



The societal impact of water system development in the world of the Old Testament

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Abstract

Looking at water availability and systems developed around it invariably leads to a better understanding of the roles it played throughout the different periods as reflected in the Old Testament. Both religion and societal development form part of the history of ancient Palestine. Importantly, water is a major part of both these pillars. The Bible is a significant source of information when it comes to answering questions regarding what exactly the role of water was for daily life in times of peace and war, to the elite and to the poor. As such, for this study, the biblical text is combined with extra-biblical manuscripts to complete the picture. Along with religious practices that involved water, which includes purification rituals, we also find evidence of practices dependent on social development reliant on hierarchical structures. The changing extent to which water would be manipulated throughout the Old Testament would have contributed to a division between social classes as it led to the creation of different jobs spanning from water carriers to the engineers who installed large-scale water systems.

Keywords: Old Testament, water, society, environment, ancient Palestine.

Introduction

There are so many aspects to consider when looking at the development of any civilisation or geographical region as human history is greatly complex in nature. In a study of the world of the Old Testament, this is no different. However, for the purpose of this paper, the focus is on water as the central theme, with other contributing factors influencing development around it. Importantly, water formed a major part of both religion and societal development. Its contribution spanned across all facets of life in times of peace and war – affecting the elite and the poor. As such, this research focuses on the different aspects of water both in its natural and anthropogenic distribution. By combining archaeology, anthropology and geography, the impact of water supply and technological advancements surrounding it, are explored with particular focus on social complexity. This multi-disciplinary approach provides an understanding of the effect water availability had on class division and the kind of social structures that were in place to allow for the creation of the different water systems. Finally, it becomes apparent that what was at first a basic need for survival in rural areas turned into a magnificent show of power and authority of the ruling elite of the Old Testament's world.

Settlement in ancient Palestine

During the Bronze Age, ancient Palestine was split into different areas related to the favourability of environmental conditions. The most favourable areas for settlement had been utilised almost without interruption and fell within the region of the Coastal Plain, the Shephelah and valleys in the north (Finkelstein, 1988:338). Other areas, less conducive to permanent settlement, were subsequently occupied with interludes throughout history because of challenges that topography, access to water and infertile soils presented (Finkelstein, 1988:338–339). Life depended on environmental conditions and the socioeconomic aspects that surrounded these conditions became important (Finkelstein, 1988:338). Of these conditions, access to water was in all likelihood the most important consideration.



Where tribal systems were common, various events such as raids and disputes occurred. This was mostly in the pursuit of gaining more control over the natural resources that the land offered. Such unrest would have taken place at regular intervals because of the lack of an enforceable legal system (De Vaux, 1973:9). This is attested to in various biblical accounts such as Genesis 21:25 where Abraham speaks to Abimelech about the well that the latter's servants had taken and Genesis 26:19–22 where Isaac and the herdsman of Gerar quarrelled over the well that Isaac's servants had found in the valley. Where nomadic lifestyles reigned, the groups consisted of families with slight divisions in terms of class (De Vaux, 1973:69). The major water systems that would be developed later meant that access to water could be secured even in areas with low precipitation. This was a basic requirement in the quest for urbanisation. However, to build these systems would also require vast amounts of labour and bureaucracies (Mithen 2012:7). The securing of a water supply thus formed a major part of societal organisation. As such, when settlement patterns became more permanent, the equality that existed before fell away and gave way to monarchical systems and changes in social distribution (De Vaux, 1973:69). During this time, for unskilled or specialised workers alike, heavy reliance was placed on the environment to sustain them (Wenham, 1999:87).

The ancient Near East has always been heavily involved with securing water sources. The systems created to secure its conservation was only possible due to technological advances and an ability to either conform to the environment or adapt in a different way. In turn, it would affect social and economic structures (Roberts, 1977:143). Kenoyer stated that people used material and religious aspects to create an identity for themselves as a group (1999:39). From this statement, it seems reasonable that the same applied to the construction of specific water systems and practices that surrounded it.

