Foreword

This year marks the 25th Digital Landscape Architecture conference. Happy silver anniversary DLA!

The theme of my first DLA conference was Virtuality in Landscape Architecture. It was 2001 and I was asked to give a keynote about how landscape architects were changing from analog to digital methods as the 20th century was coming to an end. Most of the presentations discussed visualization technology – many discussed 3D visualizations. PAAR introduced us to the idea of using a gaming engine for landscape visualization. There was interest in "immersive" environments using multiple synchronized projections. Several presentations were about new software. It was all very exciting! In 2002 the theme was expanded to include GIS applications to which presenters enthusiastically responded. Participation was added to the theme in 2003, though the contributions focused on the technology and less on the quality of the participation. I may have been asleep, but it seems to me that we have proceeded largely along these lines for 20 years with interesting new contributions, but no major innovations that would change the nature of landscape architecture as much as moving from analog to digital methods did.

The prediction of revolutionary change has been on the horizon for what seems decades – computers would be able to make meaningful design decisions and designers would interact constructively with the public in real-time fully immersive virtual landscapes. I am excited to find that there are 2024 DLA presentations that do just that and go beyond the concept to provide evaluations of artificial intelligence (AI) in design and using immersive technology in co-design projects.

The importance of artificial intelligence was recognized by several JoDLA 5-2020 papers, but as TEBYANIAN characterized it "while [machine learning] generated landscape design solutions are possible, they rarely have been studied and remain a future field of research." In JoDLA 7-2022, ZENG & PENG presented a bibliometric analysis of digital landscape publications identified through the Web of Science and the JoDLA between 2010 and 2021. They recognized AI as falling within digital technologies, but did not identify it as a researched area. Two articles employed AI technology, one concerned recording human behavior for post-occupancy evaluation, and the other explores prototypes of human-plant-digital interactions. JoDLA 8-2023 included four AI related papers. An autonomous robot that cares for an urban garden, for instance while you attend the DLA. A second compared visualization created using traditional Photoshop collaging with text-based and sketch-based AI image generation. Twelve landscape architects and urban designers evaluated the visualizations and answered questions about the potential and implications of AI for landscape architectural practice. The third paper compared the usefulness of three AI image generators for producing 2D assets for inclusion in design renderings. The final paper identifies micro-level landscape qualities associated with Starbucks coffee shops in Hong Kong by using machine learning to interpret customer comments and relate them to visual features extracted from street photographs.

This brings us to JoDLA 9-2024. I would note that AI was not identified as a sub-theme for the 2024 DLA conference, yet over a dozen papers across seven sub-themes focus on AI!

Perhaps that is how it should be – less focus on the technology and more focus on the problems it can usefully address.

The AI papers are moving beyond giving AI a tryout to systematically evaluating its capabilities. GEORGE et al. prepared 15 prompts for "various ecological, stylistic, functional and aesthetic themes" to identify 20 appropriate perennials. Three tester submitted each prompt ten times to two versions of ChatGPT and the resulting plant lists were evaluated for accuracy, variety and distribution. Among the interesting results was a bias toward certain plants, even across the diverse criteria. The authors consider how such bias might affect plant selection. SENEM et al. created a custom database of garden plans evaluated for a number of attributes by a large number of people to train a deep learning AI. The AI was used to generate 100 garden plans which were then evaluated for graphic language, plan readability, building mass, land-use patterns, circulation, softscape pattern, diversity, and readability. TAN et al. provide another example of how AI can become a "collaborative partner" in creating form, in this case by providing real-time feedback about wind-related conditions. The role of AI as instructor was also explored by a couple of papers. Finally, I would like to draw attention to FERNBERG & ZHANG's paper characterizing five ways landscape architects relate to AI – a sort of Myers-Briggs for AI personalities.

The second subtheme that drew may attention this year was Co-creation, or approaches to participation. The predictions that public engagement will move into the virtual landscape are decades old. I am very excited by the paper from DHAINI & DREKSLER that compared two workshops with participants representing diverse interested parties. Their purpose was to design a pond area in a Bioreserve using a physical model and immersive VR (i. e., participant wore Oculus Quest 2 VR headsets and worked using Gravity Sketch 3D design software). A systematic evaluate was conducted through a questionnaire documenting their experiences. We need many more such comparisons to better understand how to effectively employ VR as a co-creation tool. Digital approaches to more traditional public participation methods were also discussed. For instance, POLYZOU & SECHIDIS adapted an opensource children's art program to overcome inhibitions in graphic expression. In addition to basic drawing tools, the program included a library of design-appropriate landscape features. Creating this image library was part of the co-creation process. A couple of papers also considered AI as a co-creation partner, for instance the paper by TAN et al. discussed above. I am looking forward to further development of this subtheme next year when the overall conference theme will be Collaboration.

