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## Editorial

### Cybernetic Ground: Information, Imagination, Impact

The capacity for digital technologies to iterate, automate, and facilitate the decision making that ultimately shapes the built environment is profound. “Cybernetic Ground”, the theme of the International Digital Landscape Architecture (DLA) conference at Harvard University Graduate School of Design, invited practitioners and academics to speculate first on the information, imagination, and impact of cybernetics and second on broader themes of digital technologies in landscape architecture. The world responded. One hundred and twenty abstracts from five continents, sixty-five academic institutions, and four professional offices weighed in on the medium and its application. Geodesign, visualization, and algorithmic design dominated the submissions immediately followed by discussions of Landscape Information Models and augmented and virtual reality (AR/VR). Context, scale, and uncertainty differentiate landscape architecture from allied fields, yet the design disciplines share common data structures. It is the measures and methods, the language, and the complexity of representation models that distinguishes our scholarly and professional contributions. JoDLA implicitly highlights disciplinary imperatives, including climate change, cross-disciplinary decision making, and transformative professional practices while explicitly discussing digital landscape technology.

Stephen Ervin, the on-site host for the 2020 International Digital Landscape Architecture Conference at Harvard Design School, has been a pioneer within a regenerating cohort of academics and practitioners defining future imperatives in landscape architecture. Stephen occupies a privileged position as instigator, provocateur, participant, and observer whose intellect, artistry, and generosity of spirit continue to nurture generations of digital landscape architects.

Our initial collaboration, “30CGLA”, documented the formative years of computer graphics in landscape architecture for Landscape Architecture Magazine (LAM 2000). Y2K was an appropriate time to reflect. Landscape Architecture at Harvard University celebrated its first centennial that year, followed soon after by the ASLA's centennial celebration and annual conference. Our intent was to document computing's impact on landscape architecture in North America during the final two-thirds of the 20th century. The timeline began with Sketchpad, Ivan Sutherland's 1962 room sized computer-aided drafting system. We defined eight significant periods in landscape architecture computing. Research and academic driven projects introduced the first-generation Geographic Information System (GIS) between 1964-1966. Early monochrome three-dimensional oblique views of raster surfaces were soon followed by perspectival projections of raster data and remotely sensed satellite imagery of large-scale landscapes. The early eighties saw advancements in vector-based graphics and wireframe perspectives. Rapid developments in computer graphics, including material and light rendering, continued for the next half-decade. We observed that landscape architecture professionals did not fully embrace CAD until it was clear that the medium could conceptually advance both discipline and practice. The eventual embrace of CAD occurred during the latter half of the eighties. The World Wide Web changed GIS, professional practice, and our culture forever during the nineties. Increasingly powerful hardware and software facilitated the modelling of natural phenomena, including plant growth and atmospheric effects.

Buoyed by order of magnitude increases in processing power, the millennium ended with a widespread ability to model dynamics, simulate landscape change, and support long-distance collaborations. We chose to end our report on the first thirty years of computer graphics in landscape architecture with immersive technologies, including projection technologies, and virtual reality modelling with haptic feedback, prompting the reader's imagination to define what was next. Twenty years later, we can see that we failed to fully anticipate the extent to which the "Internet of Things" (IoT) and sensor-driven technologies would affect "smart landscapes" and their representation, as seen in this year's contributions.

JoDLA is both witness and arbiter of significant contributions in digital landscape architecture, and much has transpired since Y2K. The gap between the conceptual framework for landscape architecture and the software and data structure that used to represent it has narrowed considerably. Attenuated to such an extent by procedural algorithms that the form, shape, assembly, and manufacture of the landscape architectural project reflects the medium. Conversations surrounding geodesign focus on methods and outcomes over possibilities. The discipline has at its disposal technologies to document, represent, and analyse the physical, biological, and to an increasing extent, real-time socio-cultural systems of our environment. Cybernetic ground suggests that the gap has closed. The material landscape is the medium and the interface. New possibilities whose responsiveness changes the conversation regarding the health, safety, welfare and stewardship of our shared increasingly networked, cybernetic environment.

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