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Dossier

Regards

Dossier « Le champ des *commons* en question : perspectives croisées »

From common pastures to global commons: a historical perspective on interdisciplinary approaches to commons

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Abstract – Over the past decades the scope of commons research has been expanded considerably, and scholars from various disciplines working on the subject have moved closer to a common definition. There is however still one essential and quite fundamental point of disagreement (although it is hardly ever made explicit) and that is about the use of the term "commons", which is a centuries-old term. Historically, when used with the definite article, it has denoted a community's common pasturage. More recently, the term is also being used by scholars from other disciplines to include completely open resources such as oceans and the air we breathe, which are also referred to as "global commons". Although it cannot be denied that the air and seas are in principle collective resources available to all creatures on Earth, these resources lack two important attributes that are characteristic of the commons as they have existed for centuries in Europe and beyond. Unlike the global commons, the historical commons were characterized by institutionalization and self-governance. In this article we describe the evolution of the term and the discipline over the past few centuries and suggest ways to reconcile these differences. Reconciling them could improve integration of the long-term historical approach in the analysis of present-day interpretations, which in itself would be an important step forward in commons research.

Mots-clés :
biens communs ;
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institutions

Résumé – Des pâtures communales aux biens communs mondiaux : un regard historique sur les approches interdisciplinaires des biens communs. Au cours des dernières décennies, le champ de la recherche sur les biens communaux ou biens communs (*commons*) s'est considérablement élargi et les chercheurs des diverses disciplines qui étudient cet objet tendent peu à peu vers une définition commune. Il reste cependant un point de désaccord majeur et tout à fait fondamental, quoique rarement explicité : l'emploi du terme « biens communaux », expression qui remonte loin dans l'Histoire. Historiquement, en anglais, quand il est accompagné de l'article défini (*the commons)*, il désignait les communaux, c'est-à-dire les pâtures ou parcours communaux d'une collectivité. Plus récemment, les chercheurs d'autres disciplines ont utilisé ce terme pour caractériser des ressources d'accès totalement libre telles que les océans et l'air que nous respirons, désignées sous le nom de « biens communs mondiaux ». Même si l'air et les mers sont indéniablement des ressources collectives accessibles en principe à tout habitant de la planète, il manque à ces ressources deux attributs importants qui sont caractéristiques des « communaux » tels qu'ils ont existé pendant des siècles en Europe et au-delà. Contrairement aux biens communs mondiaux, les biens communs historiques étaient caractérisés par une institutionnalisation et une auto-gouvernance. Dans cet article, nous décrivons l'évolution de ce terme et de la discipline au cours des derniers siècles et suggérons des pistes pour concilier ces différences. Cela permettrait d'améliorer l'intégration de l'approche historique longue dans l'analyse des interprétations actuelles, et constituerait une avancée importante pour la recherche sur les biens communaux.

Introduction

Many historians view interdisciplinary research as a challenge, despite a long-standing intent to achieve more cooperation towards a common understanding with sociologists and economists. And yet, opportunities abound. The commons are an excellent example of a topic that has been studied by historians and other social scientists, although without much real interdisciplinary

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cooperation or transfer of knowledge. Despite the fact that there is considerable scope for interdisciplinary cooperation in commons studies, some barriers still prevent both historians and other social scientists from sharing their findings, or even learning from one another's research results. One of the main consequences of this disciplinary divide is that the term "commons" is frequently used for essentially different things, on different levels. Especially now that "commons" has become a buzzword – an evolution that started earlier in the twenty-first century but has been increasingly accepted since Elinor Ostrom received the Nobel Prize – the term is used for so many ideas that it threatens to become an empty concept.

It may be considered an insignificant detail, but over the past few decades the term "commons" has also changed linguistically, which is equally surprisingly revealing: whereas in historical documents "commons" were always used as the plural for "the common", it became standard practice to also use the term as "a commons". This new term as referring to the concept of collective usage clearly indicates its reconceptualization, though without any link to Hardin's ahistorical usage (1968). The historical interpretation of "the commons" was centred on the inseparably linked definite article (the) with the noun (commons). While more recent interpretations all use the noun (commons) without the definite article, in English (not necessarily so in other languages or by non-native English speakers), the definite article is used to refer to a specific, defined noun that has either been previously stated or is so well-known and commonly understood there is no need to further specify it. By using "commons" without either definite or indefinite articles, the concept is automatically understood as an indefinite idea requiring further definition. In this usage "commons" has come to include anything not privately held: a host of objects not included in the historical referent "the commons". When scholars expand a particular noun to include very different ideas, that expansion needs to be defined (not assumed as part of the common understanding) and differentiated from the heretofore commonly understood use of the word. Often scholars take this expanded use for granted[1].

In this article, we will explain how the term "commons" over the years has come to include two essentially different and in some ways even opposite forms of collective goods. The term itself has by now almost become too vague to serve as a sound starting point for co-operation and exchange among disciplines. Although this is a problem with many popular terms (social capital, for one), the differences in interpretation stem from a time long before commons became (and are in fact still in the process of becoming) a popular topic[2]. In this article we try to discover the reasons for the disciplinary divide. What did and does the term really connote in diverse circumstances? The term commons is now used for very different types of resources, both tangible (land, pasture, rivers) and more intangible (the air, the Internet).

