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Sharing Water in the Roman Countryside: Environmental Issues, Economic Interests, and Legal Solutions

Summary

This paper seeks to provide lines of approach and hypotheses for a historical and geographic contextualisation of the jurisprudential texts of the Digest. It focuses upon the matter of water sharing in rural landscapes. After examining different landscapes, it argues that legal solutions proposed by Roman jurists originally applied to the situation of competition for natural resources observed in the periphery of Rome and were linked with the development of the city between the 3rd and 2nd centuries BC.

Keywords: Roman law; water management; land property; ancient countryside; urban periphery; food production

Dieser Beitrag versucht Herangehensweisen und Hypothesen zur historischen und geographischen Einordnung der rechtswissenschaftlichen Texte der Digesten vorzuschlagen. Der Fokus liegt dabei auf der Verteilung von Wasser in ländlichen Gebieten. Zunächst werden verschiedene Gebiete untersucht, um dann zu argumentieren, dass die rechtlichen Lösungen, die von den römischen Rechtsgelehrten vorgeschlagen wurden, sich ursprünglich auf die Konkurrenz um natürliche Ressourcen in der Umgebung von Rom bezogen und mit der Entwicklung der Stadt zwischen dem 3. und 2. Jh. v. Chr. in Verbindung standen.

Keywords: römisches Recht; Wasserverwaltung; Landbesitz; antike Landschaft; Stadtumgebung; Nahrungsmittelproduktion

1 Introduction

The matter of water sharing is discussed in many different documents from the Roman world. Author Frontinus, in charge of the aqueducts of Rome at the turn of the 1st century AD, provides information about diversions from the public water network. The possibility of obtaining a concession is also confirmed for provincial cities.¹ Prominent texts (i.e. the *Table of Lamasba* and the *LRH*) deal with the specific subject of what has been called “communities of irrigation”² and for which easy parallels may be found in modern time Spanish rural communities,³ or African and Middle East oases.⁴ This paper focuses on the question of water sharing in the texts of the Roman jurisprudence compiled in the Digest. From these documents, we draw most of our knowledge of the rights that regulated a multiplicity of uses of water in the Roman countryside, especially the practice of sharing water between private landholders.

To begin with, I will present the main regulations and their evolution, and try to show that this topic is prevalent in legal texts. Their inclusion shows how concerned the jurists were with this matter and, therefore, also the people asking for their juridical advice. My aim will not be to explain how the water was shared due to the Roman jurisprudence: Roman legal texts have been thoroughly studied by jurists.⁵ Historical questions, however, necessarily lying at the base of the legal resolutions, need to be asked. I will, therefore, present some of the legal elements to try to answer the questions that underpin this need for legal solutions: where was it necessary to share water, and for which purposes? In response to these questions, I will propose some hypotheses and avenues of research, for which I will concentrate on the period of great changes that occurred in the Roman world between the 2nd century BC and the end of the 1st century AD, when most of the rules were actually enacted.

2 A real concern for water sharing in legal texts

One of the most noteworthy products of the Roman law is servitude or easement: by giving some rights to the holder of a dominant estate over a servient estate, the Roman jurists created an effective legal system to regulate the legal relationships between neighbors. In this case, it applies to the management of water. Typically, a water servitude will

1 See for instance in *Thysdrus* (Africa Proconsularis) *Inscriptiones Latinae selectae* 5777 = *Corpus inscriptionum Latinarum* VIII 51.

2 Shaw 1982; Beltrán Lloris 2006.

3 Ribero 1989.

4 Troussel 1986; Bédoucha-Albergoni 1976.

5 Möller 2010; Franciosi 1967; Capogrossi Colognesi 1966; Capogrossi Colognesi 1976.

allow a landholder to access hydraulic resources he needs even if situated on the property of his neighbor. Upon this general pattern, various solutions were issued in order to answer the diversity of situations needing a settlement. The Digest mentions a right to conduct the water from one parcel of land to another, thanks to ditches or canals (*ius aquae ductus*) (a solution for which spring water was originally favored), a right to enter the property of a neighbor to draw water from his well or waterway (*ius aquae haustus*), and a right to cross someone else's estate with cattle in order to water the animals (*ius pecoris ad aquam appelandi*).⁶ Establishing such a right was not free. Although we do not know many details, it was sold and, therefore, had a price that was probably negotiated on the basis of the needs of the dominant estate and the capacity of the servient one. Once established, a water servitude clearly added to the price of the estate benefiting from it.

