

1 Introduction

Urban Water

Urbanity constitutes a crucial form of settlement organization. Urban agglomerations can be described as social, economic, and cultural ‘hubs’ within dynamic networks. Today, half of humanity lives in cities and, within two decades, nearly 60 % of the world’s population will be urban dwellers.¹ However, even premodern, agricultural societies often follow a ‘centralized’ mode of dwelling.

The present volume takes a very specific perspective on the manifold aspects of urban agglomerations: It puts the aspect of urban water in its centre. Of the world’s total water supply, over 96 % is saline (seas and oceans), whereas of total freshwater, over 68 % is locked up in ice and glaciers. Another 30 % of freshwater is in the ground. Surface freshwater (lakes and rivers) make up only 1.2 % of earth’s water.² But water is essential to life; it is therefore hardly surprising that water is essential for the development of societies too and that a multitude of cultural practices have emerged to manage water as a resource – one could say that civilisations are built on water.³ The importance of water and its management as a resource is underlined, for example, by the fact that, in 2019, the pre-modern water management system of the city of Augsburg was inscribed on the World Heritage List.⁴

Water thus also constitutes a central factor of urbanity. ‘Water is the only universal urban resource that in this sense is a must and that can be controlled in this strict understanding of the word’.⁵ Many crafts, trades and proto-industrial facilities need water: tanners or brewers, but also blacksmiths, potters, butchers or bakers. Water, however, is not only a crucial urban resource, it affects all aspects of urbanity. The hydrological conditions create a specific ‘embedding’ into a ‘natural’ environment from which arise specific health conditions, but also the availability and breeds of specific animal species and the cultivation of specific plants. These latter two aspects are key to specific urban diets. Furthermore, in many cities water is managed by specific infrastructural measures: aqueducts/pipes, fountains or cisterns for water supply, sewer canals for waste water, drainage systems. Besides such measures of water management, bridges and harbour installations (e. g. moles) are crucial for the infrastructural embedding of water into a built environment. Consequently, the presence or absence of rivers and the sea is key to urban practices and the perception and aesthetic quality of urban agglomerations. This holds true for daily routines, for specific (e. g. religious) rituals, for specific economies, but also for forms of trading (e. g. seafaring). As a consequence, not only the town itself, but also the surrounding countryside is dependent on water systems and the respective actions involved.

History of research

The history of research⁶ reveals that studies on water within urban agglomerations have usually focused on specific aspects – be it the analysis of specific buildings or infrastructural measures

1 Burdett – Rode – Groth 2018, 10.

2 <<https://water.usgs.gov/edu/earthhowmuch.html>> (29. 09. 2018).

3 See the United Nations World Water Development Report, published on a yearly basis, available online: <<https://www.unesco.de/kultur-und-natur/wasser-und-ozeane/wasser>> (02. 08. 2019).

4 <<https://whc.unesco.org/en/list/1580/>> (29. 08. 2019).

5 Tvedt – Oestigaard 2014b, 2; see also Konold 2004; Brantz 2017.

6 The bibliography is endless – we only give examples. The bibliography on ancient water studies was partly compiled by Nicola Chiarenza. For medieval water, see these databases: Akademie der Wissenschaften und der

connected to water (e. g. aqueducts, fountains, drainage systems, bridges, harbours, etc.),⁷ urban facilities demanding water, such as baths or toilets,⁸ the reconstruction of water as a medium of transport (e. g. fluvial networks or maritime networks),⁹ water as a threat (e. g. floods) or medium of power,¹⁰ the reconstruction of ‘water knowledge’ (e. g. the analysis of Frontinus’ work)¹¹ and water technologies,¹² the (industrial, economic, private) uses of urban water,¹³ the pollution of water,¹⁴ water as a cultural skill,¹⁵ the sacred, political and social semantics of water infrastructures (e. g. fountains),¹⁶ aesthetic aspects of waterscapes and water installations,¹⁷ or the analysis of visual and textual representations of water monuments, harbours, and harbour cities.¹⁸ On a more general level, several studies address the role of water in different urban formations – besides the conventional towns (e. g. *civitates*, *municipia*), Punic *emporía* or the *emporía* on the North and Baltic Seas, market places, *palatia*, or inland central places related to palatines or monasteries.