Being aware of the background of the multiple contents of a concept used by various disciplines helps us understand the potential difficulties and dangers of using and perhaps conflating one another's models. It also identifies where common benefits can be found: the key-differences are probably to be found in the extent of institutionalization that the resources have undergone. Whereas (the) commons for the historian is understood as a set of well-defined and circumscribed resources (usually land), with rules and sanctions attached to them, other disciplines tend to include resources (not only land, but also knowledge, information) before the process of institutionalization. When the term "commons" is used to refer to resources that are open access and in need of regulation of their use, it should be made clear that this is the case. In the first part of this article a type of genealogy of the term will clarify when paths between the disciplines started to diverge. In the second part, rather than starting with the term itself, we begin with the characteristics the goods have that are being described as commons. If a term includes so many meanings, it can well be that the historian's commons are too different from the sociologist's or political scientist's commons to integrate (or conflate) such varied ideas, models, and theories – or even to make them scientifically acceptable. To avoid possibly unsound results, it is a key to know exactly what the different types of commons comprehend. To do this, we analyze the various types of commons on the basis of their characteristics, starting from a classical economic way of distinguishing goods, which is also used frequently in commons studies. Identifying the analytical characteristics of the different types of commons will help us identify where historians and other scholars have a common interest in collaboration, and it should provide a clear understanding of the potential difficulties

[1] For example, a fairly long explanation of "the commons" can be found in Wikipedia (http://en.wikipedia.org/wiki/the_commons). The article begins by using the noun together with the definite article, yet defines the concept as: "The commons were traditionally defined as the elements of the environment – forests, atmosphere, rivers, fisheries or grazing land – that are shared, used and enjoyed by all. Today, the commons are also understood within a cultural sphere. These commons include literature, music, arts, design, film, video, television, radio, information, software and sites of heritage. The commons can also include public goods such as public space, public education, health and the infrastructure that allows our society to function (such as electricity or water delivery systems). . . "

[2] In fact, commons have only really drawn the attention worldwide since Elinor Ostrom received the Nobel Prize in economic sciences in 2009 and are now, thanks to the prize, increasingly receiving the attention they deserve.

of using resources in common. The key issues at the basis of scientific debates often depend on such characteristics.

In the second part we offer a solution for clearing up the "terminological fuzziness". Logically, more disciplinary integration is an important part of the solution. One way to achieve this is by paying more attention to the long-term developments of common institutions. Another change that may help resolve the debates is a more frequent use of the more neutral term "institution for collective action". This term is not "contaminated" by historical debates of several hundred years, as may be the case for "commons". Elinor Ostrom (1990) has helped clarifying what the term really stands for, and it has been used more frequently in the literature. Considering its analytical qualities, it may be more useful to use this term rather than the term "commons", or use the two terms together to stress the typical features of commons in the past and present.

Are we talking about the same things? The confusing use of the "commons paradigm" by various disciplines

The meaning of the term "commons" seems to depend on when it has been used: one of the main differences between historians and other scholars when approaching a term such as "commons" is that historians tend to stick to the original meaning of the word, whereas other social scientists, mainly because of their inclination to theorize and model, analyze the characteristics of the original term and, based on the similarities in characteristics, use it for other phenomena with similar attributes. Thus the term has been "stretched" to extend to very different ideas. This has happened in the case of global commons and to a certain extent to "new commons" and "digital commons". Although the use of the same term for varying ideas can under certain conditions be useful and offer new insights, it can also lead to confusion. Users of the common pastures in the past (or the present) and those who use global commons do not deal with the same challenges, and thus research results for one form of commons may not be simply transferable to the other form, which, in turn, may prevent cross-disciplinary cooperation.

This terminological fuzziness is a consequence of several factors relating to the historical meaning of the term "commons". Previously, in the historical documents "commons" referred to common land, often in the form of pastures or meadowland. The commons in its historical sense referred to land that "was used by several people or households during a certain period, as opposed to land that was used by only one person or household throughout the whole year", although this too is a post facto definition by scholars, not one taken from historical documents[3]. The variety of alternative names in English (open field, common meadow, common waste) and in other languages (*markegenootschappen*, *meenten* [Dutch], *Genossenschaften* [German], to give just a few examples) has over time led to considerable confusion even among historians, and has long prevented a genuine comparison of the emergence and functioning of the commons[4]. Even in the same language and country, "commons" comprised a number of historically different types of things. In this article we restrict ourselves to different types of commons and the synonyms that were attributed to each type. A historical anecdote can easily show this: in 1824, when the Dutch government began to rule the region that in 1830 would become known as present-day Belgium, the Dutch rulers issued a survey to all heads of villages, with a number of questions on the existence and appearance of "*marken*" in their village[5]. Whereas the Dutch clearly understood that "*marken*" referred to commonly used and managed land, the Flemish (in the northern part of Belgium) who also spoke Dutch (albeit with some differences) did not understand what this questionnaire was about. They had to ask the Dutch government what they meant by "*marken*", and whether that term comprehended the same concept as the word they used in their village. In short: even within a relatively small area as the Low Countries, many different terms for exactly the same thing existed.

