DETERMINING THE EXTERNAL SOCIAL COSTS OF PUBLIC SPACE CROWDING: LIFE IN A TOURIST GHETTO

B. Neuts[1]

ABSTRACT It can theoretically be stated that the property rights of a city's public spaces lie with the local population, making it a case of common property. The right holders can therefore decide upon proper use and potentially exclude non-right holders. In reality, however, limiting use rights to public space in the form of exclusion is extremely difficult to impose and consequently seldom occurs. This results in a situation where the common property runs the risk of being over-consumed. Nevertheless, in contrast with environmental resources, this overconsumption will generally not result in a tragedy of the commons where the resource ultimately gets destroyed. Herein lays the major difference between public space and other sorts of common goods: public space is simultaneously subtractable and reproducible. The consequences of crowding in public spaces are temporal and intangible, in the form of utility loss to its users. This temporal aspect of crowding still induces significant societal costs, in the form of annoyance, loss of life quality or avoidance of the public space altogether. Quantifying these external costs, with special attention to the case of tourist crowding, will result in improved cost-benefit models and more adequate development strategies.

Keywords: public space, crowding, externalities, tragedy of the commons, choice experiments, tourism

INTRODUCTION

Public spaces hold a privileged position in the history of urbanization. Since ancient times these places have served a diversity of functions ranging from commercial transactions, social exchange, and entertainment, to political protest and contemplation (Mattson, 1999, Ward-Perkins, 1974). Consequently, it is possible to incorporate the geographical-political concept of public space into an economic productive resource model with utility for different users as its output. However, the different functions of public space can be contradictory at times which, combined with the inherent spatial restrictedness of space, could lead to a possible rivalry in resource use. This becomes most clear in situations of congestion leading to a loss in utility for different users.

This loss of utility as a result of the activities of other users can be identified as an externality of space use. The social costs of utility loss are not internalized in the private cost function of the decision maker, leading to a sub-Pareto optimal resource allocation (Meade, 1973). Apart from the impact on Pareto optimality, which is simply an efficiency measure, the social desirability of the situation should also be

[1] Flemish Centre for Tourism Policy Studies, Katholieke Universiteit Leuven

considered. Indeed, the question arises whether the utility loss of some users as a result of the activities of others is acceptable. Answering this question needs to account for ownership of space and use rights within space which inevitably leads us to the need to define public space.

CHARACTERIZING PUBLIC SPACE

A question of ownership

Public space is often conveniently defined through legal ownership, where it is placed on a bipolar axis opposing private property (Staeheli, 1996). According to this delineation, public space is characterized by communal or governmental property rights regimes which converges with the classical idea of public space as political space, related to a specific community which owns the rights based on democratic citizenship (Johnston, Gregory, Pratt & Watts, 2000). Stated differently, public space belongs to a public.

Kohn (2008), acknowledging the internal complexity of the term ‘public space’, does not, however, limit her definition to ownership, relating the publicness of a space to a continuum on three axes: ownership, intersubjectivity, and accessibility. Nonetheless, it can be shown that Kohn’s definition only extends the topic of ownership to the full range of available property rights. This becomes obvious when we decompose property rights in its different sub-rights. As Starrett (2003) states, property rights distinguish between regulation – the actual ownership of a resource – and use rights. The rights to regulate are hierarchically superior to use rights since they encompass control over management, exclusion, and alienation choices, thus creating the regulatory framework which defines acceptable use – ranging from physical access to withdrawal opportunities of certain resources. Through ownership, then, accessibility – and with it the possibility of chance encounters with others – can be granted. And as Németh (2009) notes in his study about privately owned public space, open access does not have to be limited to publicly owned space, showing the need to focus on these use rights, instead of ownership rights, as the defining factor in public space.

To conclude: spaces in a city will have a public character if they are freely accessible, thereby complying with Young’s (1990) ideal of an open heterogeneous space. This accessibility will be managed through underlying ownership rights which, although not necessarily limited, will almost invariably fall under the jurisdiction of a governmental body. As a result non-members will often not hold the same rights on public space as do members of a polity. This does not, however, implicate that their use of public space is an illegal activity. Rather it results in their use being subordinate to the decisions of the right holders: the public.[2] Nonetheless, even in situations where the activities of non-locals are secondary to those of locals, in reality exclusion of users almost never occurs due to practical and ethical reasons, leading to a condition where public space can very much be considered an open access resource, linking it with a wider economical reality.