Our matter represents the actual subject of two titles (43.21 *De Rivis*; 43.22 *De fonte*) and a large part of two others (8.1 *De servitutibus*; 8.3 *De servitutibus praediorum rusticorum*), which is significant. It also emphasizes that there are many variations that may apply to one single right. If we take only the right to conduct water (*ius aquae ductus*), we learn from the texts that it can be split between different neighbors and that it can be scheduled according to the season (*de aqua cottidiana et aestiva*), to a night and day shift, or to hours. Some fragments also provide indications concerning the canal itself: where it may be dug, the material that must be employed, and the possibility for the holder of the dominant estate to mend or restore it. Finally, the conditions for acquiring or losing a servitude are described precisely.

The system originates as early as the time of the XII Tables (middle of the 5th century BC) with the *ius aquae ductus*, at the same time the *actio aquae pluviae arcendae* was probably introduced to minimize the damaging action of run-off water. The *ius aquae haustus* and the *ius adpulsus pecoris*, on the other hand, seem to have been elaborated later: around the 3rd and 2nd centuries BC.⁷ This development indicates that, although access to water constituted a very early concern in Roman central Italy, more solutions were progressively elaborated to adapt to new situations as the Empire grew, and in a context of increasing competition, new natural environments, different estate layouts, and modes of production had to be taken into account.

Without having to go as far as the African pre-desert or semi-arid regions of Spain, central Italy, for which we have numerous useful documents, presents a variety of agricultural exploitations, soils, and types of cultivations. My aim will now be to try to understand more precisely what plots of land and what type of estates the legal solutions produced by Roman jurists applied to. In other words, what kind of estates would need extra supplies of water from the neighboring plot?

6 Möller 2010, 78.

7 Möller 2010, 78; Möller 2016, 16.

3 Landed property and the necessity to share water

Most importantly, it is helpful to determine, even if only theoretically, some features of the localities and situations in which sharing water could become a necessity. It could happen in a natural environment somewhat deprived of plentiful supplies, but if the supplies are not that scarce, it mostly depends on the size of the plots. Columella (1st century AD) famously talked about an estate that he considered of a reasonable size, but must in fact have been as large as several thousand hectares, a *latifundium*, presumably provided with water sources, maybe small waterways or at least good run-off water catchments.⁸ Such an estate would need no extra supply of water. We must, therefore, think that solutions for water sharing chiefly relate to much smaller plots, likely to need water from the neighbors. The last criterion that has to be considered is the type of cultivation. Different sorts of cereals, fruit-trees, vegetables, and fodder do not all require the same quantity of water. Depending on what is cultivated on the parcel of land, water needs, and therefore competition, would vary.

The land property in Italy, during the period considered, does not present much homogeneity. Without making a detailed typology, I will just make some remarks concerning our issue. From the beginning of the Republic to around the end of the 3rd century BC, modest plots, cultivated by households for subsistence purposes, seem to have been the typical property in central Italy. Columella and Pliny mention a typical 7 *jugera* (~2 ha) property for that period. To make up for the very small properties, it was probably possible to use communal meadows.⁹ Aristocratic estates were of course, even at that period, much larger. Cato provides examples of 100 *jugera* (~25 ha) agricultural exploitation.¹⁰ This type of somewhat modest property still existed in the following period, the end of the Republic, even with the Roman expansion on the peninsula. Plots of 10 to 30 *jugerae* (2.5 to 7.5 ha) were distributed to *coloni* since the Gracchi (end of the 2nd century BC), and plots of 50 to 140 *jugerae* (12.5 to 35 ha) in Aquileia, Po Valley, were distributed in 181 BC, according to Livy.¹¹

