发生了显著的人口流失[1]~[3]。由于工业衰退和就业机会减少[4]，目前全球有370座大城市的人口已缩减了10%或更多。出现严重人口流失和去工业化现象的城市被称为“收缩城市”，在美国以“锈带”及其中所谓的“遗产城市”尤为典型[5]~[7]。宾夕法尼亚州约翰斯敦的居民数量在其钢铁制造业彻底衰落后锐减，收缩速度现已位居全美第三（图1）。

除了经济衰退，遗产城市还面临着社区环境恶化和投资缩减，其显著表现之一就是象征着社会萧条的废弃建筑和地块增加[1][2][8]，进而加剧社会失序和附近居民的不满[9]。大面积废弃社区的留守居民通常是低收入者，自身资源的匮乏使他们无法摆脱这种环境。解决收缩型城市的土地空置／废弃问题并为留守居民制定社区振兴计划实非易事——



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2. 依据4个场地的衰退威胁程度分别对其采取的策略：预防、抵抗、遏止与预留。

2. Four treatment strategies applied to each site based on the threat of decline: Prevention, Counteraction, Deterrence, and Allowance.

由于社区中往往存在零星的仍在使用的房屋，因此清空整片街区或政府集体拆迁并不现实[10]。尽管面临诸多挑战，为收缩型城市制定合适的建成环境策略仍对其未来复兴至关重要[11]。

随着人们离开衰落的社区，剩余居民在就业、商业活动和休闲娱乐上的选择也越来越少，而它们作为人类欲望的映射，一直以来都是城市规划和设计的对象。“破窗理论”认为，一扇损坏的窗户会导致对该地区的负面感知，并助长潜在的非法活动；当居民目睹社会失序或感到恐惧多于安全时，他们对社区的满意度就可能降低。该理论也用以证明废弃建筑会造成周边房产贬值、影响经济活力，并增加社区衰落的风险。这还将引发社区品质的恶化，且恶化范围也会随时间推移逐步扩大。

拆迁和土地储备是处理衰退社区最常见的政策，但也广受批评。拆除废弃建筑虽有助于减少管理成本[12][13]，但这种效益在场地尺度上才较明显，况且拆迁本身的成本也极其高昂[12]。在某些情况下，将闲置和废弃土地保留或再利用可能对社区更加有利。例如，近期有文献讨论了将空置房产转化为社区绿地的生态效益[14]-[16]。这或将有助于扩展城市绿色网络，修复生态资产[17]，从而吸引更多居民[14]。

收缩型城市的衰退社区需要多样且足够灵活的更新策略以满足居民的需求和欲望，并应对难以预测的情况。与促进城市增长不同，为衰退的城市制定更新策略更具挑战性，可参考的经验也非常有限[1]。目前已有许多城市将闲置土地资源的盘点与管理视为必备基础[8]，由此推行以提高社区生活质量为目标的新型城市更新政策[18]。然而，尽管此类政策在底特律和克利夫兰等城市的社区尺度实践中收获了积极效应[7]，但如何在未知未来需求的情况下为一块未使用的土地赋予永久性的新用途仍是收缩型城市和衰退社区更新中一个公认的难题。因此，许多

城市更新规划还需同时考虑临时性用地规划[19][20]。对于社区更新而言，这一举措不仅有利于盘活现有的废弃地产，也能使社区成员参与决策过程、为社会经济地位较低的业主提供支持，并减缓衰退的蔓延[19]。

适用于某一城市的更新策略在另一城市未必奏效。虽然与人口流失和过度空置相关的一般社会物质问题是相似的，但每个社区都是不同的[2]；鉴于不同城市和地域发展的不均衡，未来的投资领域选择和战略制定都需对症下药[21]。为了做出明智决策，建立在对社会经济及物质条件的评估之上的场地与社区环境全面分析，以及通过公众参与获得的居民愿望和需求信息缺一不可[20]。因此，面向收缩型城市的社区更新策略应是多样化、组合式[11]且因地制宜的。

为了应对这些挑战，约翰斯敦于2018年通过了“衰退全面整治战略计划”[22]，由城市官员、居民、非营利机构和当地社区组织共同参与解决全市范围内的社区衰退问题，并制定更新策略，涵盖房屋修复和拆除、地产许可证管控、犯罪筛查与土地储备等方面。本文以约翰斯敦为例，提出了一个针对收缩型城市的设计规划框架，将永久性用地布局于高发展潜力地块，临时性用地则更多安排在衰退区域。这些用地规划都是通过社区参与过程充分了解留守居民的需求和愿望后确定的。

2 设计过程

项目结合社会人口属性、住房类型、房屋空置率等受人口流失影响的空间信息，建立了一个加权叠加模型来评估城市衰退程度，并根据评估结果选择市中心、霍纳斯敦、坎布里亚城与普罗斯佩克这4个衰退程度不同的场地，随后通过整合一系列现场调查、研究、数据分析，以及与市规划人员、当地利益相关者和居民的会议商讨结果，为各地制定与其衰退程度相匹配的总体方针、具体策略与场地更新总体规划。基于这一改良方法制定的未来愿景将具有更强的经济性与可实现性，亦保证留守居民可以继续居住在此。

2015年，在当地企业与市民领袖的努力下，约翰斯敦启动了名为“2025年愿景”的公众参与项目，通过建立整合社区规划与社区赋权的研究框架，为约翰斯敦居民集中表达对城市的诉求和期望提供了渠道。项目由阿勒格尼社区基金会、“探索约翰斯敦市中心”合作组织、坎布里亚地区议院、非营利经济发展组织JARI，以及会展与旅游局等地区机构协助确定方向、提供指导与经济支持，利用结构化协作平台动员了超过1 500名志愿者，组成了50余个团队，分别研究聚焦于特定的经济、社区和环境目标的居民需求和愿望。随后，志愿者团队与上述机构合作改造约翰斯敦的滨河地带、与教育机构合作为市中心带来更多教育机会与资源，从而打造富有吸引力的步行友好城市，并引导社区领袖团结在一个目标之下（图2）。

