The Birth of IJAIED

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Abstract This document tries to describe the events of the early days of AIED research that led to the AIED Conferences and Society and, in particular, the International Journal of Artificial Intelligence in Education.

Keywords AIED · IJAIED · History

Judy Kay, co-editor of this esteemed journal, has rashly asked me to write some words about its early days, to help mark its 25th anniversary. I suspect that she anticipated a story of the selfless commitment of a band of pioneers to the establishment of a prestigious publication to report the worthy activities of a growing AIED research community. In fact, it is more a story of opportunism, betrayal and revolution.

Once upon a time ... No, first I must make some excuses. Since I deserted the AIED field a dozen years ago I have read nothing about AIED (sorry). So I cannot relate the academic concerns of 25 years ago with those you have today, which a good review of the birth of a journal would seek to do. Also, I don't think about the past much. My memories of 25 years ago are a bit hazy, maybe distorted, and possibly wrong. And I haven't written an academic paper for some time. This isn't one either. Nowadays I write only for amusement, my own and any readers. So, in that spirit ...

Here's a chicken-and-egg question: which do you think came first, second and third - the International Conference on AIED, the International Journal on AIED, or the International AIED Society?

1970s ...

In the beginning, that is, in the 1970s, research that we'd now consider AIED was usually carried out within AI groups in Computer Science departments. The work was

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presented - if we were lucky - as ‘fringe activities’ within the large AI conferences and journals, or as specialist papers within journals such as *The Journal of Man–Machine Studies* (a title that shows how long ago it was). This early work was reported in an influential book edited by Derek Sleeman and John Seely Brown (published in 1982) and rather generously reviewed in a book by Etienne Wenger (published in 1987 but begun some years earlier). A book that I wrote with Tim O’Shea, published in 1983, had “Artificial Intelligence in Education” as its sub-title but I’m not sure that the phrase was in common currency, otherwise we might have been bold and used it as the main title.

1983 ...

As far as I recall, the first explicitly AIED event was a workshop/conference organised by Masoud Yazdani at Exeter, England in 1983 and sponsored by the British AI Society, AISB. Masoud was a somewhat entrepreneurial academic. He organised many similar events, set up a couple of journals, and was not, I think, primarily an AIED researcher. He later became chairman of the publishing company Intellect Ltd. At AIED 83 (as we may now call it), twenty papers were presented, including seven from outside the UK.

As I am unsure of the status of AI today, I should perhaps say that in the 1970s and 1980s AI was the most avant-garde of computing research areas. It was the most challenging, controversial and exciting research field, with many virgin sub-fields for a research student to get lost in. AIED was one of those but really just a paddock off to the side, with only a few of us browsing there. For a brief period in the 1980s (within which AIED 83, no doubt not coincidentally, fell), AI was at the peak of a ‘hype cycle’. It became a bandwagon, with generous research funding, that it was worth trying to hitch a ride on. That, of course, was not AIED’s motivation: we were enthused by what we considered the profound association between education and AI, with its concerns for knowledge representation, reasoning and learning.

A second Exeter conference, which I attended, followed in 1985. I have forgotten what happened in 1987 but something must have because ...

1989 ...

... by 1989 we were up to what was billed as the 4th AIED Conference. AIED 89 was held in Amsterdam, organised by Joost Breuker and colleagues, and was the first with the full panoply expected of international conferences - committees, proceedings, social events, and the like. It attracted about 300 delegates. The Intelligent Tutoring Systems Conferences began in 1988, organised by Claude Frasson and colleagues of Montreal, with similar numbers of attendees.

By this time, then, it was apparent that a significant number of people considered themselves members of an AIED/ITS community, sufficiently so at least that they were willing to spend time and money (or their employer’s money) to hear what other members of the community were up to. Of course, the word ‘community’ raises many questions. It was hard to tell then - and even more so now - the extent to which the members had shared interests and goals. They certainly didn’t have a shared background. As with any new community, its members had drifted in from adjacent

communities, in our case, from computing, psychology, education, and so on. No doubt, that was part of the appeal. Inevitably, this new community began to develop its own techniques and terminology.