At the basis of much of the confusion is the fact that some of the (land) commons were not necessarily managed by a limited group of people but were managed by the local village board[6]. In some commons all villagers were allowed to use the common's resources, although under strict use conditions; in other cases it was the administrative board of the village that regulated use of the common land. In the New Regime the many legal changes abolished and reformed most of the commons. In Belgium, for example, the law of 1847 stipulated that all common land that had not already been sold became the property of local governments (De Moor, 2003). Few commons could escape this enforcement; those that could had to continue their centuries-old practice on a very weak legal basis (because of the earlier reforms in civil legislation

[3] The definition is taken from and applied in De Moor *et al.* (2002). There are no specific definitions to be found in the historical documents themselves.

[4] For more background information on local examples of commons, see www.collective-action.info.

[5] The questionnaire was called "Het bestaen der zogenaamde Marken in sommige Provincien des Rijks zijnde grotendeels onbebouwde heide gronden, welke . . . in onverdeelde eigendom worden bezeten".

[6] See, for example, the difference in Dutch between "*meenten*", which are commons usually governed by the local community, and "*markegenootschappen*", commons managed by the group of users itself. See for a further explanation Hoppenbrouwers (2002).

that virtually eliminated the possibility of common land). The consequences of this evolution in the understanding of the term "commons" was that because many commons had now become public property (property of the municipality) the term was applied to any good in public property that was exhaustible. Thus, whereas the commons had not necessarily been accessible to everyone, it often became property of the whole village community, and in that sense, legally, was also the property of all members of that local community. This is one of the first bases for the confusion in the exact meaning of the term "commons". An important issue to remember about the European commons, including the English commons, from which the term was originally derived, is that they were regulated, that an institution was set up to organize access to the group of users and use of the resources. As early as the late Middle Ages, this institutionalization was taking place in most of Western Europe[7]. The commons in the historical (pre-1800) sense of the term was never completely open access: there were always rules that limited use, although this did not necessarily ensure that the rules were followed[8].

The common use of land was put under severe stress from governments and political circles from the middle of the eighteenth century. By the middle of the nineteenth century, many of the commons in Western Europe had already been privatized (Brakensiek, 2000; Vivier and Demélas, 2003). The writings of Malthus (1789) and Lloyd (1833) should thus not come as a surprise. Between Hardin and the nineteenth-century writers, others had been claiming the same threat to natural resources if used in common or if used collectively, and without limiting access to these resources[9]. It is thus when twentieth-century debaters on public goods such as air and water took on the nineteenth-century arguments on risks to common land that confusion arose.

Over time, and especially since the middle of the twentieth century, the term "commons" has been used in many ways. In the middle of the twentieth century, the common as a physical phenomenon started to be used repeatedly by scholars from other disciplines to indicate collective property. Although Garret Hardin was not the first to conceptualize the historical commons, his article entitled "The tragedy of the commons" can be considered a benchmark in the evolution of discourse on the commons. Hardin caused considerable confusion by describing a piece of land, which did not have the characteristics of a medieval common but was designated as such anyhow. The "common" Hardin described was land on which no property rights rested, thus making it very easy for everyone to overuse it. In using the term "commons" Hardin created a link between the old, historical concept of commons and the contemporary discussion on common goods. Some believed he went too far with his metaphor, however, as he presents the historical example of the common as an open-access good. He asks the reader to picture "a pasture open to all. It is to be expected that each herdsman will try to keep as many cattle as possible on the commons" (Hardin, 1968, p. 1244). But the historical common was not open to all. On the contrary, as local corporative structures, all the commons had clear rules on the conditions to become a legitimate user and on what a villager was permitted or not permitted to do when he became a member. However unbelievable it may sound to contemporary ears in a society dominated by private property arrangements, the commoners designed systems to restrict behaviour in order to prevent overexploitation. In some cases each member had a right to pasture a certain number of cattle or collect a certain number of bushels of wood (and other resources)[10]. In other cases the optimal exploitation level was obtained and controlled by a price mechanism. There are many historical examples showing that farmers were aware of the carrying capacity of their commons and respected it (*e.g.*, De Moor, 2009). Hardin (1968, p. 1244) did not take account of this when he claimed

> "such an arrangement may work reasonably satisfactorily for centuries because tribal wars, poaching, and disease keep the numbers of both man and beast well below the carrying capacity of the land. Finally, however, comes the day of reckoning, that is, the day when the long-desired goal of social stability becomes a reality. At this point, the inherent logic of the commons remorselessly generates tragedy".

Hardin used the land as a metaphor for natural resources in general, and later on this metaphor was extended by others to other natural resources, in particular those with clear open access characteristics. The term "common" hereafter became linked to resources without any form of governance that were essentially open access. Unfortunately, very few historians reacted against this "abuse" of the historical meaning of commons. Hardin's intentions had nothing to do with historiography, clearly, but they did lead to a misconception of what a common really is and was in virtually all of the domains in which his theory on the overuse of natural resources became influential. The discussion thereafter has followed two diverging paths: on the one hand social scientists such as Elinor Ostrom have wisely pointed out that collective resources do not necessarily need to be privatized or

[7] Slicher van Bath (1944, pp. 55-69).

[8] These rules have been extensively discussed for the Netherlands, Belgium, England, Germany and Scandinavia in De Moor *et al.* (2002).

[9] See for example William Forster Lloyd, *Two Lectures on the Checks to Population* (1833), which can now be accessed freely *via* http://www.archive.org/details/twolecturesonch00lloygoog.