[2] Evidence to support this can for instance be found in Rome where recent laws forbid tourists to picnic or sleep in certain public spaces.

Space as a consumption good

Defining public space through ownership and accessibility clearly links the concept with the broader economic framework of consumption goods, ranging from private consumer goods to pure public goods as distinguished by two characteristics: non-subtractability[3] and inclusivity. While non-subtractability implies that the consumption of resource units does not lead to an extraction of these out of the resource system and could therefore be used and re-used indefinitely – with the marginal cost of an extra user being zero – inclusivity is concerned with the possible exclusion of groups of consumers.

It is important to make a distinction between the often confused terms of public goods, common property resources, and open access resources. While pure public goods are deemed inclusive and non-subtractable, common property resources, in turn, are subtractable in nature, leading to the possibility of a future depletion of the resource base. The difficulty of exclusion is seen by Ostrom (2005) as a shared characteristic between both types of resource. However, Baland and Platteau (2007) rightly point out that under common property regimes, the right of exclusion is assigned to a well-defined group of users. Stevenson's (1991:46) definition of common property as: "… a form of resource management in which a well-delineated group of competing users participates in extraction or use of a jointly held, fugitive resource according to explicitly or implicitly understood rules about who may take how much of the resource", clearly supports this notion. As long as a property regime is in place, this leads invariably to a right to possess, which is essentially the right to physical control and possible exclusion of others. Nonetheless, Ostrom's (2005) point of view can find support, given the fact that many common property resources suffer from ill-defined property rights. Furthermore, protection of the common property from free riders might be impossible or extremely costly.

Open access resources are distinct from common property in that exclusion is impossible. The rivalry in exploitation indicates that there are potential use rates for which the open access resource is no longer a pure public good. If the use rate exceeds carrying capacity of the resource base, destruction in the long run is inevitable.

Seeing that common property, open access and public goods have often been confused in the literature, it should be no surprise that public space has both been seen as a common property resource (e.g. Briassoulis, 2002; Vail & Hultkrantz, 2000) and as a public good (Rigall-I-Torrent, 2007). From our earlier characterization of space, it became clear that public space does have clearly defined property rights and can therefore be seen as a specific example of common property.[4] However, since these legal property rights do not lead to an exclusion of space use, open access characteristics can be assumed, leading to a possible rivalry in consumption. However, this subtractability is not unambiguously present, since Westover (1989) notes that urban spaces need a certain use level in order to function efficiently and negative congestion effects on space utility will only set in after certain use levels. This is translated in Healy's (1994) concept of congestible goods which are non-rival

[3] Sometimes also called rivalry in consumption.

at use levels between zero and a certain positive amount, yet become rival when this number of users or the intensity of use is exceeded.

PUBLIC SPACE AND THE TRAGEDY OF THE COMMONS

The problem of open access resources

If public space is indeed characterized by open access conditions and a rivalry in consumption which sets in after a certain use level is exceeded, we have to wonder whether the public space resource runs the risk to fall into the trap of what Hardin (1968) called 'the tragedy of the commons'.

Building upon the works of John Stuart Mill, David Ricardo, and Thomas Malthus, who each placed the problems of finite natural resources central in their theories about economic growth and market evolution, Hardin argues that natural commons with no clearly defined property rights will invariably lead to ruin whereby the resource on which production depends gets depleted through purely rational decision making. He illustrated his view with the example of a pasture, open to all herdsmen.[5] In seeking to maximize his gains, each herdsman looks at his own utility of adding one additional animal to the herd. This decision will generate both profits, in the expected sales of an additional animal, and costs, due to the acquisition of an animal and the overgrazing of the pasture. However, since the expected profit is his alone while the additional costs have to be borne by all users, rational decision making will lead to the continuous increase of the herds until a point is reached where the profit generated by a new animal no longer exceeds the loss in profits due to the underfeeding of other animals. Not only us this point non-optimal in terms of general profit maximization, the continuous overgrazing might lead to the erosion and weed-dominance of the pasture, severely limiting the reproducibility of the farmland.

While Hardin's theory was founded upon natural productive resources, remodelling his assumptions for the specific case of public space use is fairly easy. As a first hypothesis, a certain physically limited public space is assumed, for instance a town square. The primordial output of public space as a system is the utility it provides for its users. Hardin's production function is thus transformed into a utility function:

$$u(n, xi, K)$$

[5] Notice here that Hardin (1968) accentuates the open access characteristics of the pasture. Therefore his tragedy of the commons is actually a tragedy of open access resources.