2.1 市中心：预防策略

市中心区域现有闲置土地面积占比为17.8%，现存废弃建筑39座，并拥有石桥、教堂、洪水博物馆等众多历史地标，以及中央公园、医疗中心等设施，这里也是前往约翰斯敦主要旅游景点“斜面”的中转站。该策略旨在通过一系列多功能规划为原本的永久性用地赋予更高的发展潜力，以扭转城市衰退，有策略地选择优先发展的区域，以驱动经济引擎，引领城市复兴。因此规划将市中心分为6个区——艺术与旅游区、商业区、疗养区、滨水区、中心区和住宅区（图3）。位于艺术与旅游区的闲置/废弃土地被改建为艺术展览空间和博物馆，用以举办新的节庆活动。改造升级后的商业区将设立创业空间，孕育就业机会。滨水区被改造为一座线性公园，以供人们亲近河流。北侧空地被改造为城市公园，用于举办户外艺术展和定期活动，如美食啤酒节和洪水城市音乐节。其他功能设施包括音乐博物馆、艺术展陈空间、艺术家跳蚤市场、工作室、零售场所与餐厅（图4）。

2.2 霍纳斯敦：抵抗策略

霍纳斯敦作为老工业区，拥有废弃的钢铁厂房及教堂等遗迹。在土地闲置率近20%、废弃建筑60余座的情况下，该策略试图将有活力的小型功能用地植入大面积的永久性用地中以遏止当前的衰退趋势，而规划的临时性用地相较预防策略也更多。建议利用面积较大的闲置土地发展新型清洁型技术工业，以增加就业岗位并促进工业基础多样化（图5）。历史悠久的工业基地将被改造成商住两用区；同时，新建的就业中心提供职业培训，支持当地新兴商贸；钢铁厂遗迹则将改造为面向游客及当地居民的全新地标，现有的铁路轨道、适宜骑行的林荫大道与大部分绿地相串联，形成倡导积极生活的网络。沿河产业集群将变身高科技工业区，吸引新投资（图6）。

2.3 坎布里亚城：遏止策略

坎布里亚城拥有天然的铁路和水路运输优势，有近四分之一的闲置土地与近70座废弃建筑。该策略旨在通过平衡临时性和永久性用地的数量，尽可能抑制城市衰落对目标区域的影响。该策略建议将开发活动限制在曾经的混合用地内，临时性用途集中布局在住宅区。柯尼莫河畔的大片荒地为修建绿地和亲水活动区提供了可能（图7），遗产发现中心与十英亩桥等旅游景点也距此处不远。该设计将滨水区作为娱乐场地，并将主街和现有步道重新开发为综合休闲区。未来市民可在铁路公园和休闲公园进行活动，也可在码头乘船观光或划皮艇。部分空地将被留作绿地和口袋花园，通过城市健身步道与主街及河滨相连。该设计旨在吸引年轻人，为城市及当前以退休人口为主的人群注入新鲜血液。教育中心作为高等教育课堂的延伸，吸引学生群体的前往。主街景观经改造后将拥有更多公共开放空间以供集会。城市健身步道沿线的废弃建筑也可供年轻艺术家进行墙绘创作（图8）。

2.4 普罗斯佩克：预留策略

普罗斯佩克的海拔较高，可以俯瞰约翰斯敦及其周围群山的壮丽景色，且坐拥丰富的绿地，邻近市中心及其他景点，但土地闲置率超过40%，废弃建筑多达75座（图9）。该策略主要借助临时性用地来调

节城市衰退的影响，通过响应社区需求与增加绿色基础设施使普罗斯佩克在建立新的城市经济增长点建立并迎来复兴前，优先改善衰败地区景观的视觉效果，而非执意推行必将失败的开发活动。设计将一个小型商业 / 零售区作为进入社区的门户，现有凌乱的开放空间将被改造成中央公园，住宅用地沿主干道分布。闲置土地将被收归储备，或以每英亩1美元的价格出售给周边居民扩建自己的庭院，并促使他们悉心打理。废弃建筑中有许多建于20世纪70年代的洪水灾民公共住房，设计建议通过翻新及提高住房之间的通达性，将其改造为经济适用住房（图10）。

3 讨论与回顾

各场地运用的策略各有不同但彼此配合，共同应对人口流失导致的城市衰退。项目的总体思路是建立一种可不断自我完善的更新过程，将永久性用地布局在最有把握顺利开发的区域，并允许以临时性用地为主的区域暂缓开发，以静候适宜发展时机的到来。相较于投入高、见效快的开发激励措施，这些策略更注重培育经济基础的多样性，以期为城市创造新的长期经济增长点，并引发生活方式变革。前述策略在全面应用于4个场地后，预期将对约翰斯敦全市产生积极影响：每个场地平均将有约72%的闲置土地得到更新，其中永久性和临时性用地分别占53%和47%；新增开放空间总面积将超过12.5hm^2，59%的现有废弃建筑将被重新利用，新增就业岗位将超过3 600个（图11）。

如前所述，在城市规划领域，城市更新中的社会维度变得越来越重要[11]。本项目利用地理信息系统进行空间分析，以扭转人口流失与土地闲置造成的社会失序和生活质量下降。规划过程中的公众参与和多方互动使当地居民能够不受外界干扰，自主决定社区的未来，并根据自身需求和愿望以多种方式利用现有空地和废弃建筑物；这一过程也加深了居民们对社区独特性的理解，从而产生更多的社会效益。随着废弃地块被转化为新资源和活动场所，附近居民的社会地位也将得到提升。

