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Challenges of managing an urban commons

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Why an interest in commons?

What characterizes a city we would like to live in? Perhaps many people would list, in response to such a question, things like good neighborhoods, good schools and a safe and healthy environment. We might also appreciate nice parks and squares where we could be out for a stroll and meet friends, streets with open-air cafés, libraries or other kinds of public places. We may also look for a creative and inviting atmosphere – those kinds of elusive aspects that make a city attractive. These things have in common, so to speak, that they are of shared resources in an urban setting. These shared resources may in turn be governed in variety of different ways.

In recent years there has been a great upswing of interest in the governance of shared resources. This interest has been fueled by Elinor Ostrom's seminal work that demonstrated, in the context of natural resources such as fisheries, watersheds, woodlands and the like, that common resources could be managed effectively without recourse to privatization or direct government control (Ostrom 1999). These governance arrangements do not always lead to the sorry end foretold in the 'tragedy of the commons'. In certain circumstances collective management seems, on the contrary, advantageous in providing greater responsiveness to local needs and greater knowledge of local conditions and thus outperforming more distant government control. Collaborative management thus seems to provide an alternative when privatization of a resource is either impractical or undesirable.

Another reason for the upswing of interest in commons has been the extraordinary demonstration of collaborative production on the Internet. Open-source software and the likes of Wikipedia have made it evident for most that this is a powerful way of organizing in certain areas and the where the potential has only begun to be tapped (Hess, Ostrom 2007). There is also a range of privately owned commons that will be familiar to most readers. These are services like Google search and Facebook that rely on user input to build value available to other users. These shared resources are privately owned of course and while ownership is not irrelevant, commons are perhaps primarily about use rights (Ghosh 2007).

Interest in the commons also has roots in technological changes that potentially allow privatization of things that were previously never conceived of as possible to own. Some claims to ownership e.g. seed lines have been met with substantial resistance and the response has often been that these kinds of resources should remain a common resource. The notion of commons becomes a rallying point (Bollier 2006)

In urban settings commons have been studied in a wide variety of ways but interest in the commons has undoubtedly been stoked by the privatization of public space and the widespread experience of what Sheila Foster calls regulatory slippage (Foster 2011). Regulatory slippage refers to a gap between regulatory standards and the enforcement of these standards on regulated parties. In Foster's examples this slippage occurs primarily in open-access public space such as parks and streets when cities or regions lack the will or resources to maintain a previous or stipulated level of control. When the gap becomes painful enough for parties there is an incentive for both government agencies and other stakeholders to organize forms of collaborative and participatory management. Foster argues that this kind of phenomena is so widespread that introducing a notion of urban commons should be seen as an effort to bring theory to an already ubiquitous practice (Foster 2011).

In general there is also a recognition that modern cities have given rise to numerous shared resources: transportation systems, public parks and leisure areas, waste disposal facilities etc but these have not been studied to a very large extent as commons (Bravo, Moor 2008). There are related research areas for instance concerning participatory management and particularly the study of forms of recurring participatory management such as in participatory budgeting. The perspective of studying commons is however somewhat different from studies of participation in that approaches to understanding commons explicitly address issues of rule creation, monitoring and enforcement whereas systems of participation may be structured more or less externally by public administrations or private firms.

Literature on the use of public space also has an affinity with the notion of urban commons. Many of the shared resources identified in the literature on urban commons are public spaces although some, such as transportation systems or electrical grids are less clearly spatially defined.

This paper is an exploration and overview of urban commons studied in academic literature.. Although the presented overview of literature on urban commons is far from complete it may still serve as a basis for developing an understanding of what, if any, characteristics are specific to *urban* commons. This in turn is step in better understanding the particular challenges and potential of collaborative management in an urban setting.

The paper begins with a brief discussion of the study of traditional commons and then turns to overview studies on urban commons. The overview of literature is divided into three broad categories 1) identifying a resource and a group of appropriators 2) collective action and 3) external recognition. These headings reflect broad groups of interrelated challenges of collaborative management of shared resources. The cases we have found in the literature are sorted into these

broad categories and are discussed in relation to the challenges they present. This sorting of different cases should not be taken to imply that a particular urban commons is confronted with only one kind of challenge.