Some cross-sectional studies on the subject have also been published in recent years.¹⁹ Most recently, Terje Tvedt and Terje Oestigaard have brought together many of these in a comprehensive analysis of ‘Water in History’ published in nine volumes between 2006 and 2016. It provides a diachronic historical and comparative perspective on the complex relationship between water and society.²⁰ One volume of this series deals with the issue of ‘Water and Urbanization’.²¹ The study aims at understanding the relationship between water and the urban environment by differentiating three aspects: the natural waterscape, human modifications of the waterscape, and ideas and managerial concepts of water.²² Consequently, this study follows a relatively technical understanding of the relation between water and urbanity.

Here, instead, we focus on the social and cultural production of urban spaces. One theoretical milestone for such an approach was developed by Henri Lefebvre.²³ He starts from the assump-

Literatur Mainz <http://opac.regesta-imperii.de/lang_de/> (01. 08. 2019), Monumenta Germaniae Historica <<http://www.mgh.de/bibliothek/opac/>> (29. 07. 2019), International Medieval Bibliography <<http://apps.brepolis.net/BrepolisPortal/default.aspx>> (29. 07. 2019), International Bibliography of Humanism and the Renaissance <<https://www.droz.org/fr/13-bihr>> (29. 07. 2019).

7 Wikander 2000; Wawrzinek 2014; on infrastructural networks: Hodge 1991; Hodge 1992; Crouch 1993; De Kleijn 2001; Jansen 2000; Jansen 2002; Tutthas 2007; Dessales 2013; see also the volumes ‘Geschichte der Wasserversorgung’ published by the Frontinus-Gesellschaft; Bayerische Gesellschaft für Unterwasserarchäologie 2011; Lee 2014; Shulman 2018; Zuchowska 2012. See also the Priority Programm ‘Häfen von der Römischen Kaiserzeit bis zum Mittelalter’ by the German Research Council <<http://www.spp-haefen.de/>> (16. 08. 2019); von Carnap-Bornheim et al. 2018.

8 A bibliography on baths: Manderscheid 2004; *latrinae*, e. g.: Neudecker 1994; Kosso – Scott 2009; Jansen et al. 2011; Hoss 2018.

9 Horden – Purcell 2000; Concannon – Mazurek 2016; see the ERC project ‘Portus Limen’ <<https://portuslimen.eu/>> (02. 08. 2019); harbour studies: Blackman 2008; Rickman 2008; Feuser 2009; Salomon et al. 2016; harbour towns: Steuernagel 2004; Ladstätter et al. 2014.

10 Bartlome et al. 1999; Classen 2019; Else 2019; Ingate 2019; Kiss 2019; Nigro 2018; Rothauser 2009.

11 Abel 2017; Blackman 2001; Peachin 2004; Wiplinger – Letzner 2017; Costlow et al. 2017.

12 Wikander 2000; Wilson 2008; Mays 2010; Kreiner – Letzner 2012; Zhuang – Altaweel 2018; see especially the volumes of conference series held by the Deutsche Wasserhistorische Gesellschaft, e. g. Wellbrock 2017; Squatriti 2000.

13 Poulsen – Gundersen 2019; Wikander 2000.

14 Bradley – Stow 2012; Röber 2016.

15 Huber-Rebenich et al. 2017.

16 Dörl-Klingenschmid 2001; Dörl-Klingenschmid 2006; Schmölder-Veit 2009; Longfellow 2011; Richard 2012; Förster – Bauch 2015; Shilling – Stephenson 2016.

17 Glaser 2000a; Glaser 2000b; Grüner 2006; Grüner 2009; Dessales 2013; Staub 2013.

18 Rostowzew 1911; Kowalewski 1992; Pensa 1998.

19 Fabris et al. 2018; Holt 2018; Sulas – Pikirayi 2018.

20 <<https://terjetvedt.w.uib.no/a-history-of-water/>> (02. 08. 2019).