此外，此方法为推动收缩型城市的社会公平与公正提供了一种路径。如前所述，在收缩型城市中，弱势群体的地理分布往往较为集中[10]。许多类似案例推行的振兴政策并未回应贫困人口、老年人或无家可归者的需求，反而无意中加剧了社会阶层的两极分化。此项目采用的方法实际上构建了一个根据社区衰退程度对其进行资源管理的框架：叠加模型包含种族、收入及其他人口统计学变量，据此对社区衰退的严重程度进行评价与分类，有助于规划师和决策者将所有这些因素纳入考量，并提出不同方法来满足特定社区的需求，而非简单地采用样板化的振兴政策。

废弃与空置房屋通常位于老工业区和商业区，有损市容，且对社会经济发展以及人体 / 环境健康产生负面影响[23]。该项目通过土地再利用，赋予这些房屋新的生产性用途，从而推动各场地的商业和服务业繁荣，但不依赖刺激发展的手段，因为这些手段可能对人口流失社区并不奏效[24]。城市活动的全面恢复需要耐心和时间，随着规划逐步落实与战略政策不断调整，集中贫困将得到缓解，城市就业市场将恢复生机，私人投资也必将回暖并刺激当地税收。**LAF**



永久性用地 Permanent uses
1 集装箱式办公住宅 Residential container studio
2 艺术展和跳蚤市场 Art exhibition and flea market
3 零售和餐饮 Retail and restaurant
4 音乐博物馆和展览 Music museum and exhibition
5 混合用地 Mix use
6 居住区 Residential
7 创新技术型产业 Innovation and tech-base business
8 学生创业中心 Student startup business center
9 办公区 Office
10 酒店 Hotel
11 剧院 Theater

临时性用地 Temporary uses
12 火车站广场 Rail station plaza
13 滨水艺术区 Art district waterfront
14 户外庆典活动草坪 Outdoor festival and event lawn
15 户外艺术展 Outdoor art exhibition
16 斜面滨水区 Inclined Plane waterfront
17 口袋花园 Pocket garden
18 科技步道滨水区 Tech trail waterfront

保留现有用地 Existing
19 洪水博物馆 Flood Museum
20 “斜面” Inclined Plane

0 50 100 200m

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3. 市中心场地的总平面图

3. Master plan of the Downtown site

项目信息

项目地址： 美国宾夕法尼亚州约翰斯敦
项目面积： 485.62hm^2
项目委托： 宾夕法尼亚州坎布里亚郡规划委员会
景观设计： 得州农工大学住房与城市开发中心
首席设计师： Galen Newman
项目团队： 黎东莹、浦晨霞、屈安怡、朱芮、陶之涵
项目合作： 宾夕法尼亚州坎布里亚郡规划委员会
设计时间： 2018年6月 ~ 2020年6月
所获奖项： 2020美国景观设计师协会得克萨斯分会学生组分析与规划类杰出奖