Traditional commons

The concept of traditional commons refers to the kind of shared resources that have been studied traditionally within the scientific work on commons. These arrangements are often also traditional in the sense of having a reasonably long history. The duration over time of commons has been an important part of the empirical argument as to their viability. Studies of traditional commons are typically related to natural resources such as watersheds, fisheries, forests, grazing lands, land tenure and use, wildlife and village organization (Hess 2008).

A key feature of resources in traditional commons is that they are subtractible (rivalrous) such that one person's use depletes the resource for others. The other key feature is that the resource is difficult to divide into neat parcels (excludability). Thus for instance water for irrigation from a river is not easy to divide beforehand but one person's use does detract from others' use. Thus traditional studies of the commons are concerned primarily with what is termed common-pool resources. Common-pool resources can be contrasted to other types of economic goods as in table 1 below.

	Low subtractability	High subtractability
Difficult to exclude	Public good	Common-pool resource
Easy to exclude	Club good	Private good

table 1: different types of economic goods, from Ostrom and Hess 2007

The term commons is a shorthand to refer to goods that have the characteristic of being difficult to package (excludability) but can vary along the dimension of subtractability from being a purely public good to a being a common-pool resource.

Perhaps the primary challenge of governing traditional commons may be understood to be developing rules about who may use a resource, how much, and in what ways and also rules regulating investments in sustaining or developing the resource. There are then subsequent challenges of monitoring and sanctioning non-compliance with these rules, as well as issues of how rules can be created and modified.

Elinor Ostrom's work demonstrated the empirical viability of governing shared resources provided that certain criteria were met (Ostrom 1999). Simply stated she demonstrates that if appropriators of a resource can communicate fairly easily and create common rules of use, and if the appropriators can monitor each others' use without too much cost then there is good reason to expect that they will develop locally appropriate rules and put them in use. For the system to work appropriators should also have access to low cost means of conflict resolution and their system of administration needs some level of recognition by

relevant external parties. These principles are encapsulated in the design criteria for self-organized long-term governance of common-pool resources (Ostrom 1999):

1. Clearly defined boundaries (effective exclusion of external unentitled parties);
2. Rules regarding the appropriation and provision of common resources are adapted to local conditions;
3. Collective-choice arrangements allow most resource appropriators to participate in the decision-making process;
4. Effective monitoring by monitors who are part of or accountable to the appropriators;
5. There is a scale of graduated sanctions for resource appropriators who violate community rules;
6. Mechanisms of conflict resolution are cheap and of easy access;
7. The self-determination of the community is recognized by higher-level authorities;
8. In the case of larger common-pool resources: organization in the form of multiple layers of nested enterprises, with small local common-pool resources at the base level.

Work on understanding principles of governing the commons has subsequently been developed in relation to game theory and institutional analysis (Ostrom 1994). The work maintains throughout a close connection with practical issues including questions of what kinds of rules might, in specific conditions, be the best candidates for improved governance of shared resources.

Starting points for a study of management challenges in urban commons

It is necessary in starting a review to define some aspects of what we mean by urban commons. First, it should be clear that urban commons refer to shared resources in an urban setting. However we also wish to restrict the field further by specifying that the resource in question should be available primarily on a citywide or smaller scale. Thus the internet may provide valuable resources for many city dwellers but we would not include the internet as an urban common. Certain sites on the internet or channels of communication on social media may however be urban commons. Similarly the radio spectrum would not be conceived of as an urban common but a specific radio station might be.

