4 Conclusions

As we have seen, the treatise on *Why Seawater Was Made Salty* allows us to understand several important aspects of Ṯābit's thought about nature. It is particularly useful to read this text in conjunction with the summaries of the treatise *On the Benefits of the Mountains* that appear in later sources.

One dominant aspect of both works, as already noted by Marwan Rashed, is Ṯābit's teleological and finalistic approach to natural sciences.[1] This teleological perspective constitutes a significant difference from the generally causal discourse of many thinkers in the Arabo-Islamic Aristotelian tradition. The finalistic character of both works leads Ṯābit to explicitly state the end or purpose of creation.

Throughout the treatise *On Why Seawater Was Made Salty*, the ultimate end or purpose is life in all its forms and beauty, encompassing plants, animals, and humans on equal footing. Rather than thinking of animals and plants primarily in terms of human needs, Ṯābit understands them as the collective ultimate beneficiaries of God's design. This same argument is laid out as the basis for the treatise *On the Benefits of the Mountains*, according to extant summaries.

Thus, Ṯābit sees the divine plan as perfectly rational and knowable, if its end is duly considered. This assumption forms the basis for the scientific enterprise. This knowledge program is characterised by a mixture of empirical observations and reasoning, both of which seem to be necessary: reasoning because the divine plan is rational, and observations because some of its components – such as water – do not strictly follow theoretical principles. The end of this effort is clearly stated: human souls long for knowledge

1 Rashed, "Le meilleur des mondes".

of the divine wisdom enshrined in creation. Ṯābit considers the intellectual struggle in pursuit of this knowledge to be rewarding and never-ending. However, he also seems to imply that no single part of the divine wisdom showcased by nature is per se forbidden or unattainable in principle.

In both treatises, Ṯābit's attention focuses on water as a prominent part of creation. Unfortunately, we do not have access to the full content of the treatise *On the Benefits of the Mountains*, as Miskawayh states that his summary is only partial. However, based on what we can surmise, it mainly revolved around the origin of fresh water on dry land and the role played by mountains in these processes. Regardless, it is clear that Ṯābit sees water as a special component of the divine plan. Its behaviour, even in everyday observations, escapes the otherwise perfect but sterile order of the elements. Thanks to this exceptionality, water acts as the connecting element between dry land, the sea, and the atmosphere, playing a fundamental role in sustaining life.

Seawater salinity helps to maintain balance in this perpetual movement, which is another defining feature of creation. The cycle of water is clearly understood here as exogenous, meaning that it excludes the generation of water in the depths of the earth. While this position is not unique to Ṯābit, he appears to have been one of its strongest proponents. Important authors such as al-Bīrūnī and Miskawayh referred to him on the matter. The relative success of these two treatises in the following centuries, in the face of the more widespread adoption of the Aristotelian endogenous model of the water cycle, may have contributed to the downplaying of subterranean water generation by other authors in the Arabo-Islamic tradition. As we have seen, the exogenous model also appears in the *Rasāʾil* of the Iḫwān al-Ṣafāʾ – a collective who interestingly also shares with Ṯābit a similar biocentric view of the natural world – and al-Karaǧī tempers his account of the scientific consensus of his time on the endogenous cycle with some reluctant scepticism about the contribution of subterranean water generation. Al-Karaǧī acknowledges that philosophers and scientists assert that air transforms into water through condensation within the earth's depths. Since the hydrological discussion in the *K. inbāṭ* serves as a supplementary component to the book's primary objective, he does not extensively or emphatically explore the subjects. His exposition allows for the coexistence of endogenous and exogenous models. Rather than adopting definitive positions, the engineer presents a circulatory system of global waters that operates effectively, whether or not it includes subterranean water generation. Overall, the system primarily functions due to the well-established closed cycle of evaporation, precipitation, and percolation. Simultaneously, the theoretical possibility of continuous condensation of water from air is left open, although it is not deemed necessary.

Fascinatingly, the most vehement opposition to the endogenous model arises from within the Aristotelian faction itself, with Abū al-Barakāt al-Baġdādī standing as the most overt critic. It is important to emphasise that his rebuttal is grounded in empirical evidence. As Griffel noted, Abū al-Barakāt embraced the Ġazalian critique of the *falsafa* movement, and similar to al-Bīrūnī, he dismissed Avicennian *taqlīd* (imitation) in favour of individual inquiry and validation. Although Abū al-Barakāt often accentuates a philosopher's independent reasoning, in this particular case, he demonstrates a predilection for empirical evidence over authority, even when such authority is embodied by distinguished figures like Aristotle and Ibn Sīnā. This preference enables him to surpass mere rational conjectures.

A general acceptance of what has been called 'ambiguity' likely led to the blurring of boundaries between the endogenous and exogenous models, as seen most clearly in al-Karaǧī. The endorsement of the exogenous model within the hydrological cycle seems to be a minority position, yet it is sufficiently prevalent among various authors, with a focal point in the Mesopotamian regions of the caliphate. This observation, however, could potentially be a consequence of a well-known selection bias in the surviving Abbasid sources, due to Baghdad's central role in cultural production at large. Undoubtedly, the exogenous model is more prominent in Arabic sources than in Western European thought during the same period or even later. Future research may examine the development of this seemingly harmonious coexistence between the exogenous and endogenous models within the *dār al-islām*. This approach might be particularly revealing for authors influenced by Abū al-Barakāt al-Baġdādī, who, in a sense, disrupted this tranquillity, but the later developments of Islamic understanding of the water cycle after the eleventh and twelfth centuries have yet to be explored. It is my hope that this book may serve as a useful starting point, highlighting how premodern reflections on the role of water in the ecosystem can provide valuable insights into how past societies and intellectuals viewed the environment and our place in it.