One attendee at AIED 89 was Gary Marks of the Association for the Advancement of Computing in Education (AACE), based in North Carolina. At that time, I had never heard of AACE. It published three or four journals on computers in education and, although it had no particular experience in AIED, it decided to begin a *Journal of Artificial Intelligence in Education* (JAIED), with Gary Marks as editor.

He co-opted a few of us to serve as an editorial board. We were only too pleased to see a journal specific to our field, and willingly contributed our time and expertise for the good of the AIED community. I expect it was for the good of AACE too. I was never sure whether AACE was a charity, working for the good of all, or a company, working for profit. Looking at its website now, I see that it describes itself as a ‘not-for-profit organization’. Anyway, we didn’t care. In 1989 it mattered only that JAIED existed.

1991 ...

Meanwhile, plans for the 5th AIED Conference, to be held at Evanston, Illinois in 1991, were well underway. This proved to be a catalytic, even cathartic, event. Delegates arrived to find that they were attending “The Fifth International Conference on the Learning Sciences (formerly the International Conference on Artificial Intelligence and Education)”. The event was hosted by the newly-established Institute for the Learning Sciences (ILS). The organising committee and the invited speakers were all members or friends of this new institute. The opening address by the director of the institute, Roger Schank, was entitled “Where is AI?”. The answer was “nowhere”. Instead, the conference focussed on multimedia systems and learning environments, which had become the fashion.

In short, AIED 91 had been turned into an advertisement for ILS, to the exclusion of the majority of the newly-developing international AIED community. This community now had to decide whether 1993 would have an ICLS 93 or an AIED 93 or both or neither.

At that time, JAIED was making steady progress. Its first papers were all quite short (maybe half-a-dozen pages or so) and non-technical and in some cases not really about AIED. I must have somehow indicated that I had more time to help Gary Marks than others on his editorial board because he asked me to co-edit and then to edit the journal, which I did from 1991. I strengthened the editorial board, enrolled many reviewers and set up a reviewing process to befit a serious journal. Implicit in such activities is, I suppose, an attempt to define the scope and standards of the journal and hence of the research field (AIED) that it publishes. This attempt was eventually made explicit during the 1990s in the Journal’s ‘scope and standards’ webpage, which seems to have survived unscathed to the present day, apart from some additions to the long list of sub-topics.

Gradually the papers became more substantial and influential. At first, of course, it took some gentle persuasion to get the best AIED researchers to submit good papers to the new JAIED but a network of AIED friends got the journal moving. I recall some

‘discussion papers’ by William Clancey, Stellan Ohlsson and Jacobijn Sandberg that provoked plenty of reaction. In those days, the journal was as much a forum for discussion and debate as it was for the presentation of research results. We also began to feature special issues, for example, on student modelling, language learning and evaluation. The last was particularly important in widening the field’s knowledge of a previously neglected area. In a multi-disciplinary field like AIED we all had gaps in our knowledge of some of our component disciplines. It was part of JAIED’s mission to help fill those gaps.

AACE considered a subscriber to one of its journals to be a member of a ‘division’ of AACE. So, JAIED subscribers formed the ‘AIED division of AACE’. The members of this division might be thought of as self-selected members of the AIED community - after all, they had paid to read what other AIED researchers were writing. In October 1991, in the wake of AIED/ICLS 91, Gary and I decided to write to all such members seeking views about how they wished to proceed in the light of that conference.

Thus was formed the ‘AIED Society’, primarily to protect and develop the AIED series of conferences. Basically, the AIED division of AACE was renamed as ‘The Artificial Intelligence in Education Society’. The Society already had its journal, JAIED. The AIED conferences would henceforth be held under the auspices of AACE. This vague phrase meant (I think) that AACE would publicise the conference and publish its proceedings, with the financial risk mainly being taken by the academic organisers (as usual).