In Charlotte Hess (Hess 2008) mapping of what she calls the new commons urban commons are not considered as a separate category but would be included in certain aspects of what she categorizes as knowledge, cultural, infrastructure and neighborhood commons. The notion of urban commons does not in any way contradict her categorization, which is based on broad types of resources. Our intent here is to elucidate a category that we believe has specific characteristics and challenges of governance despite variation in the type of resource and largely due to what has been called attributes of the community (Ostrom 1994)

A starting point of the research has been that we expect shared resources in an urban setting to be faced with challenges that differ somewhat different from

those identified in traditional commons. For instance, a high level of mobility often characterizes cities and this would seem to make agreeing on rules of how to use a resource more difficult to establish and maintain, and rules about long-term investments harder to establish. Cities by their nature also set people in different ages, classes, ethnic groups and with differing interests in close relation to each other. This would seem to create potential challenges when it comes to defining a resource and bounding a group to collaboratively govern it. Moreover the urban setting will probably entail that that different types of organizations will be involved in providing and using a resource which might feasibly make collaborative management more difficult.

At this point readers should be aware of a tension in the approach of this paper. We have a starting point in work on the commons. Theoretical work in this area is squarely based on game theory and institutional economics. Our focus though is on collaborative management challenges, a topic that is more related to work in administration and management, and which is less concerned with the theoretical underpinnings of formal economics and has a more practical action-oriented perspective. We are thus using one area of research to inform another and this implies all kinds of potential theoretical difficulties. This being so, one should not perhaps overstate the differences between governance and collaborative management. If we take Ostrom's famous list of design criteria noted above and change the phasing of each criteria from descriptive to active, then this would be an excellent list of challenges for collaborative management.

At this point in the research we are, in any case, primarily interested in identifying categories of factors and related challenges (or dilemmas) and less concerned with their theoretical connection.

An overarching question of this review and exploration is thus: in what respects are the challenges of collaboratively managing urban commons similar or different from challenges related to governing traditional commons?

Methodology
We have sought to create an overview of the subject of urban commons by means of various general and more specific searches including the following:

1.   google scholar: search for "urban commons"

2.   digital library of the commons: free text search for "urban"

3.   back issues of the international journal of the commons

4.   snowballing of references

5.   google scholar searches using terms that might be related to urban commons but more specific e.g. commons and social capital, public space, security, infrastructure

As noted previously the review is still in process and we have not yet treated all the materials available in these sources. However, we have made a first attempt to structure the contemporary research around urban commons.

Each case reviewed in the literature has first been tested as to whether it can be considered an urban common. Each qualifying case has then been coded in

relation to the kinds of challenges that are described in the case starting from the perspective of the collaborating parties.

Our coding of challenges represented in the cases draws on the categories of collective action problems identified in Ostrom (Ostrom 1994) and related to the IAD framework. In some cases we have felt it necessary to introduce new types of challenges. This has been an inductive process. Some of the challenges identified in this way seem relatively easy to incorporate in the framework that Ostrom and others have developed for understanding issues of governing commons. Other challenges we identify have a more constructivist character. This latter type of challenge may perhaps be understood to be about the interrelation of different games and the attention of players. We imagine that they might be more difficult to model in a game theoretical model. They may however still be highly important for practical management.

Identifying a resource and a group of appropriators
In studies of traditional commons the shared resources are often unquestionably important resources in people's livelihoods and may in addition have a long history of being regarded as important resources. As Charlotte Hess points out (Hess 2008) new commons lack this kind of self-evident nature and this creates a particular kind of challenge for their governance.

As we hope to show there are many examples of shared resources in an urban context. Some of these resources are managed actively others are not. Collaborative management of a common resource requires that a group of appropriators actively identify a resource as shared and face the challenges of creating appropriate institutional arrangements. This initial step of identifying a resource and conceptualizing it as shared should in our opinion be considered a managerial challenge in its own right.

Mark Sproule-Jones recognized many years ago that lack of effective monitoring, of public space often led to degradation. What had been a public good became a public bad (Sproule-Jones 1979). This could for instance take to form of some group monopolizing a space for their own use but in ways detrimental to public interest. For instance owners of beachfront houses tend to privatize access to beaches and gangs monopolize street corners. In these examples there is a public good, but this good is do not seem to be perceived by residents as a shared resource that they could collaboratively manage. Thus, there is lack of monitoring and erosion of the resource.