21 Tvedt – Oestigaard 2014a.

22 Tvedt – Oestigaard 2014b, 3.

23 Lefebvre 1974.

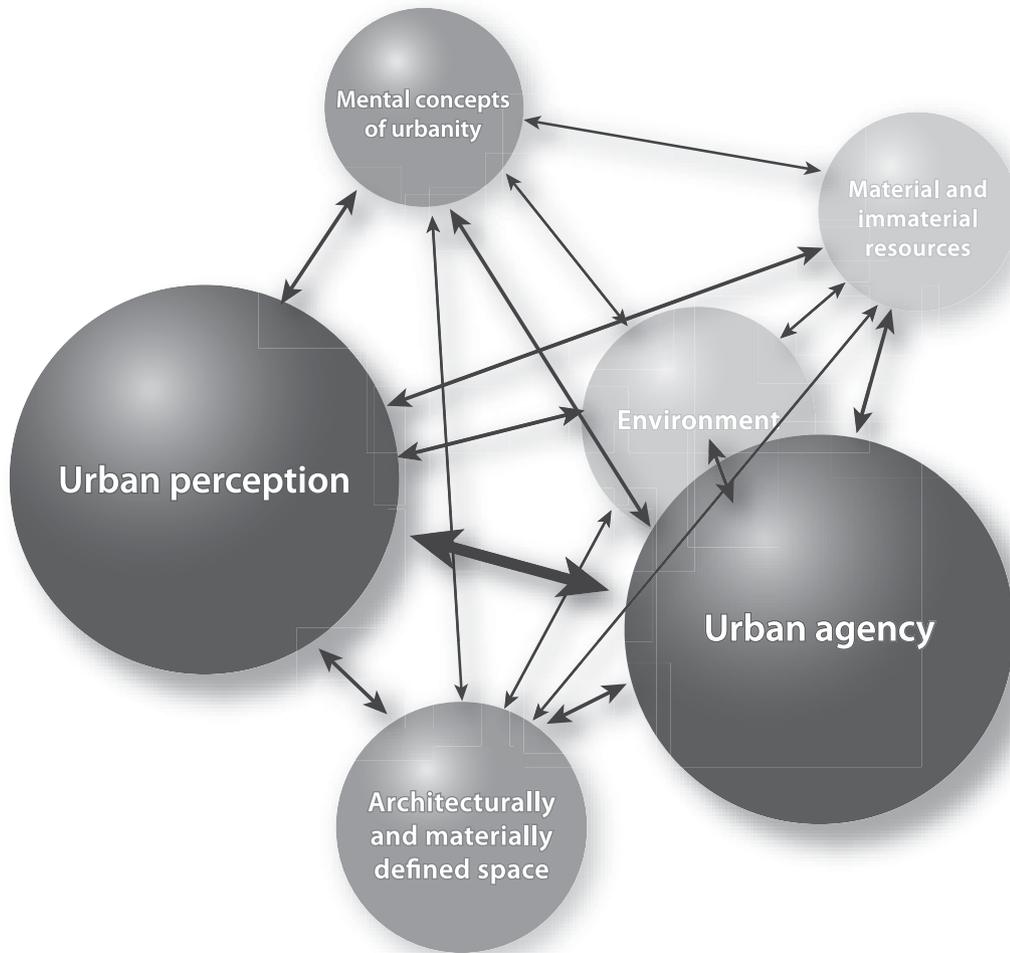


Fig. 1

tion that urban spaces are socially *produced* spaces. On this basis, he considers the experienced space (*espace vécu*), the perceived space (*espace perçu*), and the imagined space (*espace conçu*) to be mutually interdependent.²⁴ We refer to this concept, but we differentiate the categories more in detail and include further analytical constituents (Fig. 1): urban agency and urban perception, the architecturally and materially defined urban space, mental concepts of urbanity, material and immaterial resources, and environment. With a focus on urban water, this concept can be further specified.

1) **Practices** within urban agglomerations referring to water include a broad range of activities, including drinking and food preparation, specific forms of movement (shipping), productive activities involving water, hygiene and medical practices, leisure activities such as bathing, rituals such as baptism, and ceremonies. The following questions will be of importance: In what way does the presence or absence of water generate specific forms of urban agency? What effect does the practical (e. g. cultic, ceremonial, hygienic) relevance of water have on the architectural

²⁴ A concise definition of Lefebvre's concepts is given in Knox – Pinch 2010, 199: '**Material spatial practices** refer to the interactions and physical flows that occur in and across space as part of fundamental processes of economic production and social reproduction. **Representations of space** include all of the signs, symbols, codifications and knowledge that allow material spatial practices to be talked about and understood. **Spaces of representation** are mental constructs such as utopian plans, imaginary landscapes, paintings and symbolic structures that imagine new meanings or possibilities for spatial practices'.

design of a city? How are specific water practices linked to mental concepts? What roles do different types of water practices (religious, political, economic, and artistic) play in the formation of urban ‘identities’?