This new Society meant business - committee, constitution, and all. I feel that I should list the members of that first committee: the bold ladies and gentlemen who took on the responsibility of caring for the society, journal and conference for ever more (or at least until they were replaced on the committee). Here they are (and I’m pleased to see that they have not all fallen by the wayside, like me): Joost Breuker, Peter Brusilovsky, Alex Bykat, William Clancey, Geoff Cumming, Christopher Dede, Pierre Dillenbourg, Peter Goodyear, Monique Grandbastien, Jim Greer, Lewis Johnson, Alan Lesgold, Zhongmin Li, Gordon McCalla, Susan Mengel, Vittorio Midoro, Riichiro Mizoguchi, Claus Moebus, Jean-Francois Nicaud, Rachel Or-Bach, Helen Pain, John Self, Julita Vassileva, Martial Vivet and Philip Winne.

There was nothing in the process of setting up this committee that dictated the nature of its membership. It was entirely volunteers! We originally said that the Society would elect 24 committee members but with 25 nominations we didn’t think it worth an election to eliminate a single enthusiastic volunteer. Subsequently, of course, elections were necessary. In the event, the first committee represented 13 different countries. It was always part of the Society’s remit to support AIED developments throughout the international community. It would never organise a so-called international conference that focussed on the educational problems of only one country, as ICLS 91 did.

A constitution soon followed. A slightly revised version of the original magnificent document can be read on the Society’s webpage. Like all good constitutions, it should never need to be read (except in times of dispute, which there shouldn’t be). This is just as well as I see that it refers to a Leeds address that sadly disappeared some time ago.

The committee then proceeded to set about its work: to organise successful conferences, the next two being considered the 6th and 7th of the series, AIED 93 in Edinburgh (chairs Paul Brna and Helen Pain) and AIED 95 in Washington (chair Jim Greer), and to help the journal continue to develop, to become, in my biased opinion, the top journal for AIED researchers.

1995 ...

It is difficult now, especially for me, to give a picture of the context in which AIED research was being carried out in the 1990s. AI itself was far from flavour of the decade. All the hype about expert systems, intelligent knowledge-based systems, fifth generation systems, and so on, had evaporated. AI researchers could not continue to promise imminent breakthroughs. Nobody, least of all those who funded research, would believe them. The action then was all with video and multimedia systems.

AIED researchers were to some extent immune from this, as they always knew that their research had a longer-term and more fundamental dimension. However, the disavowal of 'traditional AI' by previously stalwart AI researchers inevitably led to a broadening of AIED, with some fracturing of its boundaries, with new conferences on, for example, collaborative learning, as well as the learning sciences. Even so, people continued to turn up in their 300s or so to the AIED and ITS conferences. But many more people turned up at multimedia conferences.

AACE noticed this and tried to widen the scope of the AIED field and, in particular, of AIED 97, to be held in Kobe, Japan. Proposals to change the scope of a research field do not arise only from a detached analysis of that field. Earlier in 1996 AACE had suspended work on all its journals for two months. I assumed that this was because of some (temporary, I hoped) financial problem. I confess now that I didn't make this widely known at the time as I had no wish to complicate AACE's problems or to deter potential authors. So when AACE tried to expand AIED 97 I just assumed that they were really trying to attract more delegates, and hence more income. AACE professed to have doubts about the AIED 97 financial model, which seemed ironic because the Japanese hosts had been very successful in raising support from Japanese industry, in contrast to the AACE-organised AIED 95 that had raised not a dollar from United States industry.

Naturally, all this provoked some reflection on AACE's role in AIED activities. AACE had not, for example, provided a financial report on AIED 95, or any annual report, as the constitution required them to do. They had never provided any details of Society membership: we never knew how many members the Society had, let alone who they were. As far as JAIED goes, I was aware of various difficulties, not all of which remained private. For example once, after due reviewing and revising, AACE accidentally published the first version of a paper rather than the final version.

In short, it had become frustrating to feel kept at arm's length, not just from our members, but also from financial details and publishing procedures. We began to feel that we could do a better job ourselves, if only we were able to.