[10] For a good overview of the kinds of resources that could be found on the commons, see Hoppenbrouwers (2002).

collectivized to limit overuse, but that adequate regulation and institutionalization can help manage and sustain a collective resource[11]. Although this was not always explicit, Ostrom's approach was as pertinent for the historical commons as the commons she describes today. The commons she describes in her book *Governing the Commons* are all resource systems that are limited in area, have a bottom-up institutional arrangement, are self-governing, have well-defined access rules and other characteristics that can in fact also be found in the historical commons, although the term "commons" as such may not have been used in that historical context (as in the case of irrigation systems). The other direction the debate on commons took after Hardin's publication was that of the global commons, although this developed much later. A global commons includes a much wider array of natural resources than Ostrom's, or that would fall within the historical interpretation of the commons.

Although the result was at times a confusing and ahistorical use of the term "commons" and the conclusions drawn are historically incorrect, Hardin's article did put the use and potential abuse of common goods on the scholarly and political agenda. For a long time, criticism of his article remained confined to the historical niche of scholarship, except for an article by Susan Cox entitled "No Tragedy on the commons" (published in *Environmental Ethics* in 1985) and Robert McNetting's work on commons in the Swiss Alps (1981). Nevertheless: some sociologists and anthropologists showed in their intensive field studies of third-world countries that *Homo economicus* could also be an unexpected *Homo reciprocans*. As in the historical examples of medieval and early modern Europe, the twentieth-century users of commons in less developed countries show as much awareness that there is a free-rider in each of us. With the right incentives, however, and a comprehensive body of rules, reciprocity can be enhanced and free-riding prevented. Based on such field studies, Elinor Ostrom, as the most prominent of commons researchers since the 1980s, devised her list of design principles, which has become the "cooking recipe" for the perfect common ever since. It includes the necessary ingredients for making an institution for collective action work. What differs is the local flavour, depending on the type of resources in combination with varying institutional tools to manage the use of the resources by commoners. Here again, the rules included restricted membership, thus no open access. Ostrom's design principles indicate that setting boundaries to access and use is important; it is important for all common pool resources (CPRs).

The main criticisms of goods with multiple users/owners that followed after the Tragedy of the commons (TOC)-article focused on the incapability of such users to achieve a sustainable means of resource usage. Thus it cannot be a surprise that the counter-argument paid most attention to the internal functioning of the commons and individual responsibility of the commoners in achieving a sustainable use-system. Only later, by the beginning of the 1990s, were the institutional findings on the functioning of present-day commons adopted by researchers of the "global commons". Here the debate that started as a reaction against the false image of the TOC joined in again with Hardin's main points, namely the discordant situation between open access goods and potentially threatening factors for these goods such as population growth.

If we rely on the definition of global commons in Wikipedia – where most people using the term probably get their idea – we can immediately see that the use of the term commons in this way is quite problematic:

> "Global commons is that which no one person or state may own or control and which is central to life. A Global Common contains an infinite potential with regard to the understanding and advancement of the biology and society of all life. It includes the high seas and its sea bed and subsoil, outer space, and, according to a majority of states, the Antarctic. The atmosphere is sometimes considered to be a part of the global commons[12]".

Whereas these can include the air we breathe or the oceans, the Internet age added another dimension to the commons debate. The Internet is now considered a "knowledge common", which in itself is a less problematic use of the term, as access to knowledge can often be delineated (Hess and Ostrom, 2006). It has proven a true challenge to apply the institutional frameworks based and adjusted on the basis of repetitive case studies and experiments to the global commons idea.

In the course of this debate on the functioning of the commons among sociologists and economists, historians have to a great extent not taken part. Instead they focused on the disappearance of the commons. This is of course a result of the difference in research tradition, which is largely determined by the Anglo−Saxon literature on enclosures and their consequences: historians have long focused on the dissolution of the commons, and external factors such as industrialization or population growth were considered motors of this process. The commoners themselves usually played a passive role and were

[11] Her best known work is *Governing the Commons* (1990), but in her 2005 work on *Understanding Institutional Diversity* she brings together the many insights she and her close colleagues subsequently had.

[12] The anonymous author of the Wikipedia article refers to Philippe Sands, *Principles of International Environment Law*, Cambridge University Press, second edition, as the source of the Wikipedia definition; see also: http://en.wikipedia.org/wiki/Global_commons.

discussed as a group, without much attention to the potential influence of the commoners as individuals or as members of individual households, with their own specific needs and desires. Among the nineteenth-century commons historians, there is also a clear interest in the origins of the commons, but again the individual motivations to own and use land collectively were largely ignored[13]. Who owned the commons was a more important question to them. Moreover, those motivations of commoners to act in one way or another, whether individual or group-directed, were not linked to the causes of the dissolution of the commons in the historical debate.

