ASSOCIATION FOR AUTOMATED REASONING
NEWSLETTER

No. 29 May 1995

**From the AAR President, Larry Wos...**

In keeping with the role of AAR as the "parent" corporation for CADE, this issue includes several articles related to CADE. Of especial interest is the response of Alan Bundy, current CADE president, to proposed major changes to the CADE organization. Also included are a solicitation for sites for the next CADE conference and minutes of the July 1994 CADE meeting.

I call your attention to the forthcoming QED Workshop. When I attended the first workshop, held at Argonne, I found the QED concept exciting. I hope that this second workshop will lead to specific projects that will make QED a reality.

Finally, I welcome the approximately fifty new members who have joined AAR since January. I invite each of you—as well as our long-time members—to submit articles to the *AAR Newsletter*. Usually, we devote much of the newsletter to technical articles, including challenge problems, new theorem provers, and answers to previously open questions. Our intention is, of course, to stimulate discussion and to advance the field of automated reasoning.

## In Defense of the CADE Organization

*Alan Bundy*

In *AAR Newsletter* No. 28, David Plaisted called for democratic elections of the Trustees of CADE Inc. The Trustees have asked me, as President, to respond. I do not intend to take a position for or against David's proposal, but merely to sketch in some of the history of these matters and to discuss some of the details in David's proposal. I hope other people will argue the pros and cons of the proposal through the pages of this newsletter. We need an informed debate to arrive at a well-considered decision.

### 1 The History of the CADE Organization

Until CADE-12, CADE conferences were arranged in an informal manner. The Program Committee of CADE-$n$ would select the site and officers of CADE-$n+1$. The accumulated funds of previous CADEs would be passed from Program Chair $n$ to Program Chair $n+1$, who would personally open a bank account for it. These informal arrangements seemed unsatisfactory to many of us for two main reasons. First, the current CADE officers were at considerable financial risk. If a CADE were to realize a loss, they were personally liable. Second, the transfer of money

from CADE to CADE was wide open to abuse. No one would want to question the personal integrity of any of the officers of CADEs, but it was unfair both on them and on CADE members that large sums of money should change hands in this totally unregulated way.

The solution to these problems was for CADE to become incorporated. Incorporation gave limited liability to CADE officers and regulated the transfer of funds between CADEs. This move was decided by the CADE-11 Program Committee. A corporation, CADE Inc., was created with a president, vice president, treasurer, and secretary and a Board of Trustees. CADE Inc. holds the central account; it lends money to each CADE conference; and it receives any residual money, including profits, on the completion of each CADE. CADE activities are now governed by a set of bylaws.

Considerable discussion preceded the new arrangements. Most people were happy with the way previous CADEs had been organized and did not want to give up the collegiate spirit that underpinned it. In particular, some people argued strongly that they did not want CADE to become "political" or "bureaucratic." They especially did not want the negative campaigning or self-aggrandizement that might come with elections. These arguments strongly influenced the manner in which CADE was set up. In particular, the Program Chairs of previous CADEs were thought to represent an experience bank of both the administrative details and the collegiate spirit of CADE organization. So the Program Chairs of the past four CADEs formed the core of the Trustees.

## 2 Decision Making in CADE

The model for the CADE bylaws came from IJCAI. This was because many of us were familiar with the IJCAI organization, and it seemed to work well. Another organization might have done equally well as a model, but at that point nobody advanced one. The IJCAI bylaws were rather legalistic and unwieldy, so we tried to simplify them as much as we could.

Both CADE and IJCAI faced difficult problems in deciding who its members were. The attendees at any given conference are heavily biased by its location and are not really representative of its overall constituency. Moreover, it is administratively difficult to keep track of such a constantly changing membership. IJCAI solved this problem by creating an Executive Committee of the Great and the Good, consisting of presidents of national societies, editors of major journals, etc. This Executive Committee decides the location and officers of societies and elects Trustees to office. As far as the election of Trustees goes, the IJCAI election is something of a formality. The Executive Committee is told that it is the tradition to elect the outgoing Conference Chair and that not to do so would be interpreted as a vote of no confidence. The result of the election is then a foregone conclusion. This was one of the aspects of the IJCAI bylaws that we simplified, by giving all the powers of the Executive Committee to the Trustees and by making the outgoing Program Chair an ex officio Trustee. We felt that the Trustees were a more representative body to choose the location and officers of CADEs than the outgoing Program Committee, whose members are chosen by one individual. By making the Trustees consist of previous CADE Program Chairs, we ensured that the Board had an accumulated wisdom of CADE organization that

could be drawn on by the current CADE officers. As for membership of CADE, we had a simple solution available, namely, to use the membership of AAR. This ensured a constant and easily tracked membership, which was pretty representative of the regular CADE attendees. CADE Inc was thus incorporated as a subcorporation of AAR.