After AACE's intervention in June 1996 about AIED 97 a vigorous email debate followed concerning the AACE-AIED partnership. Towards the end of this debate (well, there was little to say afterwards) AACE said that "the AIED Society was formed by AACE and will remain a part of AACE until such time as the AACE Board decides otherwise" and that "AACE questions the need for an executive committee (of the AIED Society) to exist". That was not how the AIED Society committee saw things! AACE's comments show that they could see where this discussion was leading.

The situation also stimulated some debate on the nature of AIED itself, and in particular on the role of AI in AIED. This was not a new debate and, I'm sure, it's not a finished debate, because it is a complicated issue. It was never possible to insist that the

author of a JAIED paper point to a piece of ‘real AI’ within it. Indeed, if there was an element of AI it was rarely of a form that would be recognised as ‘real AI’ by mainstream AI researchers. This may be denied by some but the fact is that very few AIED researchers were able, or wished, to publish their work in the major AI journals and conferences. Not only did we not contribute much to AI, but we didn’t really borrow much from it either, in my opinion. If you looked at the AI conference proceedings of the time you’d find that almost all of it was apparently irrelevant to AIED.

And yet AIED undeniably had an AI flavour. It was hard to pin down: I did my best with the ‘scope and standards’ webpage. Whether those words of 1997 or so apply to today, I have no idea (but I doubt it). I tried later to describe what I considered to be the two distinctive characteristics of the AIED field. One was the striving towards some kind of precision, derived from AI or computation generally, in the description of otherwise vague terms (such as metacognition, collaboration, even learning itself) that were of importance to educationalists. This seems to me a worthy objective: to help bring precision to the social sciences. The other characteristic concerned the fact that AIED systems were, almost by definition, the only ones that carried out a significant, real-time analysis of the interaction with learners, in order to adapt that interaction. Other systems claimed to be adaptive but they were really only reacting in pre-specified ways to different inputs. AIED systems responded in ways that had not been pre-specified or even envisaged. And that, of course, is the essential difference between AI programs and general computer programs.

Anyway, in 1996 we could not all agree on what AIED was. We could, however, all agree that it was not AACE’s business to tell us what AIED was. Of course, we acknowledged that the borders of an academic community are not fixed forever. If they were then it would fossilise. Any community must always be open to new ideas and techniques from outside its current perceived field. However, the Society’s committee had been set up precisely to protect and develop the ‘AIED field’. It should have been up to the committee to decide upon changes to the scope of its research field, not AACE.

Up to this point, it had been assumed that AACE would provide benign administrative support to the Society and would not seek to influence its academic activities. While some committee members no doubt sympathised with the view that it was time that the AIED field evolved, the AIED Society committee felt that it could not accept, on principle, interference in academic matters (especially when that interference was driven, we strongly suspected, by non-academic issues). The committee duly voted to split from AACE and to set up a new Society, Journal and Conference - to be called the International AIED Society, the International JAIED and the International AIED Conference. They weren’t really ‘new’: the members of the old society committee and the old journal editorial board agreed to transfer themselves en bloc to the new society and journal. In effect, we renamed the society and journal to take them out of AACE’s hands.

So, the answer to my chicken-and-egg question is: all three came simultaneously into existence on one day in December 1996. Actually, that is not quite right, because the new Society considered that it took the conference with it, and that had been ‘International’ since 1989. If you ignore the ‘International’ then it was conference, then journal, then society, which is perhaps the opposite of a rational order.

1997 ...

The decision to leave AACE may seem inevitable and straightforward (in retrospect) but it raised many difficulties. For one thing, AACE were understandably unhappy. They had worked hard to help establish the journal and to support the society and its conferences. I had enjoyed working with Gary Marks, even if at a distance. Although I had perhaps done most to build the AACE-AIED partnership, I agreed that it was time for divorce. I was, however, relieved that it fell to the new Society president, Joost Breuker, to inform AACE that the committee had decided to declare independence. The committee now had to make the new scheme work.