2) **Perceptions** of urban agglomerations referring to their waterscapes are particularly important for harbour cities and cities located on rivers. As specific urban architectural forms (aqueducts, fountains, nymphaea) stage and aestheticise water elements, they shape the perception of ‘urban water’. The following questions will be of importance: How do ‘water cities’ (located on rivers, lakes or the sea) differ from other cities with respect to their ‘atmospheric’ qualities? What is the influence of the climate (arid/humid) on the perception of urban agglomerations? What are the sensual qualities of practices involving water?

3) A large range of **architectural forms and infrastructural measures** aim at the control, provision, removal, or staging of water. ‘Water architectures’ thus become prominent features of an urban setting. The following questions will be of importance: What kind of architectures result from the presence or absence of water? In what way does water and its related buildings and infrastructure have an influence on urban lifestyles (agency) and on urban design (perception)?

4) As the presence or absence of water is linked to urban practices, perceptions and architectural settings, it is thus also an important factor for the **mental conceptualisation and imagining** of cities. The following questions will be of importance: What role does water play in specific urban (religious, political, social) mind-sets? How do such concepts interfere with specific practices and perceptions? Are there conflicts and contests connected to the access to water? What significance does water have in the sense of empowerment?

5) Water as such is *the* central **resource** of any settlement. It not only quenches thirst, it also provides an aquatic infrastructure for transport (rivers, lakes, sea), for energy generation, for craft activities, etc. Water as a material resource is thus always embedded in manifold forms of knowledge and techniques (immaterial resources) that allow for its use. The following questions will be of importance: What forms of actions and perceptions does the ‘resource’ water enable or prevent? How is the ‘resource’ water instrumentalised socially and politically? What are the economic effects of water availability and scarcity?

6) Water constitutes a central **environmental factor**. The following questions will be of importance: In what way does the presence or scarcity of water have an influence on flora and fauna and thus on urban diets? In what way does the frequency or scarcity of rainwater (climate) have an influence on urban habits (agency), perceptions and the mental concepts of cities? In what way do droughts, but also floods threaten urban life? And on a more general level: How do ecological factors influence the formation of settlement networks?

Apparently, all categories (Fig. 1) – urban agency and perception, urban material design, the availability of resources, urban mindsets, and environmental settings – are mutually related.

Thematic organization of the present volume

The present volume provides case studies that start from different facets of the network mentioned above: water as an aesthetic category (perception), water in the context of rituals (agency), urban water as a mental category, water infrastructure (architecture), water as an environmental factor, and, on a more general level, water as a factor of urbanization. However, all contributors focus on the interdependency of several of the aspects mentioned. In so doing, they refer to the Mediterranean region as well as Central Europe, and cover a time span that ranges from the 6th century BC to the 18th century AD. The volume thus focuses on the ‘European’ town.

The perception of water as an aesthetic urban category

The relevance of water as a perceptual quality becomes particularly tangible in installations that aim at a visual ‘staging’ of water. **Patric-Alexander Kreuz** focuses on North Italian cities (2nd century BC to the 2nd century AD) which are characterized by the abundance of water. Consequently, the control of water via canals, piers, embankments, and bridges becomes an important task. The corresponding architectural elements had a crucial impact on the visual appearance of a city – which is exemplified for Milan, Altinum, and Aquileia. The 1st century AD entailed a new quality of aestheticization of water with the appearance of decorative water installations which were made possible by the erection of aqueducts. This holds particularly true for nymphaea – even if such features were relatively rare. Much more frequent was the use of water as an accessory element of monumental architecture – e. g. fountains connected to monumental buildings.

The second contribution by **Nicolas Lamare** focuses on fountains in a regional context which is characterized by the lack of water: North Africa. Here again, a tension between function (the provision of water) and aesthetics/semantics becomes tangible. In an arid climate, however, the visual staging of water became all the more important. Fountains and nymphaea provided a synaesthetic experience and functioned as meeting and stopping places. Consequently, during the Roman Imperial period, they were located at prominent and visible sites (e. g. crossings) and functioned as monumental proclamations of the wealth and status of their donors. They kept, indeed sometimes even enhanced their role in Late Antiquity – thus in a period, when the whole urban layout was transformed. They even became symbols of urbanity.