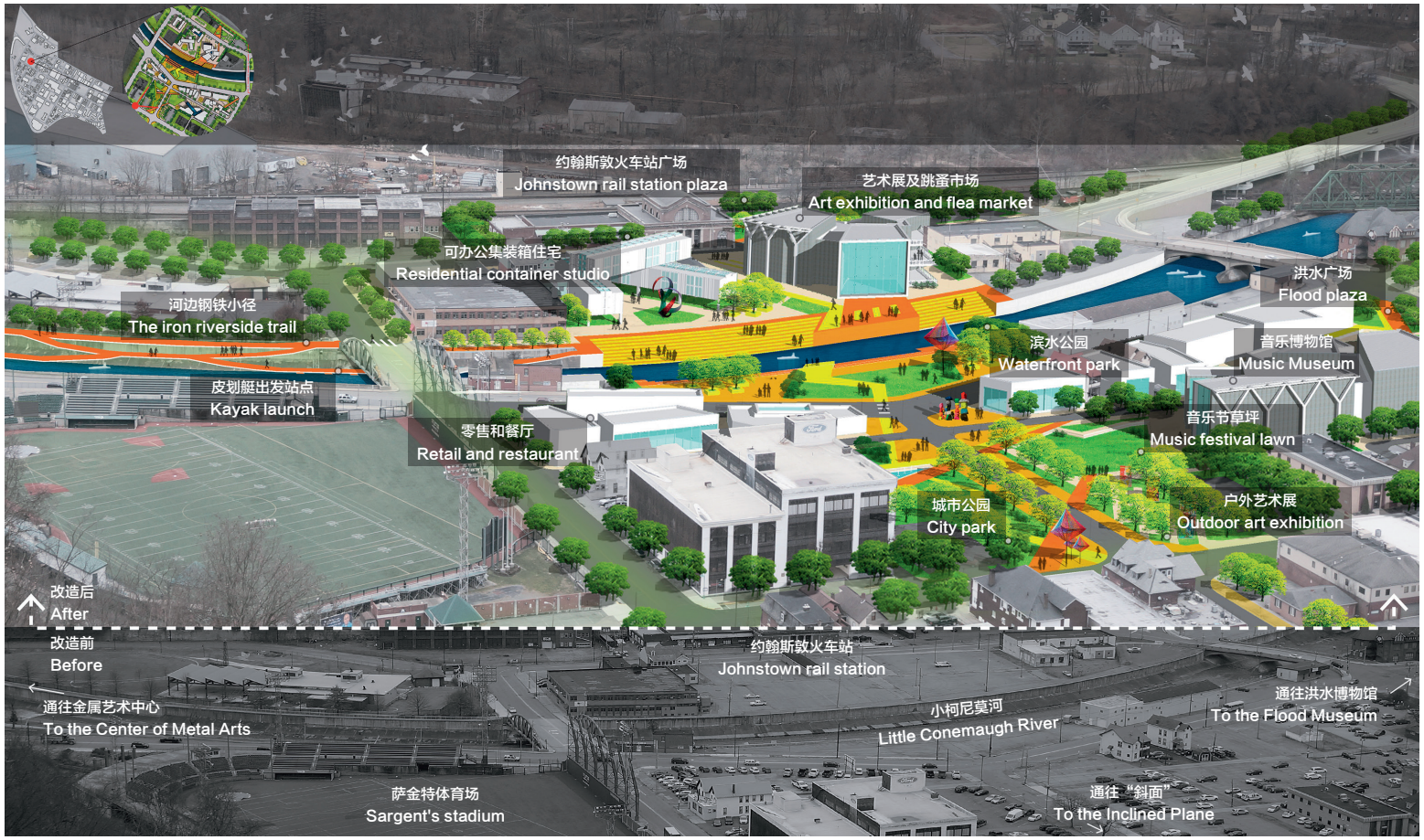
4. 市中心的闲置土地将被改造为城市公园

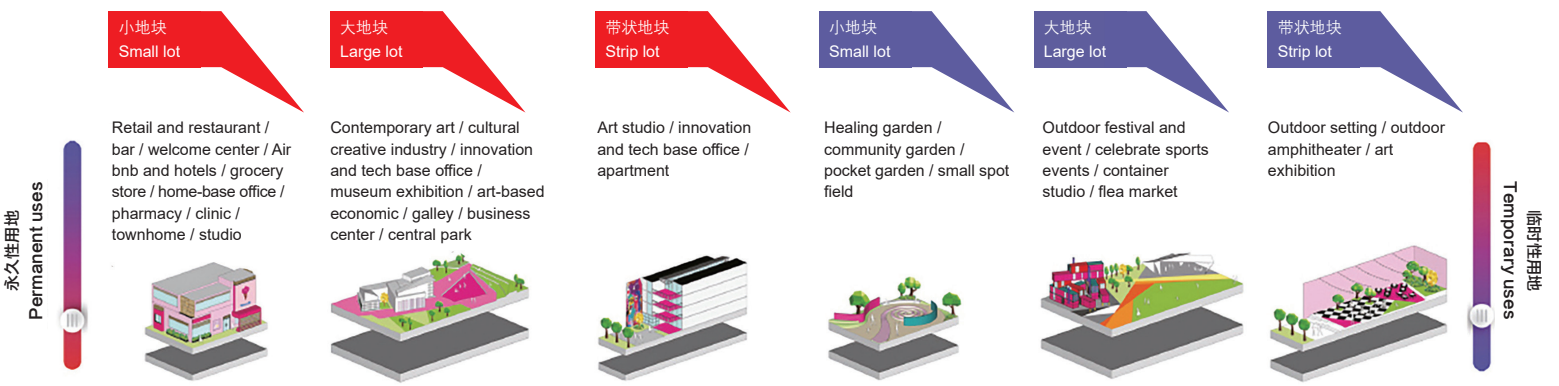
4. Repurposed vacant land into a city park in the Downtown site

1 Background and Problems

Over the last 50 years, while the world is rapidly urbanizing, some parts of the already-urbanized world, such as many large cities in Europe and the United States, have experienced severe depopulation[1]~[3]. In fact, 370 large cities worldwide have severely depopulated or shrunk by at least 10 percent, as a consequence of declining industries and a shrinking job market[4]. Cities experiencing severe depopulation and deindustrialization are referred to as “shrinking cities.” In the U.S., the Rust Belt region has gained an unfortunate reputation for depopulation and deindustrialization, specifically in what are referred to as “legacy cities”[5]~[7]. Primarily a victim of defunct steel manufacturing, Johnstown, Pennsylvania has seen even severer resident decrease and is the third fastest shrinking city in the U.S. (Fig. 1).

Along with economic decline, legacy cities can also see physical deterioration and disinvestment in local communities.





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One of the noticeable issues of the physical change across declining communities is the increase in abandoned structures and vacant lots, indicating social distress[1][2][8] and thereby exacerbating social disorder and lowering neighborhood satisfaction[9]. Residents left behind in communities with intense abandonment are typically lower-income populations with fewer resources to move out of such conditions[10]. Implementing a strategic solution to solve the vacancy / abandonment issue and suggesting a regeneration plan for remaining residents in shrinking cities is not a simple task. The remaining active houses are not typically clustered, thus, emptying the entire neighborhood or suggesting public clearance is not a realistic approach[10]. While challenging, developing appropriate built environment strategies is crucial to the future success of shrinking cities[11].

When populations leave the declining neighborhoods, so do many of the lifestyle choices of remaining residents including jobs, commercial activities, and recreational options. Urban planning and design have historically directed the characteristics that reflect such desires. Broken Windows Theory posits that a damaged window in a neighborhood can lead to negative perception of the area and increase potential illicit activities; when residents observe social disorders or sense more fear than safety, they are likely to be less satisfied with their neighborhood. The theory has been used to prove that the presence of abandoned structures can decrease nearby housing values and economic potential, and increase the risk of neighborhood decline. Further, abandoned structures and boarded-up windows can degrade neighborhood quality and this degradation can spread over time.

The most common policy response to neighborhood abandonment is demolition or land banking, yet associated strategies have been widely criticized. Demolishing abandoned structures has been utilized as a strategy to remove blighted buildings and reduce management costs[12][13]. However, the benefit of demolition is more impactful at the site scale, and it can be extremely costly[12]. Additionally, demolition should not always be the first choice, as sometimes preservation or reuse of vacant and abandoned land could, in fact, better benefit the community[13]. For instance, recent literature discusses the ecological benefit of converting vacant properties into green space for the community[14]~[16]. This could potentially expand the citywide green network and restore ecological assets[17], which can eventually attract more residents[14].

