

25 years of the Electronic Journal of Linear Algebra



ELA
The Electronic Journal of
Linear Algebra

The [Electronic Journal of Linear Algebra](#) (ELA) is the research publication of the [International Linear Algebra Society](#) (ILAS). ELA is a refereed all-electronic journal that publishes mathematical articles in matrix analysis and the various aspects of linear algebra and its applications. ELA is completely free for authors and readers, and functions based on the contributions of its authors, referees and editors.

The year 2021 marks the quarter century anniversary of ELA. To create a record and to preserve individual and institutional memories, we have collected some historical and anecdotal facts, as well as personal recollections by some of the founding members and initial officers of ELA. These memories of the early history of ELA are expanded with information on its subsequent development and with some of the latest news about the journal. We hope that this article will strengthen the general feeling that ELA is an important part of our society-and that it exists as a collective effort of many members of ILAS, who have led ELA and ILAS to their current outstanding positions. We also hope that this article will provide perspective and bring ELA to the attention of the new generations of ILAS members, since they are the future of ILAS and, thus, of ELA. Founding and maintaining the growth of ELA have been possible thanks to the efforts of many historical figures of ILAS. Sustaining these efforts in the future will rest upon the shoulders of the new generations of linear algebraists.

The beginning



We will see below that, according to Volker Mehrmann's and Daniel Szyld's recollections, Hans Schneider was the main ideological driving force behind the creation of ELA, strongly supported by considerable technical and logistical information collected by Daniel Szyld. Before diving in that part of the history, we start with the earliest documentary facts on the foundation of ELA. Included in the 1994 -1996 ILAS annual reports to its membership, there are three items that record the inception and inauguration of ELA. They are quoted below.

In the minutes of the meeting of the ILAS subcommittee on "Electronic Publishing" (prepared by Paul Van Dooren, and held in Rotterdam, Aug. 30, 1994) we read that Richard Brualdi, Daniel Hershkowitz, Hans Schneider, Daniel Szyld and Paul Van Dooren were present, and that Graciano de Oliveira, Harm Bart and Michael Lundquist also attended. We also read that "The usefulness of the electronic service of ILAS-net was acknowledged but the discussions centered rather quickly around the possible need of a new electronic journal on Linear Algebra and Applications. After further discussions within the Board of Directors, it was decided to go ahead with this ILAS initiative. The journal would be called "ELA or Electronic Journal on Linear Algebra, an ILAS publication." A tentative editorial board (during a trial phase) would consist of 6 people: Richard Brualdi, Daniel Hershkowitz, Roger Horn, Volker Mehrmann, Hans Schneider and Paul Van Dooren."

"A committee consisting of Richard A. Brualdi, Daniel Hershkowitz, Roger A. Horn, Steven J. Leon, Hans Schneider and James R. Weaver (chair) has been appointed by the President to propose changes in the ILAS bylaws in order to establish the publication of journals by ILAS. The proposed changes are to be discussed in the next meeting of the board of directors and the next ILAS business meeting, to be held in Atlanta August 16-19, 1995." [IMAGE: No. 15, p.2 ILAS President/Vice-President Annual Report: June 1995]

"ILAS has launched ELA-The Electronic Journal of Linear Algebra. The structure of the editorial board of ELA is: Editors-in-Chief: Daniel Hershkowitz (also serves as Managing Editor) and Volker Mehrmann. Advisory Editors: Chandler Davis, Israel Gohberg, Tom Laffey and Richard Varga. Associate Editor: Daniel B. Szyld (also serves as Associate Managing Editor). As of June 17, 1996, ELA has published 2 papers. ELA's primary site is at the Technion. Minor sites are located in Temple University, in the University of Chemnitz and in the University of Lisbon". [IMAGE: No. 17, p.3 ILAS President/Vice-President Annual Report: June 1996]

It is worth emphasizing the hard work done by Daniel Hershkowitz, Volker Mehrmann and Daniel Szyld for setting up ELA's sites at the Technion, TU Chemnitz and Temple University, respectively.