Other social scientists paid much more attention to the (internal) functioning of commons and the role of the individual and in relation to the group. Concepts such as the prisoner's dilemma, free-riding, and reciprocity were used to identify problematic relationships between individual aspirations and group dynamics, especially with respect to the negative effects on possible sustainable use of the common pool resources. External factors or the "context" has often been omitted as a potential causal factor for the malfunctioning or even dissolution of the commons, especially in experimental studies. This research suggests that the main reasons for the dissolution of the commons are usually located in the individual user(s) of the commons. To a large extent this focus on the individual can be explained by the methodological experiences of sociologists with experiments, and a better understanding of this may also help historians broaden their view on the functioning of commoners as members of groups. Although the particular method may not be useful for historians (active participation of long-deceased commoners in experiments is of course impossible), the results could contribute to a better understanding of the (role of the individual in the) functioning of a common. Historical research has to a large extent remained descriptive for the period in which the commons flourished (in Europe, mainly the eleventh through thirteenth centuries) and their disappearance (in Europe, mainly the eighteenth through the nineteenth centuries). Introducing concepts and ideas derived from other social sciences could lead to a more analytical approach to the long-term/historical commons.

The analytic characteristics of the commons

Since the 1960s the term has taken on an added dimension. "Commons" is no longer solely used for land (pasture, arable, waste or woodland) but also for an elusive/impalpable collective good such as the Internet. The difference in delimitation this has brought is but one aspect in which both types of commons fundamentally differ, as will be explained in this article. Models and theories that are valid for one type of common may not fit another. Awareness of the characteristics of both types is an essential element in the process to sound interdisciplinarity.

		Rivalry/Substractability	
		Low	High
Excludability	Low	Public goods	Open access goods/Common pool goods
	High	Club goods Toll goods	Private goods

Fig. 1. Classic economic way of representing different types of goods.

Now that the term has been analyzed, it is useful to clarify how all these interpretations of the term "commons" related to one another and what they really signify in terms of accessibility and vulnerability. Figure 1 shows in classic economic terms how types of goods are positioned on the scales from low to high substractability or rivalry, which can also be read as the possibility of being overexploited, and from low to high excludability. To summarize the debate on commons, we can say that of all the goods that are categorized in this figure, only one type has not been sullied with confusing applications of its name: private goods, or goods that are highly substractable and highly excludable. All other goods, especially those in the upper half of the figure, are subject to confusion with respect to the term "commons".

In the case of public goods everyone can enjoy the use of them without substracting from others' use (it is thus non-rivalling): your consuming it does not prevent me or anyone else from consuming it. Basically, such public goods are also non-excludable, although technically it would be possible to limit the use of *e.g.* streetlights to those who are citizens of the state in which the streetlight is placed. Public goods are often public property as well, although they are not the same. Not all public goods are owned by the government. For example, sunlight, a pure public good, non-excludable and non-substractable, is not owned by any government at all. Among all those goods in the top part of the frame, sunlight is probably the only one that will never be attached to a particular regime (unless someone manages to conquer the sun or can prevent the sunlight from falling on the Earth's surface). Nor is all public property of the public good

[13] See, for example, the work by Errera (1891, 1892, 1894) and de Laveleye (1894), two legal historians who worked on the origins of the commons in Europe.

type. Most governments also own property that is highly excludable and highly rivalrous, such as an interesting piece of land.

In the top right hand corner, are the goods that are very difficult to exclude others from (low excludability) but are also very rivalrous. Those goods are very valuable, and can easily be overexploited. A classic example of this are fisheries in the open seas: a resource like fish can be easily overexploited, but how to exclude others from catching the fish? Goods in the top right corner are those that have long been used in open access: everybody can use those goods. But even fisheries are no longer truly open access goods since their fishing quotas have been divided among different countries. Thus, fisheries are *de jure* no longer open access. In practice, however, a great deal of illegal fishing or overfishing – disregarding the official quotas – is still widely practiced. Very few goods in the top right corner are still truly open access goods, where access to the resources has no limits at all. Over the past few centuries they have been conquered, the rights have been appropriated, and these goods were placed under another form of resource management.

In the lower left corner are those goods that are easy to exclude others from but are low in rivalry, the "club goods" or toll goods. Among these are goods such as toll roads, goods that are difficult to overexploit but do require the potential user to fulfil specific conditions (usually payment) to belong to "the club". The historic commons can be counted among these goods because often the commoners were part of a group of people that can be defined as a club, whereby their resources become low in rivalry when the boundaries have been well defined.

Although this classic categorization of goods is very frequently used, it is subject to two important criticisms. First, the "filling" of the figure. By assigning a name to goods that is directly linked to forms of property rights, it is suggested that goods and appropriation regimes are in a way "naturally linked". Some goods are considered as "naturally" suited for open access and others for private property. However, goods of a similar nature were often managed in a different way, which indicates that there is no truly "natural" way of managing goods. The other problem with this figure is its static nature, which is closely related to the first problem. The linkage of goods with regimes suggests that certain goods are always associated with specific regimes. This is not true, and it does not help explain or promote changes of property regimes to improve resource management. It also does not take into account changes in resources and environments, thus changing the goods and the possibilities of their governance regimes. The classic framework does not sufficiently acknowledge the possibility that goods may change because of *e.g.* technological input, and that they might become more or less substractable and/or excludable. Moreover, it ignores the existence of goods "on the edge" between two types of goods. In some presentations of this classification of goods there is even a more radical distinction in terms of substractability and excludability. The term high is then replaced by "yes", and low is replaced by "no". This radical classification clashes entirely with our more gradual typology of goods. It is important to note that the line between low and high is a sliding one; in between a "full yes" and a "full no" there are many gradations. There are in principle no goods from which people can be entirely excluded. High and low refer to the degree of difficulty for reaching complete exclusion or complete division. Such difficulty can entail physical difficulty (in mountainous areas it is difficult to divide land), but costs can also be considered a difficulty. Just as the Kyoto Treaty has made it technically easier to exclude people from using air *via* tradable emission rights (of whatever quality), it can also become easier or more difficult over time to divide land. The resources may change, and the circumstances (*e.g.*, the costs of doing it) may also change.