Communities experiencing urban decline related to shrinkage require diversified strategies that cater for residents' demands and desires and are flexible enough for unpredictable circumstances. Unlike strategies promoting urban growth, regeneration strategies associated with urban decline can be much more challenging and have limited known tactics[1]. With the necessity of inventorying and managing vacant land[8], many shrinking cities are making progress with new regeneration policies targeted at increased quality of life[18]. While this regeneration movement in cities such as Detroit and Cleveland have shown positive changes on the community scale[7], one recognizable difficulty in regenerating shrinking neighborhoods and cities is identifying a new permanent use for an unused lot



永久性用地 Permanent uses
1 就业中心 Career center
- 就业 / 劳动力培训 Job / workforce training
- 招聘会 Career fair

2 商务区 Business district
3 钢铁工业博物馆 Iron Industry Museum
4 高科技工业园区 High-tech industrial park
5 居家创业村 Home business village
6 轻工业区 Light industry district
7 人才之家 Houses for talent

临时性用地 Temporary uses
8 草药温室 Herb-medicine greenhouse
9 工人公寓 Worker's apartment
10 城市公园 City park
11 共享单车站 Bicycle sharing station
12 铁路 Rail trail

保留现有用地 Existing
13 大约翰斯敦中学 Greater Johnstown Middle School
14 桑迪维尔纪念花园 Sandyvale Memorial Gardens
15 铁道 Rail road

0 50 100 200m

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5. 霍纳斯敦场地的总平面图

5. Master plan the Hornerstown site

6. 霍纳斯敦的废弃钢铁厂将被改造为博物馆

6. The abandoned iron mill in Hornerstown redesigned as a museum

without knowing future demands in the area. As such, many urban regeneration plans require the implementation of both permanent and temporary uses[19][20]. Adopting temporary uses for the community as a regeneration strategy can be valuable as it not only reuses existing abandoned properties, but also involves the community in the decision-making process, supports house owners in a low socioeconomic status, and slows the spread of decline[19].

It should not be assumed that a regeneration strategy that works for one city will work in another. While the common socio-physical problems associated with depopulation and excessive vacancy are similar, each community is different[2]. Because growth is not expected evenly across all cities or regions, the areas to invest in and the strategies to be implemented should be wisely adopted[21]. To make informed decisions, a comprehensive analysis of the site and neighborhood contexts



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needs to be accompanied by assessments with socioeconomic and physical conditions and integrated with engagement outcomes linked to resident desires and needs[20]. Thus, potential regeneration strategies for shrinking cities need to provide combined and diversified solutions[11] while considering the physical and social contexts of each community.

To address the challenges, Johnstown adopted a Comprehensive Blight Strategy Plan[22] in 2018. City officers, residents, nonprofits, and local community organizations participated in the planning process to address issues of citywide abandonment and propose regeneration strategies. The primary strategies include property remediation and demolition, permit control, crime screening, and land banking. Using Johnstown as an example, this project develops a framework for the planning and design for shrinking cities, integrating permanent functions into potential high development areas and more temporary functions into declining areas. These functions were based on community engagement processes which sought to identify the social demands and desires of the remaining population.

2 Design Process

In order to assess the threat level of urban decline, a weighted overlay model was created using sociodemographic, housing, vacancy, and other spatial characteristics related to the effects of depopulation. Based on this output, 4 sites with different levels of decline were selected: Downtown, Hornerstown, Cambria City, and Prospect. Through a combinational series of field investigations, research, data analytics, meetings with Johnstown city planners, and meetings with local stakeholders and residents, approaches to dealing with decline specific to each site were identified. Strategies for dealing with urban conditions associated with the decline level of each site were then proposed and retrofit master plans were developed. The retrofit approach allows future development to be more affordable / realizable while not displacing residents who have not left the city.

In 2015, Johnstown's engagement undertaking known as "Vision 2025" was launched through the efforts of local business and civic leaders, in which a research framework was developed to integrate community planning and engagement power into the hands of Johnstown residents by focusing on their needs and desires for the city. Based on a structured and collaborative platform, it mobilized more than 1,500 volunteers to form over 50 teams. Each team explored residents' needs and desires upon specific economic, community, and environmental goals, assisted by area agencies including the Community Foundation for the Alleghenies, Discover Downtown Johnstown Partnership, Cambria Regional Chamber, JARI, and the Convention and Visitor's Bureau which helped provide direction, guidance, and financial assets. The teams then worked with these agencies in an effort to transform Johnstown's riverfront, and collaborated with educational institutes to create downtown opportunities, building an attractive and walkable city and aligning community leaders under one goal (Fig. 2).