The two articles underline the great importance of water in the urban landscapes of very different regions. This result becomes even more significant when it is compared with the role of water within sanctuaries. Here, it is of primary ritual importance, but most often does not have a visually striking appearance.

Urban agency: the ritual uses of water

In ritual contexts, water can be regarded as one central ritual element connecting different religious groups and underlining the ‘pure’ status of the believers in an otherwise ‘impure’ environment. Nevertheless, the religious connotations and the cultic handling of water rituals differ²⁵ (e. g. iterated purification, water as a one-time symbol of new life). This is especially important in the horizon of cultural contacts – e. g. in Graeco-Roman,²⁶ Jewish, Christian and Muslim cults. The architectural and atmospheric impact of the ritual use of water in different urban cults (private or public) can be analysed and compared on a synchronic and a diachronic level.²⁷

Given the primary importance of water in cultic contexts, **Nicola Chiarenza** analyses the case of the Acropolis of Selinous with its urban sanctuary during the 6th and 5th centuries BC as an example. The two wells within the sanctuary and the fountain did not receive any monumental framing and visual staging. However, the article explores the spatial relation between the water sources and the architectonic development of the sanctuary and suggests potential uses in the context of the ritual.

Chiarenza concludes that the ‘sacred’ wells are not architecturally staged, and this is confirmed by **Philipp Kobusch’s** contribution, which is based on a large sample of sanctuaries in the Hellenistic East (4th to 2nd centuries BC in Greece, Asia Minor, and the Greek islands). This

²⁵ Hellholm et al. 2011.

²⁶ Especially in healing practices and healing cults, such as the Asclepius cult, see Israelowich 2015, 117–124.

²⁷ Shilling – Stephenson 2016.

visual unimportance runs counter to the cultic relevance of water. Kobusch locates lustral practices close to the (architecturally marked) borders of a sanctuary. Such architecturally marked borders do not coincide with the placing of ritual ‘rites de passages’ involving water.

Christiane Zimmermann focuses on a different religious setting: water in the early Christian cult in Corinth (1st to 6th centuries AD). Here, too, water rituals marked ‘liminal’ situations: the initiation into Christianity (baptism), in particular. In Corinth, it was not earlier than the 6th century AD that the ritual received an architectonic framing in the shape of the baptistery of the Lechaion basilica. In the context of Christianity, water rituals received – for the first time in antiquity – their own, visually impressive building. Consequently, its architectural layout contributed to the temporal and spatial structuring of the ritual. The architectural form of the building (being related to bath plans) and its placing (outside the city, in the context of the necropolis) is thus also meaningful with regard to the underlying conceptions of the ritual. The water ritual of baptism thus negotiates traditional and new concepts of water use. Water possesses culturally specific meanings.

Urban water as a mental category: Memory, identity, symbolism and ceremonies

Water as a mental category is not limited to religious contexts. Its metaphorical meaning underlies all contexts of social, cultural, political and economic life. Consequently, the cultural self-imagination (‘identity’), the construction of one’s own history (‘memory’), and the construction of the ‘other’ often involve narratives, images and actions related to water. Water becomes a highly charged symbolic good.

The article by **Dylan Rogers** leads us to the centre of Roman power and identity: the Forum Romanum in Rome, originally a swamp before the Cloaca maxima was built. He shows how, during the Republic, manifold narratives referring to Roman myth and history (e. g. naval victories) involved rituals and ceremonies related to water and referring to the ‘aquascape’ of the place. Water rituals and their spatial anchoring thus contributed to the stabilisation of memory and identity. The age of Augustus marked a drastic change. Most of the buildings of the Forum Romanum were transformed architecturally, but above all, the emperors started to build new Imperial fora. Instead of connecting memory to ‘dead’ water, the new fora were equipped with fountains staging ‘living’ water. Water thus gains a new aesthetic quality.

Adam Rogers considers water to be part of the urban materiality in military forts, towns, but also in pre-existing *oppida* of Roman Britain – a region characterised by the over-abundance of water. With the arrival of the Roman army, the ‘traditional’ land- and waterscapes changed considerably. Roman territorial development built prominently on the ‘functional’ domination of land- and waterscapes (by building harbours, ports, canals, etc.). At the same time, it aimed at the appropriation of ‘symbolic’ water sites that were restructured and occupied by settlements. The domination of water and the creation of new waterscapes thus became a means of power.