Understanding the dynamism of goods within the confines of the figure can help enhance our understanding of the complexity of a term like "commons". Some examples of the application of the term will show the difficulties this classification carries more clearly. Although it is essentially open access, a good such as "air" is traditionally considered to belong to the realm of public goods. Other goods that can be considered public are, for example, national defence. However, as pointed out earlier, air pollution has made the public aware that the air itself may be more substractable than had been thought. In that sense "air" should be moving to the left side, towards the side of high substractability. Moreover, new practical and legal techniques are being discovered to "enclose" air, for example, in the form of tradable emission rights. In this sense air as a good can be moved to the bottom of the figure, where goods with high excludability are found. Air, or the right to use ("pollute") that air can more easily be captured, at least in theory. This makes it more susceptible to appropriation. The combination of high substractability and high excludability thus makes air increasingly a private good. A good like "air" that is in some work described as a common or also a "commons" can thus, with the necessary technical and practical appropriation tools and methods, be turned into a good subject to a private property arrangement.

Notwithstanding the difficulties the framework creates for understanding the true nature of commons in all its varieties, it has been used by many researchers as a way to categorize goods and to position commons in relationship to other forms of property. Essentially, the frame that has traditionally been used remains useful for categorizing goods but with the necessary conditions. Below we use it to explain the position of the types of commons that can be found in the literature. If we now

project the "historical commons" and the "global commons" onto the traditional representation of goods, we can position them in the following way. The historical commons are plots of land which offer a number of natural resources. Access to these resources can usually be restricted, although this often proved to be difficult (hence the middle position between high and low excludability), and the use of the resources can be rivalrous. We have already stressed the need for these historical commons within the agricultural system, but we have at the same time stressed the relativity of the "value" of these goods. We have implicitly pointed to the possibility of a historical common moving from the middle of the spectrum to the upper part if the value of the common land decreases, or to the lower side if the common land as a good becomes more valuable. In the latter case, it cannot be excluded that the good will become a private property situation, under the constraints of either the commoners themselves or external forces (including the force exercised by the state). This first characteristic, "medium excludability", does not correspond with Hardin's metaphor, as he pictured the medieval village common there as open access. This was not the case at all, not in practice nor in legal terms. The second characteristic of high excludability does correspond with Hardin's picture: the commons could easily be overexploited by the villagers.

On the basis of the characteristics that were attributed to commons as metaphorically pictured and on the basis of the characteristics Hardin attributed to them, we should place Hardin's commons in the top right corner, where we can find goods that are highly substractable and difficult to exclude others from. We can also place the global commons there, comprising, for example, the atmosphere. This kind of good may over time become more excludable and thus shift its position to the lower half of the frame. In the left side of the frame we can find the goods that relate to information and knowledge, an area in which the "commons" is used very frequently. Although the literature usually views knowledge as a single type of good, there are different types of knowledge. The "traditional" example of information or knowledge common (both terms are used) is the Internet. The Internet may well be one of the purest forms of publicly accessible knowledge; with a computer and a connection to the Web, it is possible to use a virtually endless source of information. But this sentence involves two restrictions: some technical tools are necessary to access this commons and it is not possible to access all forms of information. Some sources of information require passwords. In this sense the Internet as a source of information is less accessible (and thus more excludable) than, for example, the fish in the sea or the air we breathe.

Below the Internet as a commons is the type of knowledge commons that is very familiar in academic circles: expert knowledge. Knowledge can become highly excludable when it is stored in the minds of only a few people. This limitation can be the consequence of a lack of exchange, but it may also be the object of an appropriation process. One example is the knowledge that is being kept by co-authors of an article: as long as the article has not been published, they want to share their knowledge among their peers only, themselves, and the reviewers of a journal. As soon as the knowledge is published, it moves up in the frame, sometimes *via* other forms of semi-restricted information distribution as, for example, full-text libraries. Not everyone can access the article; a person may need to be part of a "club" such as a university. The knowledge commons are also an excellent example of how technology influences property arrangements: before the wide availability of the Internet, access to knowledge, even in its post-publication stage, was limited to those with physical access to expert journals. Although much knowledge still has restricted access *via* the Internet, it is now again a step closer to availability for all.

A less modern, but nevertheless highly relevant example of a knowledge common that is in essence a club good are the guilds: one of their main purposes was to keep knowledge about a certain production process within the group of guild members. Guilds shared their knowledge among the members of their occupation within the same town; their knowledge was not as exclusive and excludable as private knowledge, but still not freely accessible. Because their knowledge had been shared by others, its value dropped and thus became less rivalrous. It is possible to argue that sharing of the knowledge made it precisely more valuable since an individual possessor might not have been able to achieve the same results in production on his own. This can be true – and in the case of the guilds it may even have been a reason to stick together – but this is an advantage induced by collective action and not an added value because of the particular state of the resource. The historical commons are on the same level of excludability as the guilds, but this does not affect their level of substractability: they remain as vulnerable as before because they are natural resources. Some guilds levied heavy fines on disclosing their secret knowledge (as in the case of, for example, the Venetian Murano glassblower guilds) [McCray, 1999].