Similarly. people in cities are, whether they are aware of it or not, dependent on different ecosystem services that can be considered shared resources. Such ecosystem services could for instance be in the form of green areas or street trees that clean the air and regulate temperatures within the city, or lakes and rivers close to the city that receive and help to clean wastewater (Borgström, Elmqvist et al. 2006, Steed, Fischer 2008). These kinds of ecosystem services could be a result of deliberate management of green areas in the city (Barthel, Colding et al. 2005) but they could also derive from 'urban wildernesses' like old industrial sites, brownfields or wasteland, which become overgrown, areas in

between parts of the city, neglected parks or abandoned redevelopment areas (Jorgenson, Tylecote 2007). But because ecosystem services are "everywhere", it is hard for citizens to understand themselves as appropriators of these kinds of resources and collaboratively manage them.

Roads provide a further example of this kind of managerial challenge. Efforts to create an awareness of roads as a shared resource and to agree to terms of use so that all benefit have been studied by Gutscher and Keller (Gutscher, Keller et al. 2000). They argue that a condition for a successful management of an urban commons like a road is the willingness to accept, at least in part a collective responsibility for the resource. Otherwise, individual actions will tend to lead to suboptimal use. Interestingly, political efforts instituting tolls to regulate traffic flows for instance in Stockholm can raise this awareness and create acceptance for allocation rules that provide for better overall use.

In some cases political conflict can temporarily aid the formation of a group of appropriators. An interesting example of this is the hotly contested development of water supply systems in parts of South America. The proposed privatization of water supply systems in regions of Bolivia led to the famous 'water wars' of the early years of the new millennium. In a review of the case of Cochabamba and similar struggles Bakker (Bakker 2008) brings up a discussion of how both governments and private firms have failed in creating water supply systems in many parts of the developing world. She explores a variety of different ownership structures that exist in this area. It is clear that some forms of collaborative management exist and have in some cases worked very well. However it is also clear that mobilization in this area asserting the importance of common ownership often failed to achieve adequate forms of collaborative management (Bakker 2008).

An interesting aspect about group formation in relation to urban commons is the increasing ease or organization created by social media. Shirky (2008) has studied the formation of different interest groups through the use of social media and demonstrates how the increasing ease of collaboration using these tools can create very large shifts in the management of traditional organizations.

Collective action

Collective action problems are at the root of many of the challenges facing traditional commons. These problems include creating agreements on who and how a shared resource can be used, how it is to be provided as well as issues of monitoring and enforcing these rules. There are also challenges in gaining recognition from external parties such that these rules are not undermined.

A business improvement district (BID) provides an example of a common that seems to face quite traditional challenges in an urban setting (Foster). This form of business cooperation is widespread and exists in different forms across the US, Europe and Africa (Hoyt 2004). The basic concept of a BID is that a group of co-located businesses agree to tax themselves to provide additional services of sanitation and safety in their area so as to attract customers. BIDs may also take on further issues such as the beautification of an area, communication with

authorities and lobbying to further the group's interest. The BID is a recognized form in the US and this provides the group with external recognition and means of enforcement. The challenges in BIDs therefore seem to be the issues of getting business to want to contribute, to monitor each other's behavior and make sure that agreements are followed through.

Parks also provide examples of shared resources in an urban setting. Parks as public spaces are subject to degradation by overuse just as other public spaces. Municipalities often lack means and perhaps interest in maintaining them at levels that citizens may desire. Forms of co-production and cooperative management are therefore not unusual. Delshammar (Delshammar 2005) found that most municipalities in Sweden practices some form participant management in their park facilities. Central Park in NY has had a substantial element of co-operative management since the 1920s (Foster 2011). The collaborative management of parks entails that the challenges of providing the resource then becomes a collective action problem for the collaborating parties.

Similarly, crime prevention and a greater sense of security have been the focus of different collaborative management initiatives. The Neighborhood Watch initiative is, for instance, widespread in the US and UK. This simple arrangement seems to support its ability to reduce crime in an area (Bennett, Holloway et al. 2006). The example of the Guardian Angels in NY provides a further instance of collaborative management of safety as an urban resource (Foster 2011). The collective action challenges in these instances are perhaps primarily related to gaining external recognition and support from relevant authorities such as the police.