7. 坎布里亚城场地的总平面图

7. Master plan of the Cambria City site

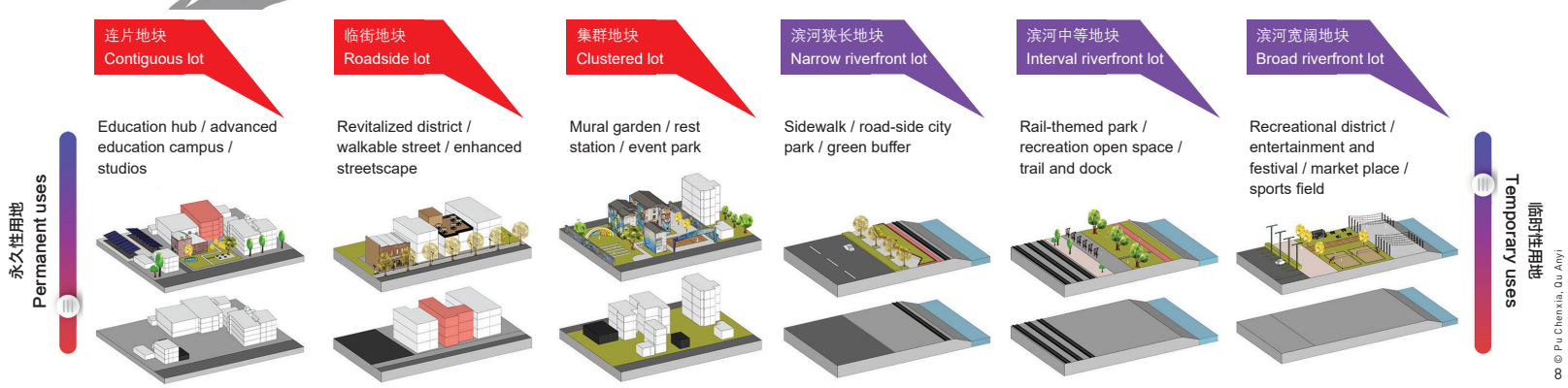
8. 更新后的坎布里亚城滨水区

8. Regenerated waterfront area in Cambria City

2.1 Strategy for Downtown: Prevention

With 17.8% vacant land and 39 abandoned structures, the Downtown has various historical landmarks such as the Stone Bridge, churches, and the Flood Museum, and the central park, a medical center as well as a connection to the city's primary tourist attraction, the Inclined Plane. This strategy seeks to reverse urban decline through a series of multifunctional programming to transform primarily permanent land uses into areas with higher development potential. Strategically developing new anchors into prioritized urban districts will bring in new economic engines to help initialize revitalization. The Downtown site is divided into 6 districts—art and tourism, business, therapeutic, waterfront, central, and residential (Fig. 3). The vacant / abandoned land in the art and tourism district is repurposed into art exhibition spaces and museums to create new festivals and events. The enhanced business district offers student startup / entrepreneurial spaces for new job opportunities. The waterfront is also remolded as a linear park to increase riverfront accessibility. The vacant land in the north is repurposed into a city park to hold outdoor art exhibitions and year-round events, such as the food and beer festival and the Flood City Music Festival. Other programmatic elements





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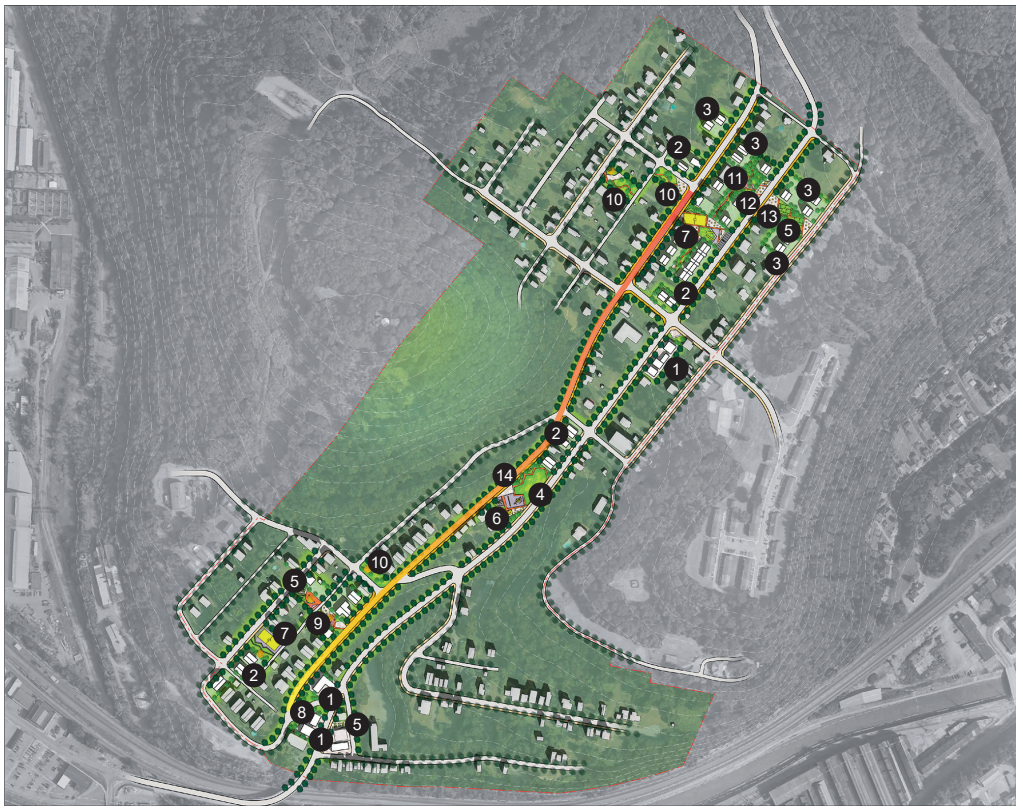
include music museum, art exhibition, artist flea market, studio, retail, and restaurant (Fig. 4).

2.2 Strategy for Hornerstown: Counteraction

Hornerstown is a historic industrial district with relics such as an abandoned iron mill and churches. Faced with a vacancy rate of nearly 20% and over 60 abandoned structures, this strategy seeks to stymie the process of current decline through small-scale insertions of revitalization-based programmatic elements into a majority of permanent land uses, but more temporary uses than the prevention strategy. New, cleaner industries are suggested in this site to increase jobs and provide a more diverse industrial base. Large vacant lots are regenerated for new, cleaner, and technology-based industrial uses (Fig. 5). The historic industrial site is adapted into a live–work district. Simultaneously, the new career center offers job training and encourages new local trades. The existing historic iron mill will be repurposed into a new landmark attraction for both tourists and locals. Riverside green space together with the abandoned rail road composes the green space networks, a majority of which connects the existing rail-trail and bicycle-friendly boulevards to create a network of active living opportunities. Clustered industries along the riverfront area will become a high-tech industrial district and attract new investment (Fig. 6).

