**Editorial**

**Would a manuscript by Archimedes be within the scope of the Journal of Ecohydraulics?**

If at first glance, the Editorial title question appears rather provocative or its relevance is not readily apparent, please indulge us with your patience as we attempt to provide some context. The *Journal of Ecohydraulics* emphasizes the need for inter- and trans- disciplinary high quality manuscripts. As a new journal, though, such general statements or even further descriptions, may be insufficient to guide authors on which manuscripts may be within the envisaged scope range. In particular, manuscripts which may be considered close to the margins of the journal scope, may present dilemmas to authors. Despite the description of journal scope, available on the *Journal of Ecohydraulics* website, as a submitting author with mostly a hydraulic or mainly an ecological background, you may have pondered whether your manuscript would be suitable. It is worth noting that “ecological”, includes biological, and all aquatic life aspects, while “hydraulics”, includes hydrology, geomorphology, and all physical aspects. Perhaps the best way to enhance descriptive definitions of manuscripts which are considered within or outside the scope of the *Journal of Ecohydraulics*, is following the advancement of the Archimedes screw pump, an invention from antiquity whose utility has changed over time, and today is considered an ecohydraulic device.

Archimedes screw, with its characteristic helical vanes housed in a cylinder, is one of the oldest hydraulic machines, known since ancient times. Originally used as a pump, then overlooked for centuries, it seems to have been re-discovered in the 20th century (DWA 2005). In addition to pumping, the Archimedean screw when operating in reverse, is used as an energy converter in waste water treatment plants, as well as an alternative for hydro-turbines in low head dams (DWA 2005; Muller and Senior 2009). In recent decades, the Archimedean screw, is also used to allow fish movements at barriers, and biological assessments demonstrate low levels of injury or mortality, particularly when appropriate protection is utilized in the leading edge of the helical vanes (e.g. DWA 2005, Environment Agency 2009; Kemp 2016). Furthermore, Archimedes screw has inspired the development of helical high fish survival hydro-turbines (e.g. Katopodis Ecohydraulics Ltd. 2013). This invention and its perception through history, can help illustrate in tangible ways, the nature of manuscripts which may be considered within the scope of the *Journal of Ecohydraulics*, and how this may change over time. A manuscript on the invention of the Archimedean screw, explaining its function but making no connection to ecological aspects, would not be sufficient, even if offered by the ancient Hellenic genius himself. Despite their valuable contribution to the hydraulic and energy conversion efficiency aspects of Archimedean screws, primary literature like Muller and Senior (2009) or Rorres (2000), would also be outside the scope of the *Journal of Ecohydraulics*, even if the journal was available at that time. Should high quality manuscripts connecting or assessing both the hydraulic and ecological function of the Archimedean screw, double screw (Zeiringer et al. 2015), helical high fish survival hydro-turbines or variations of these concepts be submitted though, they would be welcome and within scope.

The invention and evolution of Archimedean screws, demonstrate how the perception of a device developed millennia ago, is not only connected to contemporary needs for innovative solutions to environmental problems, but it has advanced over time to the point that in recent decades offers solutions to ecological aspects, such as upstream and downstream fish migrations at barriers. The modern advancements and ecological connections demonstrate that the ancient invention was a truly ecohydraulics device all along. Perhaps the emergence of Ecohydraulics has much deeper roots than anyone thought, even if it was not recognized in antiquity. With such rich history and for continuing to inspire interdisciplinary research and development, we ponder whether Archimedes himself could justifiably be named the Father of Ecohydraulics?

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