The original editorial board of ELA seems to have remained unchanged during the first three years, since the first notice that we have found after 1996 is in [IMAGE: No. 22, p.6 ILAS President/Vice-President Annual Report April 1999], where we read "We are happy to announce the appointment of five new advisory editors and three new associate editors. The new advisory editors are: Richard A. Brualdi, Ludwig Elsner, Miroslav Fiedler, Shmuel Friedland, and Hans Schneider. The new associate editors are: Ravindra B. Bapat, Stephen J. Kirkland, and Bryan L. Shader."

Volker Mehrmann's recollections

Volker Mehrmann served as co-Editor-In-Chief of ELA, along with Daniel Hershkowitz, for less than 3 years. He left the position when he became co-Editor-In-Chief of *Linear Algebra and its Applications* (LAA) in 1999.

In an interview about ELA's history, Volker confirms that Hans Schneider (president of ILAS at the time) was the main advocate for a new journal, with strong support and encouragement from Daniel Szyld. Hans was motivated by the recent and successful founding of the *Electronic Journal of Combinatorics* (EJC), while Daniel Szyld had played a prominent role in the founding of the *Electronic Transactions of Numerical Analysis* (ETNA). According to Volker, there were three main motivating factors for establishing ELA, which complemented each other:

- i) ILAS wanted to have a research journal, like other professional societies. SIAM was a primary example at that time. In particular, the SIAM Activity Group in Linear Algebra and the *SIAM Journal on Matrix Analysis and Applications* (SIMAX) were becoming increasingly focused on computational linear algebra at that time. As a consequence, some core ILAS members felt the need for an additional journal that would be more conducive to theoretical linear algebra.
- ii) The decade of the 90's saw the first big surge of electronic, completely free to access journals. Hans Schneider was interested in exploring electronic journals and the impact of the internet in scientific publication. As said earlier, ETNA (founded in 1993) and EJC (founded in 1994) were successful examples at that time that inspired the creation of ELA.
- iii) Around the time ELA was established, the number of submissions to LAA had grown significantly, forcing changes in their editorial policies and delays in the publication process (18-24 months, recall that LAA was then a mostly print publication). Similar delays were being experienced with the publication of papers in *Linear and Multilinear Algebra* (LAMA) and SIMAX. This led Hans Schneider and Richard Brualdi, who were the Editors-in-Chief of LAA at the time, to consider creating a new journal with high scientific standards and a more timely publication process. The goal of an electronic publication would be to publish a paper within 3-4 months from submission to posting (a goal that ETNA had already achieved).

Volker expands on the initial vision for ELA as follows.

One of the original goals of LAA was to assist authors in writing and publishing good papers by providing scientific and editorial advice in the form of judicious referee reports and professional copy-editing. In the words of Volker, some initially poorly prepared papers could be accepted at those times in LAA, as long as the results were substantial and the editorial process could be used to improve the exposition. With the boom of the number of submissions, however, this was no longer viable. The hope for ELA was that, as a journal of modest size, it could partially fulfill such a role.

The first two Editors-in-Chief of ELA (Volker Mehrmann and Daniel Hershkowitz) had no specific types of papers in mind. It was hoped that authors who wanted to publish a paper in a short period of time would be attracted to ELA. Volker also recalls that there was considerable uncertainty on the success of ELA because at that time "electronic-only-journals" were viewed as second-rate and suspected to be of lower standards. This is still the case to some extent, according to Volker.

According to Volker's recollections, the original advisory editors of ELA (Chandler Davis, Israel Gohberg, Tom Laffey and Richard Varga) were essentially chosen to provide prestige, status and trust to the new journal. All the editorial work initially was exclusively performed by Daniel Hershkowitz, Volker Mehrmann and Daniel Szyld.

Daniel Szyld's recollections

In 1993 Hans Schneider as president of ILAS asked Daniel Szyld to write a report to the ILAS Board of Directors on "the future of the internet." The report was submitted in 1994 and circulated among the ILAS membership.