Overall, I declare this year's Journal of Digital Landscape Architecture a successful representation of the diversity of activity in the field. I look forward to the stimulating discussions we are sure to have at the conference.

Prof. Dr. James F. Palmer, DLA Editor
Burlington, Vermont

Introduction

We are pleased to present to you the ninth issue of the Journal of Digital Landscape Architecture JoDLA 9-2024 with a total of 98 contributions. Approximately 150 authors from thirty countries sent in extended abstracts by the deadline in November. Thanks to the JoDLA review committee with more than eighty colleagues from twenty countries, we could select the final papers after two blind-review phases. These papers cover many of the topics of current digital landscape architecture. The contributions came from all Landscape Architecture programs in German speaking countries, and from a great number of American as well as Asian and Australian programs. Research units, and vendors specializing in applications for landscape architecture and leading landscape architecture offices also contributed. We are very happy that "publishing in JoDLA is an unwritten expectation – practically a requirement – for recognition / success in some university departments " and we will do our best to keep and develop this standard.

After being listed in Scopus, the journal is now also listed in DOAJ (Directory of Open Access Journals). Wichmann publisher has been making the JoDLA, and its forerunner publication Digital Landscape Architecture, accessible as open access papers since 2013, and therefore provides ten years' documentation of research in the area of Digital Landscape Architecture.

The cover of this issue, provided by Vollmer, Matthias, ETH Zurich, shows a mixed presentation using three different capture methods: an airborne Laser scanning for the background, a mobile laser scan from a car for the street scape, and a mobile handheld laser scan by Leica for the underground channel. The image indicates the multiple disciplinary cooperation among GIS and imaging experts in capturing and processing geodata, and the interdisciplinary application of this data by civil engineers, city planners and landscape architects as well. Digital landscape driven by multiple disciplines is the basis for the complex environmental modelling we are in need of.

The DLA 2024 is being organized for the first time by the Vienna University of Technology. We thank Univ. Prof. Michael U. Hensel PhD, Univ. Prof. Dr. sc. Susann Ahn, Univ. Prof. Dr.-Ing. Thomas E. Hauck for taking on the Chairs for DLA 2024. Being invited to Vienna also gave us the chance to thank Prof. Dr. Andreas Muhar from BOKU University of Natural Resources and Life Sciences for his early publication on digital landscape architecture in 1992. We would also like to thank Prof. Dr. Richard Stiles, the former landscape architecture chair of the Vienna University of Technology, for establishing the European Network of Landscape Architecture Educators, LENOTRE, instrumental in building our European community.

The main theme of DLA 2024 at Vienna University of Technology is **New Trajectories in Computational Urban Landscapes and Ecology**.

In addition to the main theme, we provided a number of other possible areas for submitting papers on current research or outstanding practice in digital landscape architecture.

The ninth issue of the Journal of Digital Landscape Architecture 9-2024 covers 98 contributions on the following current areas of research and prototype applications in digital landscape architecture:

- Digital Approaches to Participation and Co-creation
- Digital Responses to Nature-based and Nature-integrated Solutions
- Data-driven Design for Integrating Ecology and Architecture
- Ecological Modeling and Simulation
- Energy Landscapes
- Decision Support for Social-Ecological Systems
- Sensorics and Responsive Landscapes
- Resilient Landscapes, Global Change and Hazard Response
- UAV Imagery and Remote Sensing
- Geodesign Approaches, Technologies, and Case Studies
- Algorithmic Design and Analysis of Landscapes
- Landscape and Building Information Modeling (LIM + BIM)
- Visualization, Animation and Mixed Reality (VR, AR)
- Teaching Digital Landscape Architecture

In the preface, James Palmer gives an editorial overview of these many contributions.

We hope you will appreciate the ninth edition. The printed copies will be sent out on request to all participants before the conference at the beginning of June 2024.

You will find all the contributions online as open access publications at the gis.Point and gis.Open platforms of Wichmann http://gispoint.de/jodla.html.

We would also like to invite you to the next DLA conference. The 26th international conference on information technology in landscape architecture, Digital Landscape Architecture DLA 2025 with the main theme “Collaboration”, will be held from June 4 to 6, 2025 at Anhalt University in Dessau, Germany. Furthermore, we can already announce that the DLA 2026 will be hosted by University College Dublin.

The Journal of Digital Landscape Architecture invites you to submit ideas for special issues and topics. Please follow our continuously updated announcements and call for papers and posters at www.dla-conference.com. Here you will also find the complete online documentation of the DLA beginning from the year 2013. For earlier contributions of DLA publications, you may ask our JoDLA office.

Erich Buhmann, Stephen Ervin, Pia Fricker, Sigrid Hehl-Lange, James Palmer, as well as Michael U. Hensel, Susann Ahn and Thomas E. Hauck