In the bottom right side of the framework the individual/private forms of both knowledge and natural resources have been added. In the case of the natural resources, this indicates the possibility that these are managed as private goods, by individuals. In the case of knowledge, this indicates the (potentially) individual origins of ideas. Ideas are usually generated by single individuals and can thereafter be shared with others. The arrow in Figure 2 shows the evolution of ideas/knowledge from one single idea to information

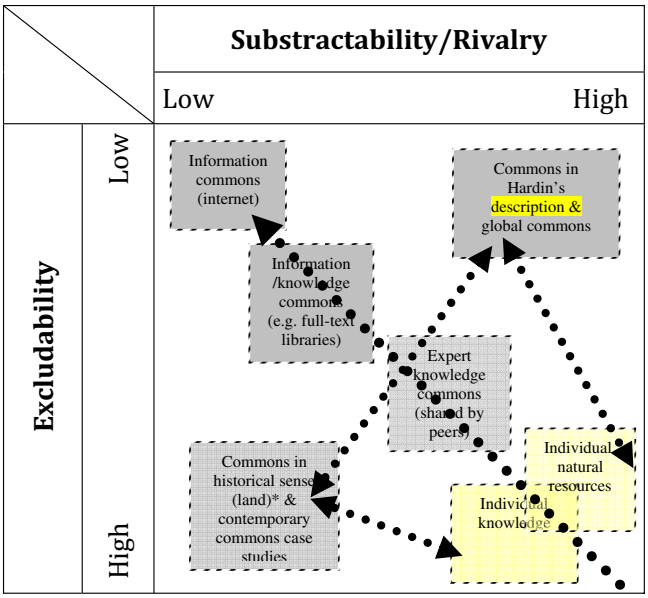

Fig. 2. Typological positioning of the historical commons and other uses of the term "commons" in the substractability-excludability framework.
*The commons in its historical sense refers to common land before the nineteenth-century legal changes.

shared by many others. Because the substractability of the knowledge depends on the objectives of that knowledge (publication, application, production, patenting), knowledge itself can move from the right hand side to the left side, from high substractability to low substractability. Its changing value to the possessors of the knowledge may cause it to move from the bottom to the top of the figure. It is unlikely that knowledge follows the opposite direction since once the knowledge is spread, it cannot be taken away, although there is the possibility that over time the knowledge is "lost" because it is not passed from one generation to another. In addition, an extreme form of censorship can also suppress knowledge formation and distribution. In principle, it can also move back to "inner circles" of interested people because the knowledge itself is no longer applied. Nevertheless, this does not make the knowledge itself less accessible, since anyone may still be able to find the information in print or *via* other means of knowledge transfer. Thus, usually knowledge "travels" in the indicated direction. This is not true for the natural resource commons: depending on their value (and external factors such as technology), it becomes less or more costly, and thus possible to exclude others from using the resources. Certain factors can make a natural resource during a certain period more expensive (*e.g.*, when there is a scarcity of wood), but this can change if new solutions are found (*e.g.*, introduction of other forms of fuel). In principle, the natural resources themselves remain highly extractable, and thus the natural resources do not travel from the left to the right hand side of this frame, although some might regenerate faster than others.

The fundamental similarities in the type of good "commons" include suggests there are reasons to work interdisciplinarly, to search for similarities between present-day commons and commoners and to learn from history. The analytical difference between the "new" types of commons, especially the knowledge commons, and the historical commons is however significant. The global commons literature is to a large extent prescriptive, as it deals with societal issues that have only been identified as problematic over the past half century. Interdisciplinary research should hence focus primarily on the "tangible" commons, those that are moderately excludable but highly substractable.

The essence of the above explanation is that institutionalization in combination with self-governance is very important in studying the different types of commons. Here we return to the original message in Elinor Ostrom's work. This message is very useful for the future of most of the Earth's collective resources. At the same time it is important to bear in mind another message that underlies Ostrom's work and that of others: institutionalization does not necessarily mean privatization or collectivization. Historical and current examples show that between these two forms of resource governance a spectrum of institutional arrangements exists that can lead to efficient resource management. Applying the term "commons" to forms of resources that are not institutionalized and not self-governing entails risks. One way to avoid further confusion is to develop the term "institutions for collective action", as has already been done by Ostrom. These should be self-governing, bottom-up institutions, in contrast to large scale common pool resources that do not have a clear governance structure. The term "institutions for collective action" has not yet been fully adopted by historians.