Where utility is a function of the number of others present (n), a collection of other relevant characteristics that define utility of space (xi)[6], and its ultimate physical carrying capacity (K) above which further consumption becomes impossible. The cost related to this utility function is the travel cost (c), which is assumed to be independent of the number of others and homogeneous between users.

Furthermore, assume that under ceteris paribus assumptions, we can write the utility function as:

$$u(n, xi, K) = an - bn^2 \qquad if\ n < K$$

$$u(n, xi, K) = 0 \qquad if\ n \geq K$$

Which makes use of Lancaster's (1966) model of consumer choice which states that utility of a good is explained by its attributes. The utility function shows a negative density dependence with declining marginal utility. If maximal utility gain for users of the space is the objective – that is, it would be possible to exclude potential users for the sake of current users – then the efficient outcome would be:

$$\frac{\partial u(n, xi, K)}{\partial n} = \frac{\partial cn}{\partial n}$$

$$a - 2bn = c$$

$$n = \frac{(a - c)}{2b}$$

However, under open access conditions each individual will independently decide upon consumption. This decision will not depend on societal utility and costs but only on the personal outcome. Different from the earlier example the total costs of an individual will not depend on the amount consumed, since naturally one can only be or not be in space. Under the assumption of homogeneous users this will mean that people will continue to arrive in space up to a point where:

$$\frac{u(n, xi, K)}{n} = c$$

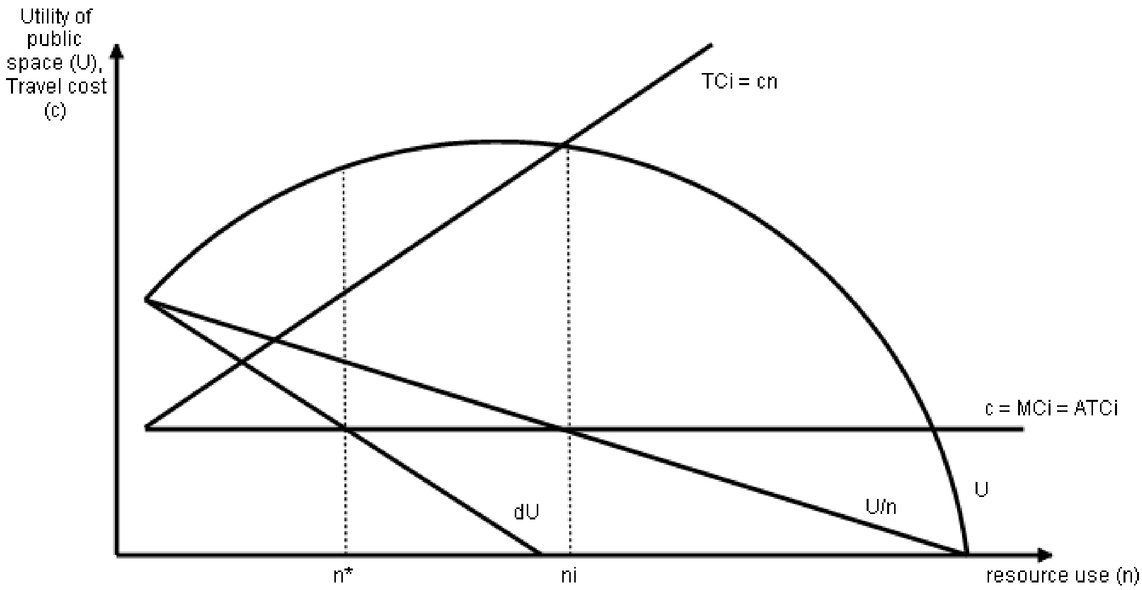
$$a - bn = c$$

[6] While an enumeration of these characteristics is redundant for our analysis, interested readers can be referred to Fornara, Bonaiuto and Bonnes (2009) and Tu and Lin (2008).

$$n = \frac{(a-c)}{b}$$

Showing how, based on our particular utility function, the space use under open access will be twice as high as the productively efficient resource use. The reason why a difference in use level is found is that profit – or utility – optimization requires a monopolistic market structure, while under the freedom of open access, the market is characterised by perfect competition. Figure 1.1. gives a graphical representation of this resource use under open access conditions.