The evolution of water systems in ancient Palestine

The need for the development of complex water systems stemmed from a need for greater quantities of water being stored more efficiently to sustain the population of an ever-urbanising world (Finkelstein & Silberman, 2001:337). It has been posited that one can look at the changes in hydrogeological and technological advancements based on the theory that there will be a shift from basic and simple towards elaborate and complex (Issar, 1976:130). However, external circumstances also impact the methods used to create water systems. Before widespread urbanisation, many different people more prone to nomadic life as a means to water their flocks used wells. As society developed, however, the maintenance, size, and practicality of different systems developed along with it. These systems not only show us how humans have had to adapt and manipulate their environment for their own survival, but also give us the ability to glance into the lives they had and how they flourished where these water systems had been perfected.

The development of water systems is an unending cycle. The earliest settlement patterns were based on natural water sources until the use of cisterns and wells provided water throughout the different seasons. During the Chalcolithic period, basin irrigation and floodwater farming were already in use and shows some of the earlier technological advancements in the manipulation of water sources (Golden, 2004:74). It is hypothesised that when survival was assured with the agricultural and industrial developments, political and social systems developed around these technologies (Matthews, 2007:38).

However, because the very nature of human development spans across time and space, in practice, there are too many external variables. Perhaps, such quests for simplifying systems are applicable to searches for quick and universal answers surrounding water systems in general.



Water as a sign of God's mercy and wrath

The Old Testament uses water as a representation of God and the power He has to bestow life on the land and its people (Wenham, 1999:87). This is not a surprising conclusion, as similar beliefs existed throughout the ancient world. For example, in the case of the Egyptians, they saw the Nile and the opportunities it presented them as an indication of the favour they had with their gods (Rice, 2003:36). To the people of the Old Testament, the natural environment was not just necessary for survival, but a God-given gift. This is attested to in Deuteronomy 11:11 serving as an example of where the biblical writers give a sense of gratitude to God, but not without the knowledge that favourable conditions in terms of water availability could also be taken away (Wenham, 1999:87).

Leviticus reflects this opinion as well:

'If you follow my decrees and are careful to obey my commands, I will send you rain in its season, and the ground will yield its crops and the trees of the field their fruit' (Leviticus 26:3-4) and 'If after all this you will not listen to me, I will punish you for your sins seven times over. I will break down your stubborn pride and make the sky above you like iron and the ground beneath you like bronze. Your strength will be spent in vain because your soil will not yield its crops, nor will the trees of the land yield their fruit' (Leviticus 26:18-20).

Jeremiah 14:2-4 tells of the hardship that befell the people of Judah, as God warned would come for their sin:

'Judah mourneth, and the gates thereof languish; they are black unto the ground, and the cry of Jerusalem has gone up. And their nobles have sent their little ones to the waters: they came to the pits and found no water; they returned with their vessels empty; they were ashamed and confounded, and covered their heads'.

Thus, it appears that God's provision of water did not discriminate against class but rather acted as an equaliser.

God's mercy

Water is often referred to as a sign of God's mercy. For example, when Eliphaz, a friend of Job, replied to Job's mourning, he notes many of God's wonders that are beyond the understanding of man. One of the miracles mentioned is God's provision of rain to water the countryside (Job 5:9-10). In Exodus 15:22-25, Moses was leading the Israelites from Egypt. After three days in the desert without drinkable water, the Israelites turned their anger to Moses. God then instructed Moses to throw a piece of wood into the bitter water at Marah after which it became sweet. Later, in Exodus 17:1-6, the Israelites again argued with Moses after water was once again scarce. God commanded Moses to strike a rock with his staff so water would flow from it and the community's thirst could be quenched.

In a similar time of need, Elisha purified the water at Jericho by throwing salt into the spring and relaying God's message: "I have healed this water. Never again will it cause death or make the land unproductive." (2 Kings 2:19-22)

God's wrath



The consequence of not abiding by laws set out by God was his wrath as can be gleaned from examples where He either withheld water from His people, or used it as a means of destruction. Examples can be found in Jeremiah 8:14 wherein the aftermath of the desecration of God's temple, the people of Judah proclaimed: '...Let us flee to the fortified cities and perish there! For the Lord our God has doomed us to perish and given us poisoned water to drink...' (Jeremiah 8:14) An example of God's destruction with water can, of course, also be found in the narrative of Noah and the flood in Genesis 6–8.