Cross-sector collaboration

Collective action problems of a slightly different kind occur in other types of urban commons. For instance infrastructure has been discussed by Little as suffering from traditional collective action problems. Little puts forward the argument that critical infrastructure suffers from commons dilemmas: both as public good not sufficiently monitored (creating slippage) and as common-pool resource (Little 2005). Private firms that supply most utilities like electricity use a common grid but lack incentive to maintain the grid on adequate levels. The profit maximizing focus of each individual firm leads to problems of maintenance and easily disrupted systems, vulnerable to collapse. The challenge in maintaining an adequate level of infrastructure not only related to the number of different parties involved but also different types of organizations, public authorities and private firms, that are interlinked in complex ways that make overall management of the system difficult. The problems of collective action are exacerbated that these different types of organizations answer to different constituents or customers so provision of reliable infrastructure becomes linked in complex ways to other 'games'.

A further example of the same type of challenge would be the issue of brownfieds, that is, former industrial areas. Clapp and Meyer (Clapp, Meyer et al. 2000) have examined the conditions for large-scale development of brownfields and argue that there are reasons to believe that allowing some degree of collective management of these 'urban bads' might speed redevelopment and

direct it to better serve those living proximate. In their discussion they point out that in the present brownfields often stay undeveloped as uncertainty about pollution levels and liabilities of the owner block any parties from developing the area. The urban bad, the derelict area however affects those living in the area. The example demonstrates the challenge of having different types of organizations collaboratively develop a resource. While it is unclear to what extent Clapp and Meyer's suggestion has been put in practice the idea does resemble initiatives where residents have been given the authority to lead development of urban neighborhoods. Perhaps the most notable of which is the Dudley Street Neighborhood Initiative where a community was endowed with rights to manage land development in the area and has done so since the late 1980s. In the particular case of the Dudley Street Initiative the issue of diversity of managing organizations was thus resolved.

A final example of the challenges created by different types of managing organizations is from Delshammar 2005 who describes the evolution of collaborative development and maintenance of a park. In the example a group of mostly elderly neighbors begin to manage a park that has been left undeveloped by the municipality. This involvement grows as more and more neighbors begin to help out. When the municipality discovers the situation though problems arise as the municipality feels that is now responsible for maintaining the park but lacks resources to do so. In this situation the municipality tries to reach a contractual agreement with the residents stating that they are responsible for maintenance. This is however turned down by the volunteers who state that they cannot possibly as a group take on this kind of responsibility. The situation thereafter evolves with informal collaboration such that the park is maintained but there are still issues of inadequate forms for interaction between these different kinds of managing parties.

Mobility

A general issue when it comes to maintaining or providing shared resources is that the parties involved feel they can reap benefits from cooperative behavior. There are many types of resources however that may take a very long time to build. Contributing to building these kinds of resources requires a long-term commitment to the resource. Urban settings characterized by high levels of mobility might therefore undermine willingness to invest time and effort in place-based resources. This challenge seems to exist in many of the reviewed cases concerning biodiversity, clean water and air.

The mobility factor is evident in cases of neighborhood development. Pastor, Sadd and Hipp for instance find in statistical analysis of siting of toxic storage and deposit facilities, an urban bad, is highly correlated with turnover and change in the racial and ethnic composition of an area. The authors also demonstrate that this ethnic churning precedes the siting decision and is not increased by it. In the case of siting of toxic waste then mobility, at least in terms of group mobility, can be understood to undermine social capital and the ability to resist siting of a facilitiy in the neighborhood (Pastor, Sadd et al. 2001)

In related manner Jörgensen (Jørgensen 2010) argues based of comparative case studies that differences in tenant turnover explains differing degrees of social

capital and 'sense of belonging' in two urban neighborhoods that in other respects appear quite similar (Jörgensen)

Indirect value

A final form of challenge related to collective action problems in collaborative management concerns what might be termed indirect value of resources. The term indirect value serves to highlight that many urban commons are, in contrast to traditional commons, not the basis of people's livelihoods. If a property is adjacent to a park, close to a good public school or a community garden this may raise the value of the property. It is probably most often not the case that these shared resources are directly connected with the livelihoods of the residents. Indirect value entails that appropriator's attention is likely to be focused on situations that are primary to his or her livelihood. This in turn creates challenges for group formation as noted earlier, but also for monitoring of the shared resource. In effect, the lack of daily interaction in using the resource raises the cost of monitoring.