The bylaws of CADE can be changed by a vote of CADE members at a general meeting. A general meeting is called at each CADE. The quorum of this meeting is the members present, and the bylaws can be changed by a simple majority. Proxy votes are allowed. The intention to raise a motion changing the bylaws must be announced in advance of the meeting. So the next regular opportunity to change the bylaws, e.g., to introduce elections for Trustees, will be at the general meeting of CADE-13 in 1996. It is also possible to convene a special members meeting before that date, but then the quorum becomes 20% of the overall membership, which might be difficult to achieve except at CADE conferences. From these arrangements it can be seen that the ultimate power to determine CADE policy does already lie within the democratic control of the membership. It is not true, as David claims, that "there is no democratic element at all in the current system."

## 3 Detailed Comments on Plaisted's Proposal

David Plaisted raises a number of issues about the organization of CADE and the method of choosing Trustees. Below I discuss some of these issues.

**Election Mechanism:** David proposes an election by e-mail. This would certainly simplify the process, but it would disenfranchise some people. Most members of CADE have e-mail access, but not all do. If we are to have truly democratic elections, we will have to include postal votes too. This will complicate matters, but not impossibly. We do need to seriously consider the costs of an election. CADE Inc. has a pretty modest bank balance.

**Franchise:** David proposes an election by a combination of AAR members and recent CADE attendees. At the moment CADE membership is coincident with AAR membership. To allow non-AAR CADE attendees to vote would require first changing the bylaws defining membership then inviting attendees at selected previous CADEs to vote. In practice, two CADE general meetings would be required to realize this. There is also the problem of tracking past CADE attendees. We have not made a practice of maintaining records, so some research would be required to find out who these people were.

**Size and Number of Committees:** David proposes having both a Board of Trustees and an Executive Committee. He does not give a reason for this duplication, and it seems an unnecessary complication to me. He also proposes that the Trustees be a much larger committee than the current nine members. There is a balance to be struck between being large enough to be representative and small enough to be manageable. Nine members seems to me to be about the right size.

**Number of Elected Positions:** David proposes electing four Trustees every two years, with a term of four years. Thus a total of eight elected Trustees would be in office at any one time.

To this must be added any ex officio members, e.g., the secretary and treasurer, the current, and the future CADE officers. This might add another four to six members, thereby giving a committee size a little larger than I would be happy with, but not unreasonably large. However, a term length of four years is not long when one takes into account the need to maintain group memory and continuity. The current term is effectively ten years, but will automatically gradually drop to six years when we move to annual CADEs. (The past four Program Chairs are Trustees plus the forthcoming ones. CADE's officers are generally chosen two years in advance.) If we maintained current practice except for choosing Trustees by election, we would elect only one Trustee per conference.

**Power of the Trustees:** David paints a rather exaggerated picture of the power of the CADE Trustees. Once chosen, the Program Chair and Local Arrangements Chair are collectively responsible for the organization of each CADE. Even if "a subarea or subphilosophy of CADE from [became] disproportionately represented" among the Trustees, this would be unlikely to affect the distribution of papers, since accept/reject decisions are decided by the Program Committee and the referees. If the center of gravity of CADE was forced to move against the wishes of its members, the conference would surely die. The Trustees are unlikely to commit such collective suicide.

## 4 Conclusion

Democratic mechanisms are already in place for the members of CADE to change the method of choosing the CADE Inc. Trustees. Anyone who feels strongly about this can propose an appropriate amendment to the bylaws at the next general meeting at CADE-13 in 1996. I invite anyone who intends to propose such an amendment to publish it in the *AAR Newsletter* well in advance of CADE-13. We all need to see and argue about the details of any change to ensure that we get them right.

The present arrangements were a compromise between those who wanted to maintain the original collegiate organization of CADE and those who wanted to introduce some regulation and accountability. The introduction of elections will move CADE further away from the collegiate organization. I would not expect such a move to be unopposed. It is vital to hear from those who opposed change in 1992 and from anyone else who opposes the introduction of elections. We need a full range of views to be expressed before further change is made. Since CADE membership coincides with AAR membership, the *AAR Newsletter* seems to be the ideal forum for this debate.

### Proposals for Sites for CADE-14 Solicited

*Alan Bundy, President, CADE Inc.*

CADE Inc. invites proposals to host the 14th Conference on Automated Deduction (CADE-14). CADE-14 will be held in late June or early July 1997 outside North America. Proposals are due by July 1, 1995, and a final decision will be made by September 1, 1995. Proposals will be evaluated in relation to a number of site selection criteria, which include suitability of

site and facilities, strength of local automated reasoning research, costs, and availability of local sponsorship. Further details are available on request from the CADE Inc. Secretary, Neil Murray (nvm@cs.albany.edu).