In medieval literature, water was used as a complex metaphor for a wide range of purposes. **Dahm-Kruse** examines their multiplicity on the basis of the 13th century novels ‘Herzog Ernst’ and Konrad Fleck’s ‘Flore and Blanscheflur’. The authors refer to the broad symbolic and especially religious implications given to the element of water. In both epics, the well elaborated descriptions of waterworks are of great importance for the image of the city. They are central parts of various urban structures and architectural forms. On the one hand, it is obvious that these portraits of water systems refer to biblical images and thus become a medium of specific spiritual concepts. The descriptions of the garden of Eden or Heavenly Jerusalem have, at the same time, aesthetic and representative functions. The visual depictions, on the other hand, also allow an insight into the material infrastructure connected with the water systems.

Water infrastructure, water politics, water economies

Water is a prerequisite for livelihood, health, food security, and general economic growth. Water systems are part of the development of urban infrastructure, both tangible and intangible. They encompass the supply of drinking and industrial water, as well as ports, bridges, flood protection, and irrigation. Access to and availability of water could be limited and could function or be used as a trigger for conflicts and struggles, both within the city and also at a higher geopolitical level. The urban economy can be related almost exclusively to water as a transport system (e. g. port cities). At the same time, water is a resource for commerce and crafts, not only in the city, but also in the urban hinterland. The control of rivers for trade, but also access to sources and lakes for urban water supplies illustrates how water systems became integrated into urban development.

Sophie Bouffier analyses several of the aqueducts of Syracuse. The building techniques of three of them (Tremilia, Ninfeo, Paradiso) show well developed technological knowledge, while, at the same time, they demanded an immense investment of working time and labour. The infrastructural measures can possibly be related to the dynasty of the Deinomenids (Gelon) in the 5th century BC, when Syracuse experienced a phase of important urban growth. The Galermi aqueduct can possibly be linked to Hieron II (before BC 213/12). In the case of the water supply of the city of Syracuse, one could thus speak of a real water policy.

Betty Arndt's contribution addresses private and public water management in the Late Medieval and Post-Medieval town of Göttingen. She starts with a discussion of the commercial use of water. In addition to private uses, inner-city crafts and small businesses (especially tanners) needed complex water infrastructure (e. g. sewers or pipe systems). Like windmills, watermills were an important factor in urban economy. However, there were numerous conflicts, e. g. for fishermen. With the installation of public wells and water arts, water management not only attained a new administrative relevance; water also became a new component in the perception of urban space. Last but not least, the author also examines the treatment of liquid and semi-liquid waste that could contaminate the groundwater. The basic need for water on a physiological basis is the root cause for water becoming a resource, and the abundance or scarcity of water then provides the cause (or not) of conflict. **Elisabeth Gruber's** article investigates the influence water had on urban communities in the Middle Ages by using the example of the towns of Krems and Stein on the Danube, from Late Medieval up to Early Modern times. She discusses the role of water for late medieval towns and their inhabitants. Access to water is always associated with questions of use and regulation. This interaction can be organised at an individual level, in communities or between different groups of actors. Whether with regard to fishing rights, tolls, marketplaces or even bridges, water is not only a contested or connecting resource, but also a potentially dangerous element of life and the economy.

Environmental hazards: floods and other dangers

As densely populated settlement systems, cities are highly exposed to environmental impacts. Environmental issues are not an invention of the recent past and were particularly well perceived in pre-modern times. Extreme natural events, such as unexpected droughts or 'floods of the century', threatened the urban landscapes. Continuously recurring natural events such as floods forced urban residents to develop prevention strategies and to minimize risks. Last but not least, the contamination of drinking water or water scarcity due to industrial activities forced inner-city discussions and demanded coping strategies.

In his contribution, **Christian Rohr** discusses these aspects from a long-term perspective, from the Middle Ages to Early Modern times. The differentiation between natural hazards and (natural) disasters is of crucial significance for the understanding of pre-modern natural phe-

nomena. Floods and ice jams are such phenomena, for which pre-modern societies were scarcely equipped. Ice jams and subsequent floods can threaten the whole city, but they can also have a tremendous impact on urban subspaces and on the relationship between the city and the surrounding countryside. In his article, he points out how people tried to minimise these risks. This included not only construction works, but also administrative interventions and neighbourhood cooperation.