Figure 1.1: Tragedy of public space under open access conditions

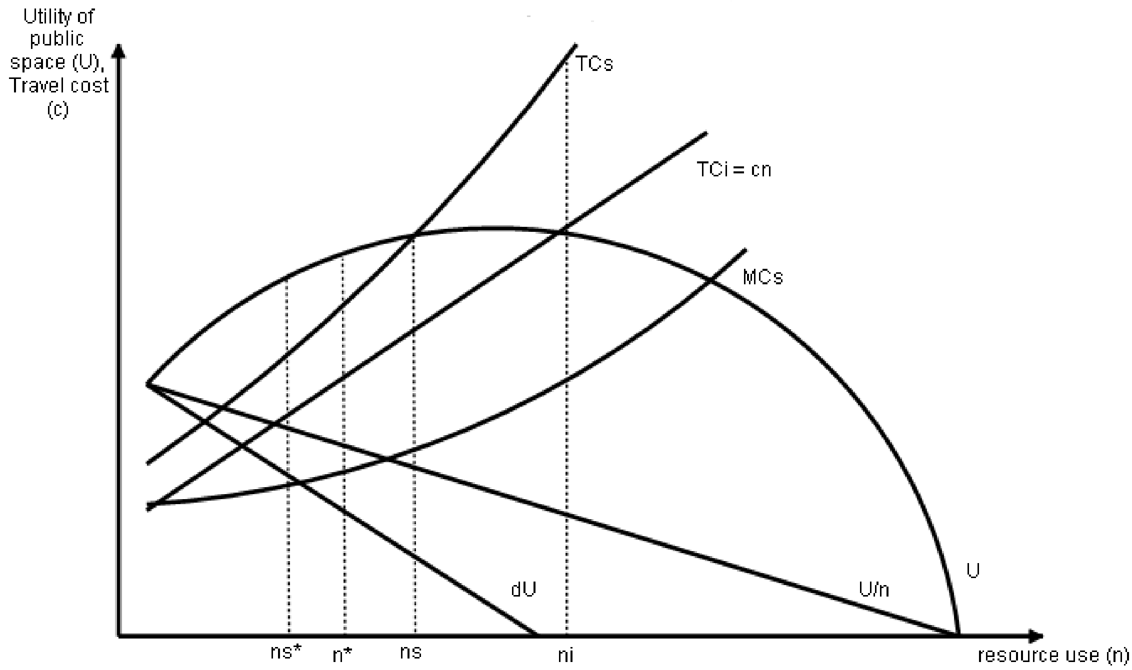


While the overuse is clearly a problem of productive inefficiency, it is not necessarily an unacceptable situation. This can be explained by the specific characteristics of public space as a congestible good. Since urban spaces are capable to withstand large numbers of users without physical deterioration, resource use above the point of efficiency will likely not destroy the resource for future use. This makes public space unikely subtractable and reproducible. If, as a consequence, the resource is not subject to destruction, it can be argued that from a societal point of view public space should ideally be open to as large a part of the public as possible and could therefore rightly be consumed up to the point of physical carrying capacity (K). However, a different set of problems underlies the public space problems of open access: the consumption by both locals and non-locals and the externalities caused by these non-locals.

Overuse and the problem of externalities

Due to the open access characteristics, the potential use by non-locals is virtually unbounded. As a result the total number of users of public space will be made up by locals and non-locals, with non-locals influencing the utility experienced by locals, sometimes locals might opt for non-use altogether, instead choosing alternative public spaces and therefore losing the utility of that specific space altogether. A society should therefore be aware of the potential external costs caused by non-locals in their consumption of space. To identify the implications this overuse has on society, another graphical analysis is helpful. In figure 1.2 the total amount of visitors under open access (ni) is compared to the efficient use numbers if accounting for external costs – which can for example consist of traffic jams, displacement effects or physical deterioration. Due to negative externalities, the individually optimal resource use will be higher than the socially optimal quantity, ns, leading to a loss of societal wealth.

Figure 1.2: Marginal cost and revenue curves for public space



While the existence of certain externalities as a result of public space use may be logically clear and graphically established, the actual measurement of these externalities in terms of monetary values is much harder. One way to quantify these externalities is by a choice experiment method. This methodology, which has been used extensively in marketing research and has found more recent adaptations in environmental economics, uses a random utility approach as a theoretical basis to integrating behaviour with economic valuation in choice experiments.