The properties described, faced the emergence of very large estates belonging to wealthy aristocrats and called *latifundia* in the middle period of the Republic. Undoubtedly, this is what Columella refers to, even mentioning that some people owned even larger pieces of land. I already expressed doubts concerning the need to share water for such properties. However, it seems useful to underline some possible features. First, we

8 Columella. *Rust.* 1–3. The author gives the indication that the estate could be toured by a horse but fails to indicate how long this tour could have taken. It is, therefore, almost impossible to figure out the exact size of such a property, in spite of

many attempts; see Martin 1971.

9 Nicolet 2007, 103.

10 Cat. *Rur.* 1.7.

11 Liv. XXXIX.55.

know that the total property of a senator or of an *eques* could be split across various regions of the Mediterranean basin. Pliny reminds us that it is clever to take advantage of different soils and natural environments. Secondly, a solution much favored by wealthy landowners was to keep their estates in smaller and more manageable units.¹² One example of this was provided with the thirteen villas of the rich Sextius Roscius in the Tiber Valley in Umbria at the beginning of the 1st century BC provided by Cicero.¹³ At the end of the 1st century AD, Pliny also provides valuable information on the subject; acquiring an estate adjacent to one of his villas, he apparently did not join the two holdings.¹⁴ There is no reason why the case of Pliny should be isolated; a fragment of the Digest shows that the jurist Sabinus (1st century AD) thought about the consequences of this sort of transactions concerning water resources.¹⁵ Regardless of a change of ownership, a servitude remains attached to the original property, even if the servient and the dominant estates are at some point owned by the same person. It means that even a landlord like Pliny, head of a *latifundium*, but whose vast property was composed of a multitude of modest and separate units would, therefore, always need water servitudes in order to obtain the necessary water supplies.

The last aspect to be considered, is linked to the exceptional development of the urban markets, around the 2nd century BC. In the close vicinity of substantial cities and preferentially along the channels of distribution and communication (i.e. roads and rivers), small and valuable plots are cultivated. Although one cannot completely rule out the possibility that cereals were also cultivated in those areas, it is more likely that fresh goods, necessitating intensive cultivation were preferred, the profit expected from these being much bigger.¹⁶ Yet, for vegetables, flowers, and all the *pastio villatica* business, the need for irrigation in those parcels of land was very high all year round. Considering also the fact that plots are thought to have been small, we may doubt that each landlord had the opportunity to obtain a perennial and plentiful source of water. Irrigation water users, therefore, had to rely on servitudes over a neighbor's plot in order to satisfy their needs.

As we have seen, Italy was composed of many different types of properties. Water servitudes may be useful for all of them. From what I have described, however, I think that the suburban Roman area offers a pretty unique opportunity to take a closer and more accurate look at a pattern of landed property where hydraulic resource were the object of an intense competition and where sharing water, therefore, represented a crucial issue.

12 Carlsen 2001, 53.

13 Cic. *Rosc. Am.* 7.20.

14 Plin. *Am.* 3.19.2.

15 Pompon. 33 *ad Sab.* (*Dig.* 8.3.20.2).

16 About the lack of evidence for cereals cultivation in the suburban area, see Quilici Gigli 1994, 141.

4 An increasing need for water on small plots, from the 2nd century BC onwards

The field survey campaigns provide very valuable information about the distribution of agricultural exploitations, north-east of Rome.¹⁷ In particular, three sectors around the locality of Fidenae, Ficulea, and Crustumerium show a very high concentration of villas and farms. The estimated average size of the properties oscillates between 15 to 35 ha (400 x 400 m / 600 x 600 m).¹⁸ From Cato to Cassiodorus (6th century AD), not only the agricultural productivity of the Roman hinterland is well acknowledged by written sources, but also the type of cultivations, consisting of fresh and quality products, and market gardening activity, all requiring a fair amount of water.¹⁹ Archeological evidence of intensive irrigation is also available and has been carefully observed in the three aforementioned areas.²⁰ Some of them correspond very well to legal dispositions. Private aqueducts supplying villas may, for instance, be related to the relationship between a dominant and a servient estate. The presence of a nymphaeum near the Aniene reminds us that people living on the sides of a river could freely use the water.²¹ It has been proposed that some of the large cisterns situated on the eastern side of the Tiber were maybe destined to be filled up at night, the water then being used during the day.²² This system would be compatible with the possibility to apply a schedule to a right of drawing water.²³

