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Variety and Variation

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Variety and Variation

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Welcome to Volume 2 of Issue 2 of *Euleriana*. While we occasionally discover themes that emerge from the articles and translations presented in a given issue, the wide range of Euler's work more often results in a variety of topics for each issue. This is no less true for Issue 2.

In the [Reviews](#) section, Erik Tou describes the many highlights from a new textbook in the history of mathematics: Volume 2 of *The History of Mathematics: A Source-Based Approach*, by June Barrow-Green, Jeremy Gray, and Robin Wilson, published this year by MAA Press. This review covers the work in the first half of the book, which concerns (roughly) the years 1650-1800. The text's devotion to original sources can be seen in the numerous direct quotations from Euler's work, among many others.

The first item in the [Translation & Commentary](#) section covers one of Euler's many contributions to astronomy, "A Method for Calculating the Equation of Noon" (E50). In this translation from Patrick Headley, we see how Euler combined differentials with spherical trigonometry to improve on previous efforts to determine exactly when the sun crosses the meridian.

In the next item, frequent contributor Sylvio Bistafa has translated "On the motion of boats propelled by oars in rivers" (E94) into English. In this work, Euler again used differentials and trigonometry, this time to calculate trajectories and transit times for a boat to cross a river in a variety of different scenarios.

The first contribution in the [Articles & Notes](#) section is a continuation from our last issue of an article about TRansforming Instruction in Undergraduate Mathematics via Primary Historical Sources (TRIUMPHS) and its math history classroom projects. In this submission, Janet Heine Barnett, Dominic Klyve,

and David Ruch detail five more projects suitable for undergraduates, in which students read and work their way through original writings of Euler.

Then, in her ongoing *Euler Archive Spotlight* series, Cynthia Huffman highlights Jordan Bell, a translator extraordinaire. Bell has graciously shared 43 English translations with the Euler Archive, which represents a sizeable contribution to the total. Let us know if you would like us to feature other “super translators,” and if so, whom.

The remaining three articles feature some “classics” from Euler’s oeuvre. In the first of these, Uwe Hassler and Mehdi Hosseinkouchack delve into proofs of the famous Basel Problem (i.e., showing that $1 + \frac{1}{4} + \frac{1}{9} + \frac{1}{16} + \dots = \frac{\pi^2}{6}$) and then show how to generate additional proofs using Karhunen-Loève expansions of stochastic processes. In the next article, Alexander Aycok explores Euler’s treatment of his gamma function (E661) in more detail in order to address a question asked in the *Opera Omnia*. Then, in the final article, Sylvio Bistafa describes the contributions of Euler and Lagrange to what is now called the Euler-Lagrange equation in variational calculus, and demonstrates its application to the brachistochrone and to finding the quickest path between given points on opposite sides of a river.

We hope that these first two volumes have demonstrated the utility of Euler scholarship to a variety of mathematical fields and endeavors, and we plan to continue when Volume 3 launches in Winter 2023! If you have ideas or articles to submit for subsequent issues, please let us know; we are always [accepting submissions](#).