Water as influencer

Environmental conditions

It is generally accepted that changes in the climate and the hydrological makeup of a region have an impact on the functioning of settlements and societies, but some believe that in itself it cannot bring about their end. Particularly in the ancient Near East, where the drastic shifts in precipitation from year to year occurred often and the impact on crop yields was expected, it is believed that they would have prepared to minimise detrimental effects (Rosen, 1995:36). According to Rosen, it has been the habit of many archaeologists to look to environmental conditions when searching for the source of pressure on societal stability. However, she argues that where societies were truly developed, they knew how to adapt to such changes. As such, where a collapse did occur, underlying instability within the society is seen as the main cause for destruction (Rosen, 1995:26). Others, such as Mithen, hypothesise that by being able to determine when milestones in water management occurred, it allows you to see when some of the main aspects of the rise of civilisation occurred (2012:14–15).

To change environmental conditions, such as that of the hill country or the desert, so that it becomes possible for humans to settle there is only possible through massive projects involving intensive work and planning. This includes, but is not limited to, the creation of terraces around Jerusalem so that crop cultivation could take place as well as ensuring that enough water is collected for periods of drought (Har-el, 1997:149–151).

Economic prospects

With the establishment of a centralised monarchy, economics became one of the most important aspects of daily life and social classes developed (De Vaux, 1973:69). Along with clear evidence that the environment would have given early inhabitants pause for consideration when deciding on a location for settlement, it is within reason that economics would have been a different driving factor. Water would still need to be secured, but marginal areas would have been attractive enough to inhabit. Perhaps this is even more fathomable because it still makes sense for the modern creation of cities and towns. The creation of some settlements might have been economically motivated rather than environmentally as seen at Arad. Arad's location was important in terms of trade and defence but was not naturally favourable for settlement in terms of water supply.

For coastal or port cities, such as Ashkelon, Ashdod, and Dor, their role in maritime trade was of utmost importance. Along with the availability of water through shallow wells because of the high water table, the occupation of sites such as Ashkelon was favourable and serves as an example of where environmental conditions led to continuity and transition rather than a complete abandonment and re-uptake of settlement.

In the case study of Arad, the environmental conditions appear to have been a major consideration of where to settle. The environment was important because of a lack of technological knowledge on how to secure water artificially. In times with moister climatic conditions at Arad (e.g. Early Bronze Age), settlement could easily be successful, whereas



when drier conditions became prevalent (e.g. Middle Bronze Age), destruction ensued (Frumkin, 2002:21). The settlement of the area was probably to support an economic function and form part of the social dynamics developing within settlements and regions as a whole (Amiran, 1991:158–161). During the Iron Age, Arad came to serve the kings of Israel and Judah as a guardian of the route followed to reach Edom and Elath. In terms of economic interests, the road it protected was of major importance for trade in copper, spices, and perfumes with Arabia (Aharoni & Amiran, 1964:43–44).

Ashkelon serves as an example of an area with favourable environmental conditions that led to continuity and transition rather than a complete abandonment and re-uptake of a settlement. This was the case until the Early Bronze II period, where increases in precipitation created marshlands and led to abandonment (Golani, 2013:96– 98). Although environmental conditions still dictated how long the site could be settled, it seems that possibilities of trade would have driven the inhabitants to remain there as long as possible. With technological advancements, the environmental elements, at least as far as water is concerned, would have had less severe consequences, as it could be manipulated by man-made inventions, such as tunnels.

Fortification driven

In terms of fortification and concerns for security, cities were built on higher areas, such as at the tops of hills. This left the problem of collecting water as the naturally occurring sources would not necessarily have fallen within the high area of habitation. It meant that securing safe access to water was necessary for defending the cities of the Canaanites and Israelites alike (Weinberger, Sneh & Shalev, 2008:3035). Creating water systems that would satisfy this need often required engineering expertise. Some installations, like those at Jerusalem and Megiddo, were aimed at creating secure shafts and tunnels to reach springs from within the fortifications (Weinberger et al, 2008:3035; Fritz, 1995:151). At Gibeon, a tunnel connected the pool to the spring; at Gezer, a tunnel was created that led to a cave with groundwater; and at Arad, a cistern was constructed (Weinberger et al 2008:3035). However, even though some of these systems that required complex techniques were known, it would have required the knowledge of experts in the field thus making it an expensive endeavour (Miller, 1980:339). As such, the large-scale creation of water systems is often linked to royal cities. (Herr, 1997:141).