As we have seen above, around the same time, the idea of electronic journals was being discussed not only in ILAS but at much wider circles. In particular, a workshop on electronic journals was held in 1994 at the Mathematical Sciences Research Institute (MSRI) in Berkeley. Hans asked Daniel to attend in representation of ILAS. After the meeting, Daniel wrote a very detailed "how-to" guide for creating electronic journals, presented in December 1994 to the "Electronic Subcommittee" of ILAS and used as a blueprint for ELA.

That guide was entitled “Primer for the establishment of ELA, the Electronic Journal on Linear Algebra, an ILAS publication” and contains an amazing amount of technical and logistical information. Here, we only quote the first point: “1. Establish an Editorial Board. At the MSRI meeting, this point was emphasized as very important, fundamental, etc, to give credibility to the journal. This is not so much our problem, since: a. ILAS backing gives it plenty of credibility and prestige, and b. a tentative board has been already nominated.” We mention this opening point because it is fully in agreement with Volker’s comments about electronic-only-journals being perceived as lower-standard publications in the 1990s.

Daniel agreed to be Associate Editor and the first Associate Managing Editor of ELA, which meant he did the copy-editing of all the papers for eight years (from 1996 to 2003, included). Since then, Daniel has continued his editorial work for ELA, serving as Advisory Editor from 2001 until today. Interestingly, Daniel is the only member of the original editorial board of ELA who is still serving on the board.

Another initial service that Daniel provided for ELA was acquiring the ISSN and having the journal indexed in Mathematical Reviews. Later on he worked with the Institute for Scientific Information of Thomson Reuters (ISI) for ELA to be included in what was then called the Science Citation Index (SCI). Note that SCI has evolved into the current Journal Citation Reports (JCR) of the Web of Science (WoS), where ELA continues to be indexed.

Bryan Shader’s recollections

Bryan Shader assumed the duties of co-editor in chief, with Ludwig Elsner, on July 15, 2010. Ludwig retired from ELA service in 2011, after over a decade of service. In Fall 2010, in discussions with the ILAS Publications Committee, it was decided that a team led by Panos Psarrakos (along with Sarah Carnochan-Naqvi, Michael Cavers and In-Jae Kim) would take over the production of ELA papers. Prior to this, for many years, Michael Tsatsomeris (along with Panos Psarrakos since 2007) had shouldered this task after Daniel Szyld stopped being the Associate Managing Editor in 2003.

Under the leadership of Bryan two prominent initiatives were taken in order to modernize ELA and make it more amenable to new internet tools and browsers that have been developed. First, an update to the ELA website was performed in 2012, and at that time the website and server for ELA were moved to the University of Wyoming. This gave ELA a more modern look, and allowed for ELA-specific Google searches.

Second, in September 2014, ELA moved to a new platform, part of Digital Commons (run by BePress) and supported by the University of Wyoming Library system. This move allowed online submission and tracking of papers, enhanced discoverability of papers via inclusion in more digital repositories (such as EBSCO), the ability to be notified of ELA papers when they are posted, better digital curation through assignment of a digital object identifier (DOI) to each published paper, and allowed MathSciNet and Web of Science to post an entry for an ELA paper immediately upon publication. All these features contributed significantly to a wider dissemination of ELA and to make ELA competitive with the rest of journals, all of which (including originally print-only journals) were providing electronic publication.

Due to his wife’s illness, Bryan Shader resigned as ELA Editor-in-Chief in 2019, but he continues working hard for ELA as Advisory Editor, Managing Editor, and as an intermediary between the current Editors-in-Chief and the staff of the University of Wyoming Library. In recognition of his many services to ELA and his scientific achievements, Bryan was invited to deliver the “25 years of ELA Plenary Lecture” at the SIAM Conference on Applied Linear Algebra 2021-23rd ILAS Conference held virtually in May 17-21, 2021. The title of Bryan’s lecture was “Recent Progress on the Inverse-Eigenvalue Problem for Graphs: Matrices, Manifolds and Graphs”.

In Fall 2019, when BePress chose to become a public company, the University of Wyoming chose to move to a different platform for its electronic journals. They selected to use the Open Journal System (OJS) platform. ELA officially moved to OJS in January 2020. Since 2012 the University of Wyoming has contributed to ELA by providing the server, membership fees, and support for the ELA platform. This support is highly appreciated by ELA and, more generally, by ILAS.