Concluding remarks: the way forward

In this article we have tried to explain the diverging paths historians and other social scientists have followed in their quest for understanding the commons. Some of those paths have led to places where a historical approach may not be very helpful, as the problems the global commons face are fairly new. Nevertheless, long-term analysis remains a condition *sine qua non* to understand what can happen on a local, national and supra-national scale to our precious resources if they are not governed appropriately. In our post-Napoleonic world, where private and public are the "normal" ways to distinguish goods in our societies, we have forgotten

that there is an abundance of potentially useful institutional arrangements for forming self-governing (neither private, nor public) institutions that are formed by the stakeholders themselves. In many cases such institutions are more cost-effective and efficient than the private or public solution. Analyzing the long-term evolution of commons, and other types of institutions for collective action, can help us enrich our knowledge about institutional "tools" to manage resources collectively. What we need as commons researchers is more than just models to study and checklists to evaluate the basic characteristics of such institutions. If our knowledge about the past and the present can be brought closer together, we can develop a collection of institutional arrangements, an "institutional toolbox" that can work for certain resources, under certain conditions, whether seventeenth-century Europe or present-day India. Lin Ostrom (2005), with Sue Crawford, has taken a major step forward by identifying a "grammar" of institutions. Their analysis of regulation helps us understand what rules really mean and how they affect one another within the same institution. Historians now have an obligation to use this grammar to link long-term change within the institutional grammar to change in exogenous factors. If this is repeated for a large number of historical case studies, we can discover the conditions for successful regulation of common pool resources.

In addition to a horizontal, long-term analysis we also need to expand our view of institutional types. This is true for both historians and other social scientists. In her *Governing the Commons*, Lin Ostrom has already shown us another route towards a better understanding of the commons, which is through institutional comparison. Although the inclusion of global commons does broaden the scope of types of resources that can be studied within the same framework, there are many more other forms of institutions for collective action that govern entirely different resources than natural ones. These can be studied within the same framework. If we move away from the term "commons", and focus on what an institution for collective action really is, without regard for the type of resource such institutions try to manage, our view of the world of institutions will change. In essence, the historical commons can be compared to many other collectivities, such as the guilds or the old water boards[14]. Today, most cooperatives would fit in the picture of institutions for collective action, with strong stake-holder participation, self-governance, and clear incentive structures. Including such institutions in our analysis and theoretical models will also help fill the "institutional toolbox" that can be used to solve commons-like problems in the future.

[14] On the website www.collective-action.info we explain how these institutions are alike.

References

Brakensiek, S., 2000. Gemeinheitsteilungen in Europa. Neue Forschungsergebnisse und Deutungsangebote der europäischen Geschichtsschreibung, *Jahrbuch für Wirtschaftsgeschichte*, 2, 9-16.

Cox, S.J.B., 1985. No tragedy on the commons, *Environmental Ethics*, 7, 49-61.

De Laveleye, E., 1894. *De la propriété et ses formes primitives*, Paris, Félix Alcan.

De Moor, M., 2003. Les terres communes en Belgique, in Demélas, M.-D., Vivier, N. (Eds), *Les Propriétés collectives 1750-1914. Les attaques du libéralisme en Europe et Amérique latine,* Rennes, Presses Universitaires de Rennes.

De Moor, M., Shaw-Taylor, L., Warde, P., 2002. *The Management of Common Land in North West Europe, c.1500-1850*, Turnhout, Brepols.

De Moor, T., 2009. Avoiding tragedies: A Flemish common and its commoners under the pressure of social and economic change during the eighteenth century, *Economic History Review*, 62, 1, 1-22.

Errera, P., 1891. *Les Masuirs. Recherches historiques et juridiques sur quelques vestiges des formes anciennes de la propriété en Belgique*, Brussel, P. Weissenbruch.

Errera, P., 1892. *La question de la propriété foncière en Angleterre et les idées de Henry Georges*, Brussel, H. Lamertin.

Errera, P., 1894. Les Waréchaix. Étude de droit foncier ancien, *Annales de la Société royale d'archéologie de Bruxelles*, VIII, 145-179.

Errera, P., 1897. *Quelques phases de l'évolution de la propriété*, Brussel, Moesen.

Hardin, G., 1968. The tragedy of the commons, *Science*, 16, 1243-1248.

Hess, C., Ostrom, E., 2006. *Understanding Knowledge as a Commons. From Theory to Practice*, Cambridge, MA, MIT Press.

Hoppenbrouwers, P., 2002. The use and management of commons in the Netherlands. An overview, in De Moor, M., Shaw-Taylor, L., Warde, P. (Eds), *The Management of Common land in North West Europe, c. 1500-1850*, Turnhout, Brepols.

Lloyd, W.F., 1833. *Two Lectures on the Checks to Population*, Oxford, S. Collingwood.

Malthus, T., 1789. *An Essay on the Principle of Population, as it Affects the Future Improvement of Society: with Remarks on the Speculations of Mr. Godwin, M. Condorcet and Other Writers*, London, Johnson.

McCray, P., 1999. *Glassmaking in Renaissance Venice: The Fragile Craft*, Aldershot, Ashgate.

McNetting, R., 1981. *Balancing on an Alp. Ecological Change and Continuity in a Swiss Mountain Community*, Cambridge, UK, Cambridge University Press.

Ostrom, E., 1990. *Governing the Commons: the Evolution of Institutions for Collective Action. The Political Economy of Institutions and Decisions*, Cambridge, UK, Cambridge University Press.

Ostrom, E., 2005. *Understanding Institutional Diversity*, Princeton, New Jersey/Woodstock, Princeton University Press.

Slicher van Bath, B.H., 1944. *Mensch en land in de Middeleeuwen. 1 Mensch en Gemeenschap*, Assen.

Vivier, N., Demélas, M.-D., 2003. *Les Propriétés collectives face aux attaques libérales (1750-1914). Europe occidentale et Amérique latine*, Rennes, Presses Universitaires de Rennes.