2.3 Strategy for Cambria City: Deterrence

Cambria City has natural benefits for rail and water transportation, yet with nearly a quarter of its land vacant and almost 70 structures abandoned. This strategy seeks to limit the effects of urban decline as best as possible in targeted areas with a balanced amount of temporary and permanent land uses. Development is only suggested in targeted areas within previously mixed-use zones, concentrating temporary uses into residential areas. Large barren lands located adjacent to the Conemaugh River provide possibilities for green space and waterfront activities (Fig. 7). Other tourist attractions such as the Heritage Discovery Center and the Ten Acre Bridge are also nearby. The design takes the waterfront for recreational uses, and revitalizes the main street and existing trails to develop a mixed-use recreational district. The rail park and recreational park will provide spaces and activities for citizens while the pier will be used for future boating tourism and kayaking. Some vacant lots will be preserved as green space and pocket gardens, being connected to the main street and riverfront through a city fitness trail. The design seeks to attract young people as new blood to the city and the current retiree-dominant population. An educational hub functions as an extension of higher education which will serve students. The streetscape of the main street will be revitalized and create more public open spaces for gathering. The existing abandoned buildings along the city fitness trail can also provide mural spaces to attract young artists (Fig. 8).



9. 普罗斯佩克场地的总平面图

9. Master plan of the Prospect site

2.4 Strategy for Prospect: Allowance

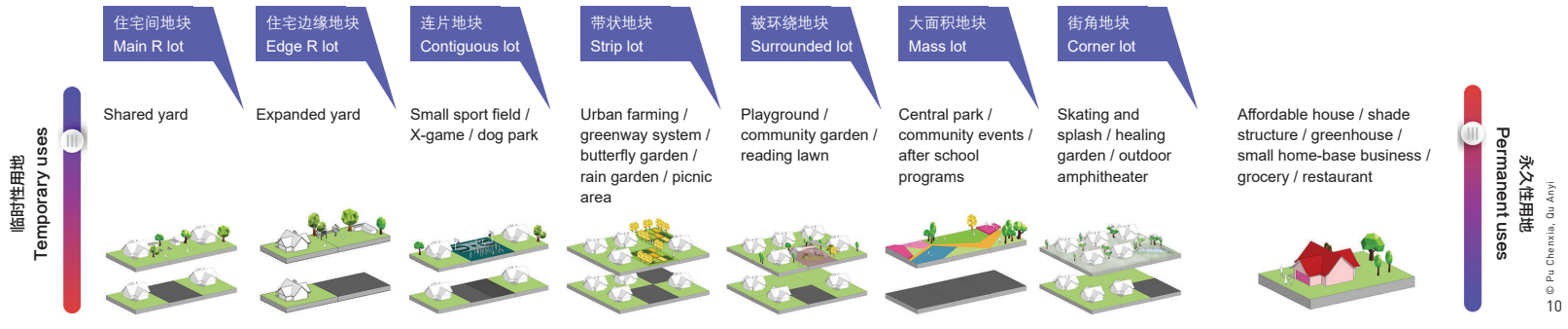
Prospect's high altitude brings gorgeous views of Johnstown and its surrounding hills. It has large green space and is close to both Downtown and other city attractions with over 40% of its lands vacant and 75 abandoned structures (Fig. 9). This strategy

10. 20世纪70年代供洪水灾民使用的废弃公共住房将被改造为保障性住房

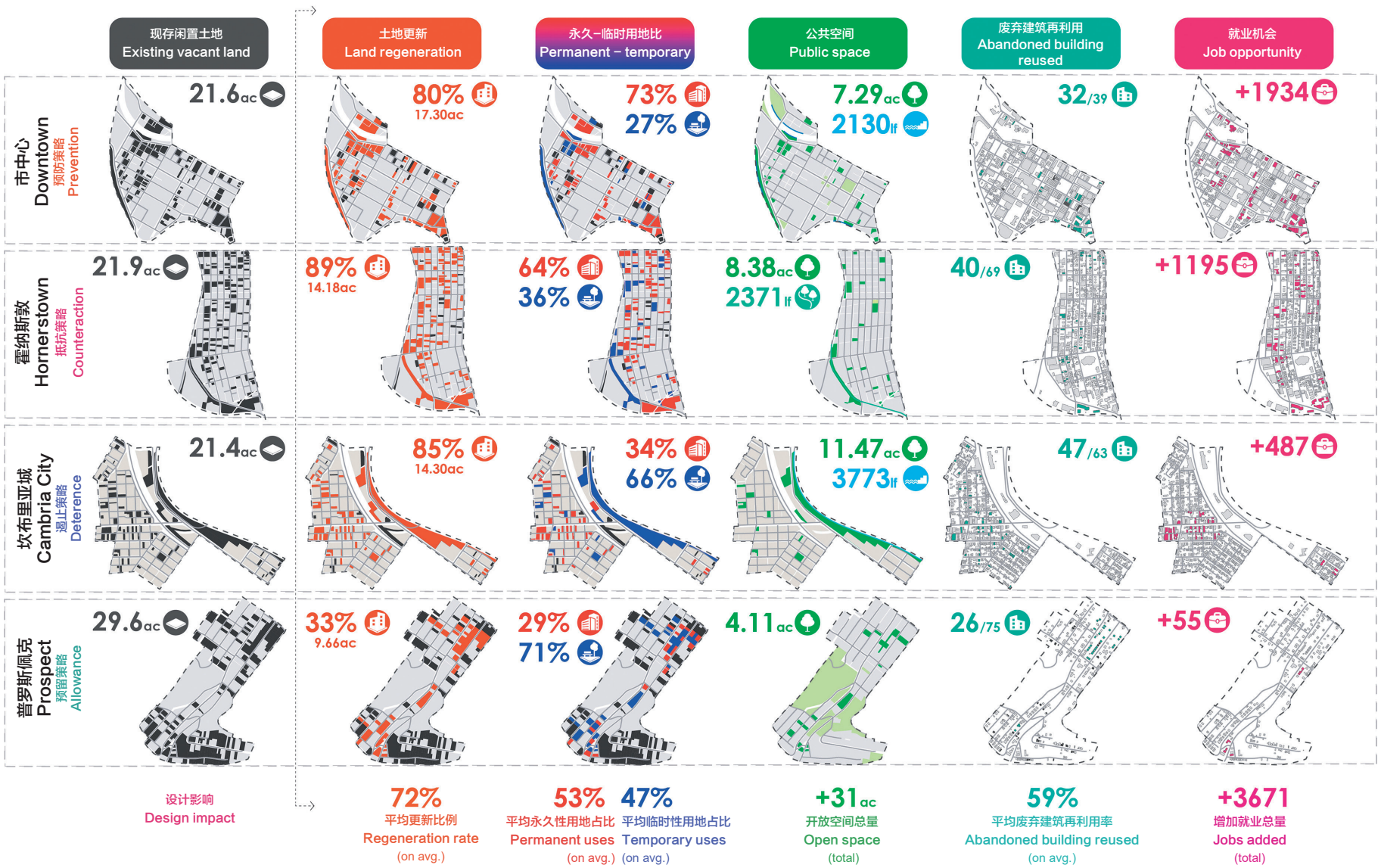
10. Repurposed abandoned public housing constructed for flood victims in the 1970s into affordable housing