## Minutes of General Meeting of CADE Inc. 1994

Friday, July 1, Nancy, France

A general meeting of CADE Inc. took place at the end of the CADE-12 conference. Alan Bundy was in the chair as President of CADE Inc. About 50 people attended the meeting. These minutes were prepared by Alan Bundy from notes taken at the time by Claude Kirchner. Bits in square brackets are afternotes which bring the information up to date.

### CADE-13

Alan Bundy announced that Michael McRobbie and John Slaney had been chosen by the CADE Inc. Trustees as joint programme chairs of CADE-13. CADE-13 was likely to be held as part of FLoC96, the Federated Logic Conference, to be held at Rutgers University in conjunction with LICS, RTA, and CAV. [This is now confirmed. The whole conference will last from Saturday, July 27, to Saturday, August 3, 1996. CADE-13 workshops and tutorials will be on Tuesday, July 30, and the main conference from July 31 to August 3.]

There was a suggestion from the floor to spread the conference over 5–6 days. [Within the context of FLoC96, this was not possible for CADE-13.] J. P. Jouannaud suggested that workshops run concurrently with the conference. [The CADE-13 Program Chairs have decided not to adopt this suggestion.] Attendees were asked for proposals for new workshop topics.

### CADE Frequency

Alan Bundy announced that following the growth in attendance and submissions to CADEs, the Trustees had decided to hold CADEs annually from 1996. So CADE-14 will be held in 1997. [A call for sites for CADE-14 has just been issued; see the preceding article.]

There followed a discussion about the problems of overlap with RTA, which will be held annually from 1995. J. P. Jouannaud suggested holding the two conferences in parallel. D. Dougherty suggested coordinating them to have a six-month gap between them.

### Evaluation of Systems and Papers

Bob Boyer expressed concern about the evaluation of systems described at conferences like CADE. He suggested that it be a condition of acceptance that systems be made available via ftp. Similar concerns were raised from the floor about other aspects of evaluation, e.g., proofs that were too long for inclusion in the conference paper. It was suggested that full versions of papers be available via ftp or WWW.

Alan Bundy accepted the principle behind the point, but pointed out that no uniform solution would fit all cases. He announced that the Trustees had agreed that words would be inserted in all future calls for papers to address these points. This solution was generally welcomed. [The Trustees have now agreed to insert the following in all future calls:

> The Programme Committee may ask authors to furnish evidence of scientific claims, *e.g.* computer programs, detailed proofs, or full experimental data.]

## QED Workshop II

*Robert Boyer* (boyer@cli.com) and *Andrzej Trybulec* (trybulec@cksr.ac.bialystok.pl)

The QED Workshop II will be held in Warsaw, Poland, on July 20–22, 1995. The goal of this workshop is to determine whether it is possible to change the QED Project from a fascinating concept into a practical cooperation.

QED is the title of an international project to build a computer system that effectively represents much of important mathematical knowledge and technique. The QED system will conform to the highest standards of mathematical rigor, including the use of strict formality in the internal representation of knowledge and the use of mechanical methods to check proofs of the correctness of all entries in the system. A principal application of the QED system will be the verification of computer programs. For background on the idea of the QED Project, see "The QED Manifesto" in the *Proceedings of CADE 12, LNAI,* 238–251, Springer-Verlag, 1994 (also available by anonymous ftp at ftp://info.mcs.anl.gov/pub/qed/manifesto.) The results of the QED Workshop I are documented in URL http://www.mcs.anl.gov/qed.

The current plan is for the workshop to be small (30 persons). We plan to split the workshop into one-hour discussions dedicated to specific problems, such as the following:

- how to transform the field under consideration into a branch of mathematics or computer science, and what its boundaries would be,
- identification of the initial mathematical targets,
- identification of the fields of mathematics to be formalized,
- why QED is needed by mathematics,
- characterization of the likely use of the QED library by mathematicians,
- consideration of possible use of already formalized mathematical knowledge,
- how to organize the accumulation and reusability of mathematical knowledge within QED or in specified systems,
- how to organize the exchange of information between systems,
- how to cope with indefiniteness,

- analysis of the possible use of the QED library in mathematical education,
- database and Internet formats for retrieval,
- attempt at initiating effective cooperation among projects for QED, and
- financing (potential sources) and coordination.

Each such discussion will be preceded by an introductory lecture of twenty to thirty minutes. We will not arrange for a presentation of individual systems, but it is obvious that when presenting general problems we will draw experience and examples from the systems that we know best. We seek speakers for introductory lectures; please feel free to propose any topic you believe is of general interest. We are open to any suggestions. We will organize also a three-hour panel discussion at the end of workshop.