The assumptions to use random utility theory are comparable to the assumptions made when calculating open access resource use: space users will make the decisions which will generate maximum utility, accounting for the different levels of the characteristics (n, xi) and the cost of their decision (c). Through different choice sets, a conditional indirect utility function can be estimated, of the form:

$$Vij = \beta 0 + \beta \mathbf{1} x1 + \beta \mathbf{2} x2 + \cdots \beta ixi + \beta nn + \alpha c$$

Where Σxi are the different characteristics that define the utility of a certain space, of which the number of users (n) and the travel cost of entry (c) are examples. By altering different levels of the characteristics, the welfare effects of a certain situation can be estimated from the conditional logit model through the formula:

$$CS = \frac{ln\Sigma \exp(Vi\mathbf{1}) - ln\Sigma \exp(Vi0)}{\alpha}$$

Where CS is the welfare effect, α is the marginal utility of the monetary attribute in the choice experiment, and Vi0 and Vi1 represent indirect utility functions before and after the change under consideration. Consequently, the marginal value of change in a single attribute (in our case n), under ceteris paribus assumptions, can be represented as:

$$WTP = -\mathbf{1}\left(\frac{\beta n}{\alpha}\right)$$

This formula represents the marginal rate of substitution between the cost to enter space and the number of users present and is as such a measurement of the willingness to pay for a change in use numbers, which can, in turn, be considered a proxy for the externality of space use.

A SPECIAL CASE OF SPACE USE: THE EXTERNALITIES OF TOURIST CROWDING

So far, this paper has stated how public space, due to its open access characteristics, runs the risk of overconsumption, causing utility loss for users and non-users. This potential overuse was theoretically identified by modifying Hardin's (1968) tragedy of the commons assumptions. Finally, the effect of this overuse in the form of externalities was established and a method was provided to value these costs. In this section we will take a closer look to one important aspect of potential overuse: tourist crowding in urban historic cities.

Page and Hall (2003) describe how urban tourism entails activities which largely take place within the public spaces of a city, implying the spatiality of the concept. If tourism is tangible and visible, the occurrence of tourism will be felt by the local population co-consuming the same space. Intuitively, one can think of diverse situations in which important negative effects of congestion occur as a result of tourist crowding, as in the case of traffic congestion and longer waiting times, with the clearest example of detrimental congestion effects probably being the historic city of Venice, where the city centre is almost completely sanitized from local inhabitants in favour of tourist consumption.

When situations like these occur, where tourist crowding leads to clear societal costs, one must question the appropriateness of tourist consumption, since theoretically tourists do not compose part of the public. The open access conditions of space would lead to a use level of:

$$n = \frac{(a - c)}{b}$$

It can be clear that this use level (n) is composed of both tourists and locals.[7] The formula shows how the number of users crucially depends on b, which can be seen as the substitution cost of space. The value of b, then, will largely depend on the activities for which this space is consumed. Locals who do not need this public space for reasons of subsistence, will have comparably larger values for b, leading them to consume alternative sites when use levels start to interfere with there utility. This can be seen in many mature crowded tourist destinations where some city spaces are actively avoided by locals during certain times of high tourist consumption. For other locals, who depend on a particular space for necessary activities, the b values will approximate zero. This is also the case for most tourists, especially when the public space concerns a landmark location. Because that space cannot be easily substituted, the b-value will be very low. All of this leads to the creation of a tourist ghetto, where the total number of users consists solely of tourists and locals who are bound to the space and therefore have no reason but to cope with the tourist presence.

The societal cost of this tourist consumption on the local population is therefore equal to the utility loss of local space users and the utility loss of people who no longer consume the space as a result of high use levels. This social cost needs to be quantified in order to develop a full understanding of the costs and benefits of tourism for a destination. The preferred way of quantification lies, with choice experiments, which have the advantage of being able to measure both use and non-use values. Through a conditional logit model, the willingness to pay for a change in public space use level can be estimated, which then makes it possible to value space use in itself.

CONCLUSION

Urban public space is characterized by conditions of open access, making them comparable to other natural productive resources, which, as pointed out by

[7] For reasons of simplicity we do not take other types of non-local space users into account.

Hardin's (1968) tragedy of the commons, run the risk of overconsumption and destruction of the resource base in the long run. However, although Healy (1994) sees tourism landscapes as being subject to the two most important problems of common pool resources: overuse and the investment incentive problem, it is clear that public space is very different from other forms of resources since it is reproducible while at the same time subtractable. This holds close resemblance with the subject of congestion. It has been said that congestible goods become rival at some positive level of resource use, meaning that after this point has been reached, subtractability sets in. However, this situation changes over time as visitors to public space come and go. Since space is per definition 'spatial' and spatiality is connected through time, different time periods may lead to different results. This helps explain why public space is reproducible, since the resource flow lost at a certain point – due to congestion – can be reproduced at a later time when resource use shows a different pattern. Even though the loss of societal wealth due to overconsumption will therefore not be indefinite, externalities of space use can still be very real in the form of traffic congestion, avoidance behaviour, and other problems.

