Perhaps no other single architect has had an impact on the face of Western architecture as has Andrea Palladio (1508-1580). The characteristic forms used in his villas, basilicas and palazzos were adopted and adapted for widespread use first in England and then in the United States and are now as representative of those lands as they are of the Veneto which saw their birth. But perhaps an even greater legacy of Palladio is his *Four Books of Architecture*, one of the first treatises on architecture that was richly illustrated and intended for a readership of architects and builders rather than intellectuals. Thanks to the clarity and scope of the *Four Books*, they can still be studied with profit today. What makes the *Four Books* of enduring interest is that Palladio set forth his canons of architecture, that is, the rules he used to create his architectural forms, from the details and proportions of the orders to the layout of floor plans for various building types. These rules, rather than remaining specific to a single building type at a unique moment in time, have been studied and abstracted and reapplied to find new, fresh applications. This is the aspect we most wish to honor with this special issue of the *Nexus Network Journal*, entitled “Canons of Form-Making,” dedicated to the quincentenary of Palladio’s birth.

The issue opens with Stephen R. Wassell’s “Andrea Palladio (1508-1580)”. This brief biography was originally written for “The Year of Palladio” website of the Institute for Classical Architecture and Classical America (http://www.classicist.org/resources/year-of-palladio/). The editors therefore wish to thank the ICA&CA for permitting us to publish the biography in this special issue of the *NNJ*. For inclusion in this issue, the endnotes and bibliography have been expanded from the original version to highlight numerous publications concerning relationships between architecture and mathematics in Palladio’s oeuvre. Of course, we can now add to this bibliography the following three articles devoted to Palladio:

Lionel March’s “Palladio, Pythagoreanism and Renaissance Mathematics” is an analysis of the very first building presented in the crucial second book of Palladio’s treatise, the Palazzo Antonini. In this article March applies his expert knowledge of the types of mathematics (including what we would now call numerology) that were important to Renaissance scholars and practitioners, in order to gain a better understanding of Palladio’s design methodologies and canons.

Coincidentally, Buthayna Eilouti’s “A Formal Language for Palladian Palazzo Façades Represented by a String Recognition Device” also analyzes Palazzo Antonini, as well as the rest of the nine designs Palladio includes in book II, chapter 3. But while March focuses on mathematics known to Palladio, Eilouti analyzes the nine façades using modern mathematics related to computer science, namely regular languages and finite state automata.

In “A Perspective Analysis of the Proportions of Palladio’s Villa Rotonda: Making the Invisible Visible”, Tomás Salgado-Garcia examines the very familiar Villa Rotonda from the viewpoint of perspective to show that Palladio’s proportions are not buried as abstract concepts visible only on the drawing board but reveal themselves visually in the building.

Canons of architecture existed of course in antiquity, long before Palladio set his own down in writing, but in the face of the lack of written documentation, they are tantalizingly hidden. New mathematical tools can help researchers uncover those canons. In “The Doric Order as Fractal”, Carl Bovill uses the technique of iterated function system (IFS) to analyze the Doric temple, and shows that the characteristics of self-similarity and self-
affinity that result from it indicate that the Greeks based their canons of architecture on what they observed in nature.

Michael Duddy also examines the Doric order in “Roaming Point Perspective: A Dynamic Interpretation of the Visual Refinements of the Greek Doric Temple”. He examines the very subtle canons for making corrections to structures or elements so that they look like they should ideally, and presents a new theory that holds that these corrections were efficacious as the observer changed position, not just from a static, “ideal” viewing point.

Roberto Castiglia and Marco Giorgio Bevilacqua take us to Albania to discover canons of Islamic architecture. In “The Turkish Baths at Elbasan: Architecture, Geometry and Well-Being”, Castiglia and Bevilacqua report on the results of a survey campaign coordinated by the University of Pisa, which has provided precise information of the geometric rules that underlie the complex plans and the domes and vaults of the hamman.

All of these studies show that mathematics is a powerful tool for the architect, both during the original design process and in the after-the-fact study of existing monuments. Anat David-Artman believes that mathematics is not just powerful but vital. In “Mathematics as a Vital Force in Architecture”, the work of biologist Hans Dreisch is used to forge an analogy between the principle of individuation and equipotential in life forms and in architecture.

Regarding didactics, in “The Use of Linear Fractional Transformations to Produce Building Plans” Christopher Stone gives a step-by-step explanation of how mappings on a complex plane can be used to generate floor plans.

In this issue’s Geometer’s Angle column, geometer Rachel Fletcher turns her attention once more to Palladio, as she has done twice before for Nexus readers and conference participants. In part three of her examination of Dynamic Root Rectangles, she explains the properties of root-three rectangles and applies them to the plans of Palazzo della Torre in Verona and Villa Mocenigo, Marocco in Treviso.

This issue concludes with two book reviews. Kim Williams reviews Andrea Palladio: The Villa Cornaro in Piombino Dese edited by Branko Mitrović and Stephen R. Wassell. Sylvie Duvernoy reviews Architettura e Musica nella Venezia del Rinascimento edited by Deborah Howard and Laura Moretti.

This is not only an anniversary year for Palladio, but one for the Nexus community as well. This is the tenth year of publication of the Nexus Network Journal, and it was ten years ago that the post-Nexus 1998 conference workshop was a tour of Palladio’s villas. We co-editors, who led the 1998 workshop, learned much on that tour and as you can see, are still exploring the depths of Palladio’s oeuvre ten years on!

Happy birthday, Andrea Palladio!