The reservoirs from Arad, Ai, and Byblos (cf. 3.7.1.1) show evidence of the use of water systems to ensure the inhabitants' safety in times of war. Arad made use of a deep well being dug, while Beth-Shemesh and Lachish (cf. 4.3.5) made use of cisterns to store runoff rainwater (Dever, 2012:126–127). Having a permanent source of water in times of political unrest made the creation of underground shafts a favourable technique to access natural water sources and to make it reachable within the safety of the towns or cities. However, even though the technique was known, it would have required the knowledge of experts in the field, thus making it an expensive endeavour (Miller, 1980:339).

The water systems developed over time had a great impact on the outcomes of sieges when invaders no longer had access to the city's water supply (Biswas, 1985:207). This can be seen in Samaria for example where they were able to fend off the Assyrians for two years from 723 BCE. Another example is that of Jerusalem's water supply, which required enhancements as requested by Hezekiah. This was forced by the imminent arrival of the Assyrians as stated in 2 Chronicles 32:4, 'A large force of men assembled, and they blocked all the springs and the stream that flowed through the land. "Why should the kings of Assyria come and find plenty of water? They said"' (De Vaux, 1973:238; Rowley & Taylor, 2006:43; Grossberg, 2013:211).



Another example of water security that affected the military chances of a city can be seen at Jerusalem where they held out against the Babylonians for a year and a half from 587 BCE, during Nebuchadnezzar's onslaught (De Vaux, 1973:238; Rowley & Taylor, 2006:43).

Another biblical account is found after the death of Ahab when Moab revolted against the Kingdom of Israel. As the coalition from Israel, Judah, and Edom set out to end Moab's revolt, they faced challenges of water shortages. The prophet, Elisha, then spoke on behalf of God and said that water will flow if they make the valley full of channels. Along with the provision of water for the armies, it was also prophesied to the king of Israel that, 'You will overthrow every fortified city and every major town. You will cut down every good tree, stop all the springs, and ruin every good field with stones' (2 Kings 3:19–25).

Agriculture driven

The variety of environmental conditions and resultant favourability for agricultural practices that existed throughout ancient Palestine leads to questions surrounding settlement locations as well as how the social structure within communities affected the use and allocation of natural resources (Ahlström, 1982:133). Thus, water management has often been at the forefront of thought as communities began to settle and pursue agriculture (Black et al., 2010:5107).

In history, many of the settlements in ancient Palestine were focused on rain and runoff collection to sustain their communities. The use of springs, rivers, and groundwater sources then became of increasing importance; however, their usefulness was reliant on technology and knowledge of environmental conditions (Frumkin, 2002:21). To change environmental conditions, such as that of the hill country or the desert, so that it becomes possible for humans to settle there is only possible through massive projects of intensive work and planning. This includes, but is not limited to, the creation of terraces around Jerusalem so that crop cultivation could take place (Har-el, 1997:149–150). In the Jerusalem hills, man-made springs were created by digging into the hill itself until water is reached. By digging into natural springs with bad returns, their discharge could be optimised (Har-el, 1997:152). In ancient Palestine, the three climatic regions had different sources of water and the inhabitants would use the best-suited options for where they were. In the hilly areas, dry farming was possible because the annual rainfall was enough. In the valleys of the Negev Mountains, floodwater was the main source of water for growing crops. Around En Gedi, irrigation systems supplied water for growing incense and spices (Har-el, 1997:150).

Initially, it would have been a time-consuming business for young girls who would have to collect water from wells or springs in storage jars and stockpile them in their homes (Dever, 2012:164). Watering the animals was also part of young women's duties (Ebeling, 2010:46). There were cases where wells and cisterns were created in close proximity to the house, but this was certainly not always the case (Dever, 2012:164). Biblical narratives reflect these duties as being assigned to women: '... until all the flocks are gathered and the stone has been rolled away from the mouth of the well. Then we will water the sheep. While he was still talking with them, Rachel came with her father's sheep, for she was a shepherdess' (Genesis 29:8–9) and 'Now a priest of Midian had seven daughters, and they came to draw water and fill the troughs to water their father's flock' (Exodus 2:16).