While Rohr explicitly focuses on a wide-ranging perspective, water also has a significant role as a ‘risk factor’ for **Rainer Schreg**. He shows how medieval urban infrastructure used water networks as a resource. The establishment of a town on a river or lake had a huge impact on ecology. The author describes the ‘projected’ influence of urban water management on the hinterland and rural landscapes, but also the unintended effects of urbanisation on hydrology and landscapes. Here, not only the direct relations between city and rural surroundings are of importance. In the sense of a ‘big history’, Schreg associates economic, social and ecological consequences with the late medieval ‘crisis’ and its processes of transformation. Both contributions thus illustrate the role water played in urban development. In addition, they show that urban water systems are also mutually related to the ‘waterscapes’ of the surrounding countryside. Against this background, water proves to be an integral feature of urbanization.

Urban water and the process of urbanization

Water is one of the basic factors for urban development. The significance of water for urbanization processes has to be investigated in its multidimensionality. Water and the urban environment form a dynamic and multifunctional network. For urban development, the physical, natural water landscape is initially a starting point. This can have a determinant effect, but human intervention was targeted at changing water systems. These find their expression in a multitude of cultural, institutional and conceptual practices and frameworks. Legal and administrative regulations, but also everyday practices are expressions of these relationships. Two contributions deal with these topics.

With a focus on the Middle and Upper Rhine Valley and against the background of late medieval written sources, **Gabriel Zeilinger** describes not only environmental aspects, but also political constellations. Water was not least a part of the conflicts in the complex relationships between the various social and political actors in the cities. Water was thus not only a natural element and an economic factor, but also a negotiated and sometimes contested resource. Water shaped the city’s own logic and thus stands for specific historical constellations. However, the treatment of water in urban development can also be an expression of similar prerequisites or behaviours. In this sense, ports, for example, as interfaces between the city and ‘the outside world’ are an expression of physical conditions, but also of historical and path-dependent patterns. **Ulrich Müller** studies these relationships on the basis of three port towns in Northern Europe. By conceptualizing harbourscapes, he describes the multidimensionality of ports as an urban area from Early to High Medieval times. The theoretical approach of the ‘-scapes’ (ethnoscapes, technoscapes, financescapes, ideoscapes, mediascapes) is used to study the urban subspace of the ‘port’ as a place of globalization in pre-modern times. Harbourscapes connect water and land, but the port as a place of encounter neither begins nor ends with the quays. Harbourscapes serve as an area for social, cultural and political interactions, processes of transformation, which manifest themselves in concrete urban locations. Finally, both contributions make evident that research into urbanization and water systems can only be carried out within a transdisciplinary framework.

Outlook

The present volume touches on diverse water issues that are at the heart of urbanity. To date, there are only a very few systematic water studies that comprise several of the constituting elements of urbanity (Fig. 1). Most often, comprehensive studies cover large regions, so that they cannot look at the interrelationships of different factors.²⁸ The present volume cannot fill this gap either. However, it is intended to stimulate future studies on single cities or small-scale, regional water networks. It is obvious that this can only be done through multidisciplinary and transdisciplinary approaches. Archaeology, geology, botany, zoology, but also ancient and medieval history, philology, art history or even religious science are essential disciplines for investigating the fluid relationships between society and the environment, between urbanization and water in pre-modern times.

However, we are well aware of the fact that the cultures of antiquity and of the following periods (the so-called ‘Middle Ages’) never existed in isolation, but developed via transcultural contacts: the ancient Mediterranean in exchange with Africa, the Near and Far East, and Northern Europe, the Middle Ages with North Africa, the Middle East and Central Asia. In such a global perspective, traditional periodisations such as ‘Antiquity’ and ‘Middle Ages’ – the latter with a specifically Christian connotation – have to be questioned.²⁹ The widening of the perspective is of primary importance, too, for the topic of urbanization and water, because water has manifold material and immaterial manifestations, especially in Islamic culture, which change or expand the Latin European perspective of *usus aquarorum*. This is not to deny lines of tradition from antiquity, but to widen the perspective for future research on the topic.³⁰

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²⁸ Dessales 2013; Rogers 2018.

²⁹ Fauvelle-Aymar 2013; Bauer 2018.

³⁰ Magnusson 2001; Walton 2006; Schattner – Valdés Fernández 2017; Czeguhn et al. 2018. See the comparative presentation of pre-modern water management systems in Augsburg 2018, 334–338.

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