Unfortunately, the 'new committee' had no way to communicate its decisions to the members of its society! Or rather, to be precise, to those who were members of the 'old society', because at the instant of divorce the 'new society' had no members. AACE held the contact details for the 'old society' members and they weren't going to give what they regarded as confidential commercial information to renegades like us.

A not irrelevant consideration was that AACE held not only our members but also our money - if indeed we had any, because, for all I know, AIED may have been a cost to AACE (although I doubt it as otherwise they would have been glad to see us go). We had to get the new arrangement up-and-running instantly without any money to do so.

We did our best to spread news of our independence but confusion lasted for some months or years. Most researchers aren't interested in behind-the-scenes shenanigans; they just want to get on with their research. AACE continued with its JAIED. The IAIED Society set up its own IJAIED, continuing its volume numbers from JAIED (the papers listed on the IJAIED website from 1989 to 1996 were actually JAIED papers). No doubt some authors submitted papers to the 'wrong' journal. No doubt some researchers continued to subscribe to AACE's JAIED when they meant to subscribe to IJAIED. Eventually, to our relief, AACE yielded and renamed their journal as the Journal for Interactive Learning Research. In any case, as all of its editorial board had vanished, AACE had to start afresh with their new, or at least newly-named, journal.

From December 1996 we worked hard to stabilise and build the International Society, Journal and Conference. We had to - we were on our own now. The Society continued its work under the leadership of Gordon McCalla and Lewis Johnson; we held conferences in Kobe, Japan (chair Riichiro Mizoguchi), Le Mans, France (chair Martial Vivet) and San Antonio, United States (chair Lewis Johnson); we published (that is, printed and distributed) the journal ourselves; we put the journal on-line, which was a somewhat pioneering activity at the time; we dealt with all the administrative and financial matters; we developed our own website; and so on. Incidentally, I find it a strange experience to browse the Society's website today, after many years away. I am transported back to the happy days of 1997, when we huddled around screens trying, in haste, to knock a design together. Today's webpages seem like old friends: has our design really lasted, more or less, for 18 years?!

Myself, I focussed more on IJAIED. Perhaps the split from AACE, stressful though it was, actually helped the journal. The 'marriage of convenience' between AACE and AIED, forced by AACE muscling into a perceived publication gap in 1989, could not last. We were incompatible. After the divorce, there were perhaps a hundred researchers (all those on the various committees) who had taken an active part in the decision to leave AACE. It may be fanciful to think so but perhaps the community became even

more bound together with a determination and commitment to make ‘their’ new Society-Journal-Conference arrangement work. Maybe some felt an obligation to help make IJAIED a success. On the other hand, maybe the divorce encouraged the community to close ranks, to focus on its core interests, and not countenance widening its scope.

At all events, from a standing start in December 1996 we soon had a good flow of papers, enabling us to develop the standards of the journal and the AIED field. In the years 1997–2001 we had a number of special issues on topics such as authoring systems, collaborative learning, modelling teaching, educational dialogues and web-based teaching, all of which I feel played a significant part in developing those sub-fields of AIED. We even had a special issue in 2000 on ‘AIED 2010’ to mark our 10th anniversary! Many of those special issues were derived from sessions or workshops at the AIED conferences, which helped to strengthen the sense of a coordinated, integrated research community.

After 1996 I did not worry much about the meaning of ‘Artificial Intelligence in Education’, as perhaps I should. There was just too much to do. I tended to think only of ‘AIED’ and, like all familiar acronyms, it took on a meaning of its own, which is a good and useful thing. You cannot decide if Ukraine should be a member of NATO by analysing what the N, A, T and O mean or meant. However, if the name itself somehow puts off potential new members from joining then perhaps something should be changed.

Finally, if I may, a word on the editing process. Academics like to assume that a journal editor is a neutral manager of this process: papers arrive; reviewers comment; decisions are made. But where’s the fun in that? The early years of IJAIED were different. Most papers did not turn up on my desk entirely unanticipated – they had been encouraged or solicited in some way. The special issues had to be planned, involving judgements about which topics were timely and of importance and interest to readers. Also, reviewers’ comments are not always decisive. There was often some leeway for helping, say, young researchers new to the AIED field or authors writing from some AIED ‘outpost’, where AIED research might be encouraged. A journal does not just reflect a field; it may also help to shape it.