seeks only to manage the effects of decline through a series of mostly temporary uses. In this way, community-based needs and the increase of green infrastructure can limit the visual impacts of blighted areas until a new economic engine appears and allow the city to recover, during which Prospect can remain dormant in hopes of urban recovery, but does not force new development into any area where it will, more than likely, fail. The design calls for a small business / retail district as a gateway into the community. The existing unkempt open space will be remolded as a central park with residential land uses scattered along the primary arterial. Approaches to extend current residential lot sizes through land banking and selling vacant lots for 1 U.S. dollar an acre allow for increased maintenance to surrounding lots for extended yard space. As for many of the abandoned buildings which were public housing for flood victims in the 1970s, the design proposes to renovate them and insert





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connections into the interstitial space to create new affordable housing opportunities (Fig. 10).

3 Discussion and Review

Each strategy applied to each site is unique, but all work with one another to treat urban decline as a result of depopulation. The overarching idea is to develop a process of urban regeneration which builds upon itself and applies permanent functions where will have the most success but allows areas with mostly temporary uses to remain dormant until development potential increases over time. Rather than chasing hefty attempted quick-hitting developmental incentives, the approach will bring new long-term economic engines and lifestyles to the city due to a diversity in the economic base. Overall, the strategies, when applied to all 4 sites, project to positively impact the city of Johnstown. About 72% of the existing vacant land will be regenerated across each site on average, using 53% of permanent and 47% temporary uses. In total, more than 31 acres of open space will be created, 59% of existing abandoned buildings will be reused, and more than 3,600 new jobs will be created (Fig. 11).

As noted, the social dimensions of urban regeneration have become increasingly important in urban planning[11]. In this project, a GIS-based spatial analytic approach is used to reverse the social disorder and diminished quality of life

11. 设计策略对4个场地产生的预期影响

11. Estimated impact of design strategies across all 4 sites

caused by depopulation and vacant land. Public involvement and interactivity within the planning process allows local communities to determine their own future independent of outside interference, creating different ways of using the current vacant lots and abandoned buildings based on their inherent needs and desires, which in turn allows for better understanding of unique qualities of their communities, thus creating more social benefits. With the transformation from abandoned lots into new resources and access to activities, the social status or residents nearby will also be improved.

Further, this approach helps provide a structured way to promoting social justice and equity in shrinking cities. As noted, the tendency for the most vulnerable groups in such areas is to be concentrated in one or a few geographical areas[10]. In many similar instances, adopted revitalization policies failed to address the needs of the poor, the aging, or the dispossessed, thus inadvertently increasing polarization by social class. The methodology adopted in this project actually creates a framework for inventorying and managing declining neighborhoods based on their level of decline: it identifies and classifies communities based on severity of decline through the overlay model with race, income, and other demographic variables, allowing planners and policy makers to consider all these factors and propose different ways to cater for the needs of particular community, not simply adopting boilerplate revitalization policy.

Abandoned and vacant properties are often located in former industrial and commercial areas, and can be visual eyesores, negatively impacting social and economic development as well as human / environmental health[23]. In this project, new and productive uses are returned to them via land reuse, which encourages growth of businesses and services in each site but does not chase only developmental incentives that may not yet work in the depopulating neighborhoods[24]. Restoration of full activities will take patience and time. With implementation and adjustments of the strategic policies, concentrated poverty can be broken up, jobs can be returned to the city, and private investment and local tax revenue will be stimulated. **LAF**

PROJECT INFORMATION

LOCATION: Johnstown, Pennsylvania, USA
AREA (SIZE): 1,200 acres
CLIENT: Planning Commission of County Cambria, PA
LANDSCAPE DESIGN: Center for Housing and Urban Development, Texas A&M University
CHIEF DESIGNER: Galen Newman
PROJECT TEAM: Li Dongying, Pu Chenxia, Qu Anyi, Zhu Rui, Tao Zhihan
COLLABORATOR: Planning Commission of County Cambria, PA
DESIGN PERIOD: June, 2018 ~ June, 2020
AWARD: Student Award of Excellence for Analysis and Planning Category, 2020 American Society of Landscape Architects, Texas Chapter

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