Some anecdotal information

ELA naming: During a visit to the University of Regina in the early 90’s, Hans Schneider canvassed the local linear algebra group as to their preferred abbreviation for the new electronic journal, one of the suggestions being ‘ELA’. Michael Tsatsomeris recalls supporting ELA, as in the Greek word $\epsilon\lambda\alpha$, which is an invitation to approach or to receive something. This positive connotation seemed appropriate for a new journal, according to Hans.

ELA cd/printed volumes: It is interesting to look back at the apprehension and eagerness to promote an electronic/online journal in those early days. For that purpose, ILAS decided to pursue additional, mainstream approaches to the dissemination of ELA. As a consequence, a printed collection of the first few volumes and a cd collection of ELA’s content were produced (see picture below). Jim Weaver was in charge of the print version. Michael Tsatsomeris pursued the cd version for which every paper up to that point had to be recompiled. A company in Vancouver, Canada, provided the cd duplication. These two versions of early ELA volumes were made available for free to the attendees of ILAS conferences. (Michael still has a few cd’s left in his office.)

ELA’s first paper: The first ELA paper was published in June 1996, is 17 pages long, dedicated to Chandler Davis and is titled “Numerical ranges of an operator on an indefinite inner product space” by Chi-Kwong Li, Nam-Kiu Tsing and Frank Uhlig.

The 1000th ELA paper was published on October 11th, 2019, it was posted by Michael Tsatsomeros and was prepared and copy-edited by Panos Psarrakos (it was the 515th paper prepared by Panos and his team). The paper is titled "Inequalities for sector matrices and positive linear maps" by Fuping Tan and Huimin Che.

Editors-in-Chief

Daniel Hershkowitz, Bar-Ilan University (1996-2010)
Volker Mehrmann, Technische Universität-Berlin (1996-1999)
Bryan Shader, University of Wyoming (2010-2019)
Ludwig Elsner, Bielefeld University (2010-2011)
Michael Tsatsomeros, Washington State University (2016-)
Froilán M. Dopico, Universidad Carlos III de Madrid (2019-)

Present and future of ELA

Times have changed a lot since ELA was founded and some of the initial motivations for establishing ELA are clearly outdated. Nowadays, all journals are published electronically (even the ones with print versions), the time-lapse for publication of papers has been dramatically shortened since the 1990s, and the huge impact of the internet in scientific research and publication is well-understood. Perhaps, the only one among the original motivations that led to launch ELA that is still valid is that the strength and reputation of professional societies are often supported and demonstrated by the publication of strong and reputed research journals. In these 25 years, the strength and reputation of ILAS have reached very high levels through its ILAS conferences, prizes at different levels, programs of distinguished talks, mutual agreements with other societies, endorsements of other meetings, etc. In this scenario, we expect that the role of ELA within ILAS will become increasingly important and that this, in turn, will help maintain and improve ELA's good standing for many years to come.

ELA is currently in its 37th volume and has published over one thousand papers. ELA remains committed to serving the linear algebra community by publishing high quality research articles that contribute new information and insights to the various aspects of linear algebra and its applications. ELA relies on the voluntary efforts of its editors (and the support of their institutions) to remain freely available to authors and readers. ELA has recently switched to professional copyediting funded by ILAS membership fees, corporate contributions and donations. Moreover, a number of recent changes to the ILAS bylaws have been approved by the ILAS Board of Directors and some of them regard ELA directly. These include limitations to the terms that editors can serve on the board of ELA and a more active involvement of the ILAS Journals Committee in ELA's activities. We hope all these changes will help make the next 25 years of ELA very successful.

All contributors contacted for this article are acknowledged with thanks: Richard Brualdi, Danny Hershkowitz, Volker Mehrmann, Panos Psarrakos, Bryan Shader, Daniel Szyld, and Jim Weaver. Also all editors, managing editors, referees, authors and ILAS officers who have contributed to ELA during these first 25 years are sincerely acknowledged and thanked.

Froilán Dopico and Michael Tsatsomeros

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