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GUEST EDITORIAL

Happy 20th birthday, *AI EDAM*

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In 1997, in a farewell message in Volume 11, Issue 1, of *AI EDAM* I recounted how the journal came to be established in 1987 and how I became the Founding Editor. At that point I was handing over the reigns to a new Editor, Bill Birmingham. Five years later, Bill turned the enterprise over to our current Editor, Dave Brown. Now, a total of 20 years has passed. Twenty years, a goodly length of time in our current world. How have we done?

To plagiarize from that 1997 farewell message, recall that we intended that *AI EDAM* be "an *archival research journal* that is intended to reach two audiences: *engineers and designers* who see AI technologies as powerful means for solving difficult engineering problems; and *researchers in AI and computer science* who are interested in applications of AI and in the theoretical issues that arise from such applications." Twenty years out, just as after 10 years, we have achieved this goal—and if not optimally, certainly we have "satisficed."

We also wanted to publish articles about the use of AI in a wide variety of engineering tasks, as indicated in part by our very title. The contents for our first decade bears witness to our success here, with applications in construction and product planning, ship design, structural engineering, manufacturing processes, finite element modeling, and many more. In the early days, papers focused more on describing knowledge-based (expert) systems that *performed* such tasks. Now there are more papers that address the issues of *representing* tasks, artifacts, and design processes, including the use of fuzzy logic, neural networks, design rationale, ontologies, functional representation, natural languages, computer-aided design-based representations, machine-based learning, and concurrent engineering.

Over both of its first two decades, *AI EDAM* has also had a strong and consistent thread of papers about design, the task that Herb Simon characterized as the distinguishing activity of engineering. There seems little doubt that the design thread will remain taut and strong, and I would like to recognize and support the strong effort that Dave Brown makes in this arena. For example, he typically attends ASME's annual International Design and Engineering Technical Conferences and its meetings of the Design Theory and Methodology (DTM) Committee, and he is not shy about reminding DTM members of *AI EDAM* as a potential forum for their work.

Some would argue that the field is still working more with "toy" systems and explorations, rather than with large-scale applications of significant import, and there may be some truth to the accusation. However, it is also worth noting that, as with AI in general, the field of engineering applications of AI has not produced the major paradigm shifts in engineering that some of us thought would happen, back in the heady 1980s. Indeed, I remember giving talks proclaiming that we had developed new ideas for representing and solving engineering tasks in ways that the standard analytical and numerical approaches could not. These new ideas would change the way engineering was viewed, performed, and (eventually) taught. That turned out to be an illusion. The engineering community in general remains largely and exclusively enamored of the engineering science model of engineering as a domain, and they are resistant to recognizing formulations such as languages of design or languages of engineering. Mathematics and numbers are the paradigm, period.

In this context I would note that I have long thought that great strides forward could be made by thinking about integrating different representations within a common framework and by better characterizing and integrating engineering and design knowledge. Perhaps if I had published some of my own forays in this area (Dym et al., 1988; Dym & Levitt, 1991) in *AI EDAM* I might have sparked some other complementary work, but for reasons that escape me now I felt strangely reluctant as Editor to publish in the very journal that I started!

On a more practical front, *AI EDAM* has become still more geographically dispersed or *globalized*. Now, thanks

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again to Editor-in-Chief Brown, we have two editors charged with linking *AI EDAM* directly to different parts of the world: Mary Lou Maher (Australia and Asia) and Ian Smith (Europe). *AI EDAM* now regularly gets submissions from China, Australia, India, Thailand, Malaysia, and Korea, as well as from Europe and America.

Having reached and maintained a respectable level of maturity, credibility, and visibility for two decades, *AI EDAM* will no doubt find more milestones and achievements to note in its future. In the meantime, I would like to acknowledge some of those who helped make it what it is today. In my 1997 farewell I described Conrad Guettler's role in initiating *AI EDAM*. Conrad is now semiretired from Cambridge University Press, but he still watches over the journal and still deserves credit for beginning the dialogues that led us to today. Bill Birmingham deserves credit for serving as Editor during 1997–2001, and of course, Dave Brown, who has been Editor beginning with Volume 16. Our regional editors, Mary Lou Maher and Ian Smith, also deserve our recognition and thanks for helping create a more diverse approach to our audience. Finally, I would like to recognize those members of the Editorial Board who were "present at the creation" and have served since *AI EDAM*'s very first issue: Steve Fenves, John Gero, John Kunz, Jean-Claude Latombe, Panos Papalambros, Van Dyke Parunak, and Warren Seering.

So, Happy Birthday, *AI EDAM*, and many happy returns of this day.

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