Overall, I think we made it. I hope that it was all worthwhile. As far as I’m aware (but then I wouldn’t be), the Society hasn’t had too many serious problems in the last decade or so. I hope not anyway. And if it has, I hope it wasn’t partly my fault.

I regret that I have had to focus here on the organisational manoeuvres behind the birth of IJAIED rather than on the theoretical and practical issues that motivated AIED researchers at the time. I simply cannot remember the latter with any precision. Events seem easy to recall; complex conceptual issues much harder, especially for someone who hasn’t thought about them for some time. I am sure, though, that the academic questions mattered most to us all, with the manoeuvres being an unfortunately necessary background. I hope that these memories, such as they are, may be of interest as a record of that period but in themselves they are of no use, unless they help to influence the future.

I am very grateful to all my ex-colleagues who built the International AIED Society, Journal and Conference and to any of them who read this I pass on my very best wishes. I am grateful also to our successors - the many individuals who have helped to keep the society, journal and conference alive. It is some satisfaction that our efforts long ago have helped to provide a home for otherwise possibly destitute academics.

Postscript

I would like to thank the reviewers for their comments – and their reassurances that my memories were not too distorted. One even included some words that I had written in January 1997 and had completely forgotten, which enabled me to add some detail to the penultimate section. However, the reviewers pointed out two major omissions in my narrative: the 1987 Pittsburgh conference and the precise event that led to the AACE divorce. I cannot honestly adopt their memories as my own and I have therefore asked one of them if his words may be included here. He has agreed, and agreed that he may be named – Gordon McCalla. Here's what he wrote:

“First, I can fill in a gap about the 1987 AIED conference, dubbed “the third AIED conference” (following up on the first two hosted at Exeter). This was the first conference to be held in North America, in Pittsburgh. Only abstracts needed to be submitted, but these, at least, went through a review process. There was no formal proceedings but simply a brochure containing all of the abstracts. The conference itself was very well attended, even by many researchers who did not find out about it until it was too late to submit their own research. There were three conference tracks. It was an exciting three days, full of interesting stuff.

This “third” AIED conference was a real coming together of a community that up until then didn't really know it existed. For many North Americans, at least, this “third” conference marked the real beginning of AIED as a discipline. The Pittsburgh conference stimulated many who were attending to want to have another conference. Joost Breuker agreed to host the next AIED conference in Amsterdam in 1989. Further, Claude Frasson decided to initiate the ITS conference in 1988. Both these conferences had a goal of imposing more rigorous computer science standards, with a more serious attempt to widely publicize the conference, to require full papers with archival proceedings, and to institute a thorough peer review process under the auspices of an international program committee. So, in many ways the “third” AIED conference marked a turning point in the field. The subsequent factionalization and “betrayal” that John describes in the paper had not yet happened, and as we left Pittsburgh we were all united heading into a glorious future.

A second point that might be interesting to add to the paper relates to the break from AACE. The action that severed relations with AACE irreparably was Gary Mark's last minute insistence, after the Kobe earthquake in 1996 and the high costs of travel to and in Japan, that the 1997 AIED conference be moved from Japan. It wasn't going to make AACE enough money! Moving the conference was unacceptable to the AIED community, and left really no choice but to try to extricate ourselves from AACE and go it alone. There were many, many other reasons for the break, as John discusses, but this was the final straw.

It was very useful to have a representative formal society at this time to make these hard decisions on behalf of the community and to follow through with action. In the end maybe Roger Schank did us a favour with the attempted hijack of AIED in 1991, since this had led to the AIED society being formed, with a special goal to guard our conference. By the way, AIED may be the only conference to face the aftermath of TWO different major earthquakes - clearly an important field if it can stimulate such major tectonic activity!”