If you are interested, contact Roman Matuszewski, Workshop Chairman (romat@plearn.edu.pl).

The QED Workshop II is hosted by Warsaw University – Bialystok Branch (Mizar Group), under the auspices of the State Committee for Scientific Research (Poland). The co-sponsor is the Office of Naval Research (USA).

## Information on Isabelle

### Introduction to Theorem Proving, Using Isabelle

On July 12–14, 1995, a course on Isabelle will be offered at Cambridge, England, immediately prior to Mathematics of Program Construction (MPC '95) Conference. The course uses lectures and practical sessions to teach students how to use the Isabelle system to perform proofs in higher-order logic. Topics include single-step proof checking, forward and backward proof, declaring types and constants, quantifier reasoning, higher-order logic in Isabelle, and advanced proof tools. The lecturer is Lawrence C Paulson, originator of Isabelle. The cost of the three-day course is 650 pounds sterling (350 pounds for academics) plus accommodation. Technical correspondence should be addressed to Lawrence C Paulson, Computer Laboratory, Pembroke Street, Cambridge CB2 3QG, England; e-mail lcp@cl.cam.ac.uk. Administrative correspondence should be addressed to The Registration Administrator, Program for Industry, 1 Trumpington St, Cambridge CB2 1QA, England. tel. +44 (0)1223 302233s; e-mail: rjs1008@cus.cam.ac.uk. For details about the course, see the World Wide Web, URL http://www.cl.cam.ac.uk/users/lcp/isabelle-course.html.

### Isabelle Users Workshop

An Isabelle Users Workshop will be held on September 18–19, 1995, in Cambridge, UK. The purpose of the workshop is to allow Isabelle users to exchange techniques and results. Both finished work and work in progress can be reported. There will be a program of short talks and possibly demonstrations. A printed proceedings will be produced provided enough papers are submitted. There will be no formal refereeing; within reason, all talks and papers will be accepted. There will also be time for informal discussions.

We expect to arrange college accommodation for participants at a cost of less than 50 pounds (UK) per day, inclusive of all meals. As an alternative, we can supply a list of hotels. There will be a small registration fee.

The workshop immediately precedes HOA '95 and LOPSTR '95. Those interested in attending should contact Lawrence C. Paulson, University Lecturer, Computer Laboratory, University of Cambridge, Pembroke Street, Cambridge CB2 3QG, England; tel: +44(0)21223 334623, fax: +44(0)1223 334678. Those interested in giving a talk or demo should send a title and abstract. We intend to compile the proceedings electronically from papers submitted in Postscript format. The deadline for abstracts is June 1, 1995, and the deadline for proceedings papers is July 1.

## Announcements

### Seventh European Summer School in Logic Language and Information

The seventh European Summer School in Logic Language and Information will be held on August 14–25, 1995, in Barcelona. The main focus of the Summer School is the interface between logic, linguistics, and computation, where it concerns the modeling of human linguistic and cognitive abilities. The 1995 program will include courses, workshops, and symposia covering a variety of topics within six areas of interest: logic, language, computation, logic and computation, computation and language, and language and logic. For further information, contact ESSLLI95, GILCUB, Avda. Vallvidrera 25, 08017 Barcelona; fax +43 3 2054656; tel. +43 3 2033597; e-mail esslli95@gilcub.es.

### EMCSR 1996

The Austrian Society for Cybernetic Studies has issued a call for papers for the Thirteenth European Meeting on Cybernetics and Systems Research (EMCSR 96), to be held at the University of Vienna, Austria, on April 9–12, 1996. Sessions are planned in such areas as theory and applications of artificial intelligence, fuzzy systems, knowledge-based systems, and knowledge discovery in databases. For further information, contact the program chairman Robert Trappl, Department of Med. Cybernetics and Artificial Intelligence, University of Vienna, Freyung 6/2, A-1010 Vienna, Austria; e-mail sec@ai.univie.ac.at. More details are also available on the World Wide Web at http://www.ai.univie.ac.at/emcsr/.

### FLoC'96

The 1996 Federated Logic Conference will be held on Saturday, July 27, through Saturday, August 3, 1996, at Rutgers University, New Brunswick, New Jersey, USA. The goal of FLoC is to battle fragmentation of the technical community by bringing together synergetic conferences that apply logic to computer science. The following conferences will participate in FLoC: CADE (Conference on Automated Deduction), CAV (Conference on Computer-Aided Verification), LICS (IEEE Symposium on Logic in Computer Science), and RTA (Conference on Rewriting Techniques and Applications). DIMACS will host the meeting as part of its Special Year on Logic and Algorithms. For further information see the World Wide Web URL http://www.research.att.com/lics/FLoC.