The importance of agriculture in the lives of the Canaanites can be seen through evidence in the el-Amarna Letters and with the uncovering of cisterns, wine vats, and oil presses. The 15th century BCE saw many inhabitants of Canaan living in urban environments for safety reasons. In times of unrest, when the town's watchtowers were not sufficient, cities provided refuge to the people (Paton, 1902:25–28). This meant that the agricultural yield would need to be maximised to feed all the refugees. One of the main methods created for conserving water in



agricultural practices to serve this purpose was to create terraces as was mentioned above. Although successful for this purpose once implemented, it would have been a very labour-intensive method to create these terraces (Hopkins, 1987:184; Ebeling, 2010:33).

To the early Israelites, agriculture was a main economic activity, although animal husbandry did still form part of their livelihood, albeit in a secondary capacity (Callaway, 1999:75). Wheat, barley, vegetables, and olive trees, among others, could now be cultivated in areas where natural water sources would not have sufficed (Callaway, 1999:83). They also practiced spreading of crops in an attempt to avoid the risk of losing all the available crops in a season (McNutt, 1999:71). Each family was also responsible for their own specific agricultural area, although pasture land was public land (McNutt, 1999:71-80).

Society driven

With previous research placing little focus on the more vulnerable inhabitants of ancient civilisations, there have been instances where skewed perceptions were created. Holistic research would have to include not only the elite but also those who built the water systems, drew water from them and were the most vulnerable to natural disasters (Mithen, 2012:6). The elite was more affected by water in terms of what it meant to them in relation to the power and luxury it provided where control of the water sources had been secured (Mithen, 2012:7). Aside from the ritual baths found in the homes of the elite, so too are many such washing facilities associated with the richer citizens. This is due to the architecture required for such facilities, which included, but was not necessarily limited to, a proper drainage system and waterproofing that would have been too expensive for citizens belonging to the lower classes to obtain (Katz, 2012:373).

On the other side of the spectrum would be those of lesser social standing who were tasked with securing water for their homes and animals. In terms of work allocation, when wells had to be dug, it fell upon the servants to perform the required manual labour (Katz 2012:375; Lemche 1988:16). This can be seen in the account of Isaac in Gerar (Genesis 26:19): "Isaac's servants dug in the valley and discovered a well of fresh water there." Accounts such as those found in the ninth century BCE Mesha inscription also serves as an example as it appears to indicate the use of prisoners from Israel to build King Mesha's large-scale water systems in Moab (Kaplan, 2010:28; Scheepers, 1984:150).

In Joshua 9:21, there seems to be particular discontent with those tasked with drawing water, where it translates to a punishment of sorts, which reflects the low social standing of water carriers (Flanders, Crapps & Smith, 1996:235).

Watering the animals was part of the duties of young women (Ebeling, 2010:46). Biblical accounts substantiating this role in society includes the story of Rachel in Genesis 29:8–9 as well as the daughters of Midian's priest in Exodus 2:16: 'and they came to draw water and fill the troughs to water their father's flock.' Based on ethnographic examples from Palestine it seems as if only the older girls were referred to as drawers of water. The latter could be related to concerns for the safety of younger children. The younger girls would still have helped to carry water back to the homes (Ebeling, 2010:46).

Disputes

Water wells led to episodes of unrest between different groups as mentioned in the book of Exodus (Lemche, 1988:16). This was because the control of the water supply would certainly grant the opportunity to expand settlements and cement a greater future in terms of economics and politics. For example, 'Isaac reopened the wells that had been dug in the time of his father Abraham, which the Philistines had stopped up after Abraham died... Isaac's servants dug in



the valley and discovered a well of fresh water there. But the herdsmen of Gerar quarrelled with Isaac's herdsmen and said, "The water is ours!" (Genesis 26:18–20). In terms of the infiltration of a city, 2 Samuel 5:6–8 describes the strategy that David prepared to attack the Jebusite city of Jerusalem. He said, 'Anyone who conquers the Jebusites will have to use the water shaft to reach... David's enemies.'