Sheila Foster describes a dispute that arose over the planned establishment of a Walmart superstore that residents argued would irreparably damage interaction and identity of the historic city center and undermine social capital in the community (Foster 2006). The key point in Foster's argument is that social capital is a shared resource that is linked to places and that should be taken into account in urban development. While the residents in this case were mobilized to form a group in response to a perceived threat to social capital the most interesting point is perhaps that social capital as a resource is only evident indirectly. This creates problems for collaborative management of the resource.

External recognition

Developing and monitoring rules is usually not enough for successful governance of commons. The appropriators also need recognition from other actors, like agencies, landowners or other groups of users of the same resource. In the reviewed literature it is possible to identify two different kinds of recognition challenges for collaborative management of urban commons. The first kind includes recognition of the rights to formulate and monitor allocation and provision rules, which is a condition for managing traditional commons as well. A second kind of recognition challenge appears when the resources is contested, and this seems more likely with urban resources. A resource would be contested for instance when owners and appropriators have different understanding of the nature of the resource or when several groups of appropriators exist side by side and have different views on the nature of the resource.

We have previously mentioned the example of different types of voluntary crime patrols, like the Guardian Angels. These groups seek to provide safety, in the sense of preventing crime. In order to do so effectively they need to be recognized as provider of safety by those institutions that originally charged with this task. The Guardian Angels is an example of a group that successfully met challenges of organizing the provision of a shared resource – in this case

safety. But the question of external recognition as a provider of safety, remained contested.

Another different example of problems with external recognition is the case of privatized housing in China. Chen (Chen 2008) argues that the privatized housing can be seen as club goods on one level (easy excludability of outsiders, high subtractability) but seen from the inside, among the members of the housing association who share ownership the property, the situation in a condominium resembles that of a common-pool resource (difficult excludability). Thus condominiums require an adequate collaborative management structure. The author discusses the case of Chinese privatized housing and shows how governance is undermined by regulation of fees and interference with housing organization by the authorities. This makes it very difficult to organize adequate governance and the privatized housing, as a result, quickly degrades. The property-owners need external recognition of the rights of to manage the condominiums in order to solve other problems of managing the common resources.

Blomely (Blomely 2008) describes a case of contested development in Vancouver that set a group of homeless in conflict with real estate developers. The homeless used a block of abandoned buildings in central Vancouver as their gathering point. The vacant lots were an important common for the homeless. For the developers the property was something that needed to be transformed in order to increase the value of the area (Blomely 2008). In this case, the homeless did not organize themselves as a group of appropriators, nor could they effectively seek external recognition for management of this resource.

Community gardens are increasing appearing in many cities around the world. The gardens are often set up on abandoned property and serve as regular meeting points in communities. Community gardens have often been discussed in terms of commons (Saldivar-Tanaka, & Krasny, 2004, Foster 2006). At first sight, those who try to manage community gardens seem to need external recognition only in terms of rights to use and monitor use of the property and otherwise face traditional challenges of collective action. From this point of view, community gardens bear many similarities with traditional commons. But community gardens could also be understood more subtly as an example of a contested resource. Community gardens are examples of contested resources because for the community the garden is much more than a place to grow vegetables, but rather a place where social capital is built. The establishment of more and less illegal community gardens could be a valuable asset for the local community (Foster 2006) that affects the value of surrounding properties in a positive way (Voicu, Vicki 2008). Herein lies a source of potential conflict between developers of vacant lots and those who actually use it. This conflict differs from the conflict mentioned above between homeless people and developer (cf. Blomely 2008) in that sense that a community gardens have more distinct and measurable positive benefits (like a rise of property values, development of social capital) and a destruction of the garden in order to develop the area probably results in a destruction of those existing values (Foster 2006).