It is then striking to observe that these areas with an exceptional density of villas – Fidenae, Ficulea, and Crustumerium – are mostly deprived of plentiful supplies of subterranean water, as the hydrogeological map of the Lazio Region illustrates.²⁴ Therefore, the reason for the high concentration of villas is probably not related to an abundance of groundwater resources, but in the proximity to Rome and the accessibility to the distribution channels (two requirements Cato advises to be met for the settlement of his ideal estate). The Fidenae/Ficulea zone is, in this concern, the most interesting. We know from surveys that the concentration of villas increases significantly around the Via Nomentana and where the Tiber is accessible. The profitability of fresh and quality goods relied on the capacity to transport the products to the markets as quickly and cheaply

17 Quilici and Quilici Gigli 1980; Quilici and Quilici Gigli 1986.

18 Quilici Gigli 1994, 140.

19 For a survey of literary evidence from Cato the Elder to Cassiodorus, see Thomas and Wilson 1994, 156–159. For other written sources about irrigation around Rome, see for instance Corpus inscriptionum Latinarum VI, 1261; XIV, 3676; Frontin. *Ag.* 9. 4–5; Cic., *Leg. agr.* 2.

20 Wilson 2008, 731–768, mostly based on the *Latium*

Vetus survey.

21 Wilson 2008.

22 Wilson 2008, 739.

23 Nera. 4 *Regularum* (*Dig.* 8.3.2.1) ; Iul. 43 *Dig.* (*Dig.* 43.20.4).

24 The map is too large to be reproduced here, but can be downloaded at the following address: http://www.regione.lazio.it/prl_ambiente/?vw=documentazioneDettaglio&cid=8671 (visited on 25/05/2018).

as possible. The same cultivations on well-watered lands, but distant from the market, were very unlikely to bring much profit.

Due to the limited size of these plots that required year-round irrigation, we may assume that the water supply was mostly dependant on the intricate system of rights and duties mentioned earlier, designed to share access to underground water. Of course, other solutions were applied, although the limits of this paper did not allow them to be studied. It is clear that the proximity of the Tiber was a valuable advantage that required an irrigation/drainage system, often the result of a pooling of resources and work. Rain water must also have become an increasingly valuable resource, also noticeable in the legal texts, since the *actio aquae pluviae arcendae*, was probably increasingly used to protect supplies, as well as to secure the drainage devices. In a context of competition for natural resources, all these uses clearly required the legal settlements that jurists provided.

5 Conclusion

A fair consideration of the exploitation of hydraulic resources requires the examination of many different elements, from a broad range of subjects. My original question consisted in asking, in what environment and for what purposes was the sharing of water necessary, or more accurately, what real problems did the jurists face that led them to give the answers in the jurisprudential texts?

Generally speaking, we observe a growing need for irrigation and for irrigation infrastructure starting in the 2nd century BC.²⁵ Developing around Rome, the market gardening activity led to increasing competition for water resources, due to environmental and economic reasons. Facing this situation, the jurists had to provide legal solutions, considering both general and private interests at the same time, which is a notable feature of the Roman law. The situation of competition for natural resources around the urban market of Rome in the Middle Republic, generated by the expectation of high profits, is one of the main social and economic problems that jurists faced, and for which they had to seek legal solutions.

Trying to provide a historical, geographic, and social context for the Roman jurisprudence is a challenging task, but considering the availability of such detailed and informative documentation, it ought to be attempted and could lead to a much better understanding of the Roman countryside, provided that we are able to integrate it with archaeological and historical data.

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