The use of cisterns that no longer served their purpose, form part of some of the biblical narratives such as where David's spies hid while they were persecuted (Power 1921:88). Water systems that have gone out of use were also used as means of imprisonment or a place to dispose of unwanted members of society (Klopper, 2002:50). For example, Joseph's brothers threw him into an empty cistern in the desert when he arrived before eventually selling him to Midianites (Genesis 37:23–24 & 28): 'So Joseph went after his brothers and...they plotted to kill him...they said to each other "Come now, let's kill him and throw him into one of these cisterns..."' (Genesis 37:17–20) and Jeremiah was punished for his proclamations of the impending fate of Jerusalem falling into the hands of the Babylonians. He was put in a cistern belonging to King Zedekiah's son. 'They lowered Jeremiah by ropes into the cistern; it had no water in it, only mud, and Jeremiah sank down into the mud...' leaving him to die of starvation (Jeremiah 38:2–9). The physical labour required for the construction of large-scale building projects, such as some water systems, fell to the lowest classes. Accounts, such as those found in the 9th century BCE Mesha inscription, also appears to indicate the use of prisoners from Israel to build King Mesha's large-scale water systems in Moab (Kaplan, 2010:28; Scheepers, 1984:150).

Finally, water formed part of the rituals used by priests to detect the infidelity of women. Numbers 5 describes how priests would test and punish women for infidelity by taking holy water mixed with dust from the tabernacle as part of a curse. If the woman drinking it were guilty, the bitter water would then cause suffering. If the suspected woman were innocent, she would be spared from the curse.

Ritual and religion

When looking at Israelite and Jewish religion at the time of the Old Testament, Ricks highlights two important aspects, namely the existence of a need for ritual purity, the need for water-related infrastructure to support this practice (1996–97:278). Biblical rules from Leviticus dictated what actions had to be taken for ritualistic purification, which preferably meant cleansing in flowing water (Ricks, 1996–97:278–279). Due to the scarcity of naturally flowing water during dry times of the year, ritual baths were created to serve this purpose.

Of note for the role of water systems in terms of social classes, is that aside from the public ritual baths, many private homes of wealthy citizens or priestly families had private *miqvaot* (ritual baths). Examples were found in the Upper City of Jerusalem and outside the Old City, close to the Dung Gate (Ricks, 1996–97:280). Class division is hinted at here with a lack of similar installations in lower class dwellings.

Hygiene

Aspects of hygiene and sanitation in ancient Palestine are another consideration of how and why certain elements of water systems were created. Looking at the presence of drains and waste disposal systems found in houses, the archaeology implies that during the Late and Middle Bronze Ages, these were limited to the upper class (Neufeld, 1970:414–415).

The more refined hygienic practices are linked to the wealthier parts of the population. They would have bathed in rivers and streams as well as pools or bathtubs in the homes (Neufeld, 1970:422). Immersion pools existed for bathing specifically related to religious cleansing. By



Herodian times, bathhouses with heating techniques were used for personal hygiene (Neufeld, 1970:422). Thus, there was an apparent change from water as a necessity to it being a luxury item further exploited by the elite (Neufeld, 1970:422–423).

Conclusion

Water had varying impacts on society and these impacts were not limited to one aspect of their lives but rather to most of it. This included their survival in terms of sustenance, their development in terms of hygiene and technology and their societal divisions in terms of use and distribution of water. Urbanisation in its most rudimentary stages already brought some challenges for water supply, but these were necessary and would be overcome to enable large-scale settlement of the Holy Land. Some common challenges of urbanisation included the stresses placed on water resources because of changes in the natural environment. With large increases in population numbers and densities, drainage, runoff, and water quality were affected (Zaporozec, 1985:203). Human intervention was then further required to mitigate these effects.

With the Old Testament as a source, we are able to see how the changes in water systems, processes, and technology surrounding the storage and usage of water coincided with social changes. This is from the point where it acted as a uniting force that required the contribution of all members of society to establish settlements, to it becoming a divider of classes with a shift from a necessary resource towards a luxury commodity. Class differentiation is also apparent in the different job allocations and statuses that went with it, along with the banishment of unwanted citizens to cisterns indicating who was seen as the lowest ranked in the civilisation. It can be concluded that the division of classes is very much the result of human nature and interpretation, whereas, in terms of religion, water is a sign of God's appeasement to all of man.

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