Another example of the importance of external recognition in order to develop collaborative management of contested shared urban resources is two cases which focuses on nature areas. In their study of the use of an urban common in the form of a natural stream close to the city, Stave and Armijo, (Stave, Armijo 2000) describe how people in the urban area surrounding the stream, the Las Vegas Wash, use both the channel and the area around it for many different purposes, spanning a range from recreation to illegal trash dumping. Here the challenge lies in the need for different users to recognize each other's perspective and need. In this case, over 20 local, regional and federal entities, as well as local businesses and residents, have interests in the Las Vegas Wash ecosystem, each identifying different system characteristics as desirable and different management issues as problematic. In this case, voluntary groups step in and take responsibility for keeping the common clean and valuable for recreation (Stave, Armijo 2000). Groups who use the area for recreation saw the increasing illegal dumping as a degradation of the common, and regularly organized voluntary clean-up actions. But they lack the recognitions from other groups and agencies to be the official keepers of the area.

A similar example is the management of the National Urban Park in Stockholm. A recent survey identified 69 local user and interest groups currently involved in management of the park area. Of these, 25 are local stewardship associations that have a direct role in managing habitats within the park that sustain aspects such as recreational landscapes, seed dispersal, and pollination. The diversity of different interest groups involved in the National Urban Park serves to highlight of external recognition between all those users. The analysis of the survey identified a need of better coordination and dialog between different users in order to avoid conflicts (Barthel, Colding et al. 2005).

To sum up, these examples show how external recognition is an important aspect of the collaborative management of shared urban resources just as in traditional commons. If relevant actors, like other users, owners or governmental agencies do not accept the users attempt to develop and look after shared resources, then this easily undermines attempts of collaborative management. Acquiring this external recognition is made more difficult when the resource is contested in the sense that users and owners have different understandings of the nature of the resource or when several appropriator groups have different understandings of the resource.

Discussion

Shared resources are an important aspect of urban life. The management of these shared resources varies widely in the extent that it includes public, private and collaborative aspects. The reviewed articles demonstrate that collaborative management of urban commons is widespread. The diversity and importance of the examples indicate how integral commons are to urban settings. Even so we suspect that we have barely scratched the surface when it comes identifying forms of urban commons. For instance we did not discuss examples of libraries, car-pools, collaborative management of properties or marketplaces. Nor did the

examples illustrate the importance of common knowledge collaboratively generated in social media.

From the examples that we have discussed we can see that many urban commons face management challenges similar to issues of traditional commons. There are for instance important collective action challenges and gaining external recognition. The examples also suggest that there may be difference between urban and traditional commons in several respects. These differences provide challenges but also potential in terms of collaborative management.

Indirect value

Urban commons like parks and community gardens but also good public schools have been shown to have an indirect positive effect on housing prices. Thus people living proximate to urban commons of could be seen to have a stake in the resource apart from the value they attach to their direct use. Nonetheless, and in contrast to traditional commons these resources are unlikely to form an essential part of people's livelihood. Urban commons often seem to have an indirect and less conspicuous connection with people's livelihoods. This creates a challenge for collaborative management in that the people who have the most stakes in the resource do not, as part of their daily activities, observe the use of the resource and interact with other users. The lines of communication amongst appropriators are thus less likely to be established in daily practice and this in turn makes forming a group of appropriators more difficult. Similarly monitoring by appropriators does not happen as a side effect of daily interaction. Costs of monitoring the use of a shared resources characterized by indirect value are likely to be higher. We see the effects of these higher costs of monitoring perhaps primarily with resources such as public space and social capital. The widespread use of social media may though substantially decrease the difficulty of group formation.

Indirect value also, perhaps surprisingly, holds potential for collaborative management in that work to create or maintain the resource may be seen as civic virtue and rewarding precisely because of the lack of instrumentality. Foster notes for instance the capacity of urban gardens to create bridging capital precisely because the gardens attract people also from other communities (Foster 2006)

Contested resources

In most cases urban commons have no history to fall back on as a justification for their existence, in this they share attributes of new commons in general (Hess 2008). A further challenge in an urban context arises from struggles over that different groups construe what constitutes a resource differently. It would seem to be in the nature of cities they juxtapose different class, ethnic, gender and racial differences as well as differences in other types of interests and ideals among the populace. It is therefore to be expected that what constitutes a resource, how it is to be valued and who has the right to use a resource is intensely contested. Whereas in traditional commons the focus of collaborative management is on who has a right to use a given resource and how it can be used, in urban areas there is also a struggle to define what the resource is and how it might relate to other conceptualizations.