While the simple potentiality of overuse can easily be identified, the sheer number of users does not give any information about possible societal costs. To identify these costs, a separate analysis needs to take into account the effects of different characteristics of space on the utility for its users and the preferences these users – or potential users – have. The results of this analysis then lead to stable welfare economic measurements of the willingness to pay for a certain level of space use.

The potential value of such an analysis can be seen in the example of tourist consumption of space, where some destinations suffer under largely congested touristic centres which can cause problems and conflicts for the local population. Only when a method is developed to adequately quantify these externalities of tourism, will a destination be able to account for them in future development planning. The practical continuation of the analysis will therefore gather data about preferences for space use by the local population of a communality, which can subsequently be given a monetary value. Only in this way a measurement item could be provided which places social carrying capacity on the same scale as environmental and economic carrying capacity.

REFERENCE LIST

Baland, J.-M., & Platteau, J.-P. (2007) *Halting Degradation of Natural Resources. Is there a Role for Rural Communities?* Oxford: Oxford University Press.

Briassoulis, H. (2002) Sustainable Tourism And The Question Of The Commons. *Annals of Tourism Research*, 29(4), 1065-1085.

Fornara, F., Bonaiuto, M., & Bonnes, M. (2009) Cross-Validation of Abbreviated Perceived Residential Environment Quality (PREQ) and Neighborhood Attachment (NA) Indicators. *Environment and Behavior*, 42, 171-196.

Hardin, G. (1968) *The Tragedy of the Commons*. Science, 162, 1243-1248.

Healy, R. G. (1994) The "Common Pool" Problem In Tourism Landscapes. *Annals of Tourism Research*, 21(3), 596-611.

Hultkrantz, L., & Vail, D. (2000) Property rights and sustainable nature tourism: adaptation and mal-adaptation in Dalarna (Sweden) and Maine (USA). *Ecological Economics*, 35, 223-242.

Johnston, R. J., Gregory, D., Pratt, G. & Watts, M. (Eds.) (2000) *The Dictionary Of Human Geography*. Oxford: Blackwell.

Kohn, M. (2008) Homo spectator: Public space in the age of the spectacle. *Philosophy & Social Criticism*, 34(5), 467-486.

Lancaster, K. (1966) A new approach to consumer theory. *Journal of Political Economics*, 74, 217-231.

Mattson, K. (1999) Reclaiming Public Space: Toward an Architecture for American Democracy. *National Civic Review*, 88(2), 133-144.

Meade, J. (1973) *The Theory of Economic Externalities*. Leiden: A.W. Sijthoff.

Németh, M. (2009) Defining a Public: The Management of Privately Owned Public Space. *Urban Studies*, 46(11), 2463-2490.

Ostrom, E. (2005) *Governing the Commons: The Evolution of Institutions for Collective Action*. New York: Cambridge University Press.

Page, S. J., & Hall, M. C. (2003) *Managing urban tourism*. Harlow: Pearson Education Limited.

Rigall-I-Torrent, R. (2007) Sustainable development in tourism municipalities: The role of public goods. *Tourism Management*, 1-15.

Staeheli, L. A. (1996) Publicity, privacy, and women's political action. *Environment and Planning D: Society and Space*, 14, 601-619.

Starrett, D. A. (2003) Property Rights, Public Goods and the Environment. In K.-G. Mäler & J.R. Vincent. *Handbook of Environmental Economics. Volume 1: Environmental Degradation and Institutional Responses*. Amsterdam: Elsevier, pp. 97-125.

Stevenson, G. G. (1991) *Common Property Economics: A General Theory and Land Use Applications*. Cambridge: Cambridge University Press.

Tu, K.-J., & Lin, L.-T. (2008) Evaluative structure of perceived residential environment quality in high-density and mixed-use urban settings: An exploratory study on Taipei City. *Landscape and Urban Planning*, 87, 157-171.

Ward-Perkins, J. B. (1974). *Cities of Ancient Greece and Italy: Planning in Classical Antiquity*. New York: George Braziller.

Westover, T. N. (1989) Perceived Crowding in Recreational Settings: An Environment-Behavior Model. *Environment and Behavior*, 21, 258-276.

Young, I. (1990). *Justice and the Politics of Difference*. Princeton: Princeton University Press.