That the resource itself is contested brings uncertainty in the viability of using the resource and makes it more difficult to motivate people to invest in long-term development. Consider the example of community gardens conducted on properties that the community does not own. The contested nature of resources will also make gaining external recognition for a group of appropriators more difficult as several groups may claim to be the ones that should be making rules.

However the contested nature of a resource may also be a motivating factor in the short term. Many groups laying claim to urban commons have been formed in response to perceived threats. These groups once formed may then transition more easily to work with long term issues. A certain degree of struggle is also a potentially positive factor in decreasing risks of what Foster calls ossification (Foster 2011). Ossification refers to a situation where established forms of collaborative management may persist despite that circumstances have been changed in significant ways and where alternate groups and governance forms might be more beneficial.

Mobility
Another central aspect of urban life would seem to be mobility. A high degree of mobility is commonly understood to make (bonding) social capital more difficult to build and therefore collective organization is more difficult. One can understand this in that mobility makes it more difficult to clearly define the actors and for these actors to develop norms for governance of an urban commons. If mobility is very high there may not even be a widespread interest in long-term development of local resources. In short residents may not have a shared past or sense of future.

The potential that mobility entails is related to that collaborative management may provide forms of integration between different groups of residents thus creating bridges of social capital in the city rather than fragmenting it further. If mobility is high then people may find a greater need to quickly integrated into local networks and certain forms of collaborative management may provide means.

Cross-sector collaboration
Foster notes that a characteristic or urban commons is that they are often enabled and operated in co-operation with local authorities. She notes that this is to be expected when urban common have arisen due to regulatory slippage (Foster). The loss of effective regulation is what provides incentive for both citizens and governing body to find new means of addressing governance. Urban commons are therefore likely to have an important component of cross-sector collaboration and have to deal with the particular management challenges that this in known to imply (Vangen and Huxham 2000 the challenge of collaborative…)

A related challenge caused by cross-sector collaboration is the need to conduct a balancing act so as not to crowd out civic engagement by overmuch governmental presence (Ostrom 2000) yet maintaining enough governmental control to avoid pitfalls of lack of accountability. The potential in cross-sector collaboration though should not be understated. It seems that there is reason to

believe that government can support and enable collaboration (Ostrom 2000) and scope to do so (Denters and Klok 2006). There may therefore be a greater potential for collaborative management of urban commons than has been realized due to lack of knowledge in this area. In certain areas collaborative management of resources offers hope of increased knowledge input and responsiveness in governance. This would seem particularly important for instance in the case of resources that are both indirect and require a high level of knowledge input such as ecosystem services but also perhaps in social capital (Foster 2006).

Conclusions

Despite the fact that there is a highly developed body of theory and empirical research on traditional commons such as fisheries, watersheds and the like, urban common resources have seldom been viewed in this light. Our review has shown the diversity and breadth of urban commons and so this seems to be an important field for further research. The institutional approach to studying problems of governing the commons provides a strong theoretical base that may help to re-conceptualize many aspects of the urban environment and address pertinent issues of participation and collaboration in urban policy. There is, at present however very little research that seeks to explore the characteristics of and contrast with more traditional commons so as to uncover if there are specific challenges or potentials in an urban setting.

This paper has sought to provide an overview of urban commons as they have been treated in scientific literature and to glean what characteristics, if any, set urban commons apart their traditional counterparts. In this explorative overview we have identified four specific characteristics of urban commons that we argue are more important in urban than in traditional commons. These four characteristics: indirect value, contested resources, mobility and cross-sector collaboration create challenges for collaborative management but they also create opportunities. We hope that this understanding of the differences between traditional and urban commons will provide input to much needed understanding of how shared resources in an urban setting can be collaboratively managed and developed.

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