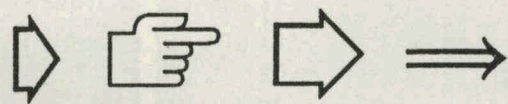


LISP Pointers



VOLUME 2, NUMBER 2
OCTOBER-NOVEMBER-DECEMBER
1988

TABLE OF CONTENTS

Letter From Editor, Van Deusen	1
Epilog to "Two Lisp Puzzles", Queinnec and Chailloux	2
Lisp and Symbolic Computation Journal	4
The Symbolic Programming Environment, Endelman and Gadol	5
The Why of Y, Gabriel	15
Call for Papers, NA Conference on Logic Pgming.....	26
(algorithms), Pavel	27
Call for Papers, Conference on Functional Programming Languages and Computer Architecture	42
The Scheme of Things: Standardization, Clinger	43
IJCAI-89 Tutorials: Request for Proposals	48
Menus for Scheme, Goldberg	49
Expert Systems and Their Applications: Call for Papers	58
Readings In Scheme, Yigit	59

EDITORIAL BOARD

EDITOR, MAILING LIST

Mary S. Van Deusen
IBM Watson Research
P.O. Box 704
Yorktown Heights, NY 10598
(914) 789-7845
(914) 232-7490
(508) 384-2526
maida@ibm.com

LISP IMPLEMENTATIONS

Walter van Roggen
DEC AITG
290 Donald Lynch Blvd.
DLB5-2/B10
Marlboro, MA 01752
(508) 490-8012
vanrogen@hudson.dec.com

X3J13

Robert F. Mathis
9712 Ceralene Drive
Fairfax, VA 22032
(703) 359-0203
mathis@b.isi.edu

TECHNICAL ARTICLES

JonL White
Lucid, Inc.
707 Laurel Street
Menlo Park, CA 94025
(415) 329-8400
edsel!jonl@labrea.stanford.edu

PROGRAMMING ENVIRONMENTS

John Foderaro
Franz Inc.
1995 University Avenue #275
Berkeley, Ca. 94704
(415) 548-3600
jkf%franz.uucp@berkeley.edu

THE SCHEME OF THINGS

Will Clinger
University of Oregon
18 PLC
Eugene, OR 97403
(503) 686-4411
will at cs.uoregon.edu

QUERY-IO

Patrick Dussud
Lucid, Inc.
707 Laurel Street
Menlo Park, CA 94025
(415) 329-8400
dussud%jenner%ti-csl.csnet@csnet-relay

INT'L NEWS

Christian Queinnec
LIX Laboratoire d'Informatique de
l'Ecole Polytechnique
Route de Saclay
91128 Palaiseau Cedex
FRANCE
Eam: QUEINNEERPOLY11.BITNET
UseNet: mcvax!inria!poly!queinnec

ALGORITHMS

Pavel Curtis
Xerox PARC
3333 Coyote Hill Rd.
Palo Alto, CA 94304
(415) 494-4455
Pavel.pa@Xerox.Com

READINGS IN SCHEME

Ozan S. Yigit
York University
Dept. of Computing Services
4700 Keele Street, North York
Ontario, M3J 1P3
CANADA
(416) 736-5257 X3976

READING ROOM M.I.T.

LABORATORY FOR COMPUTER SCIENCE
545 TECHNOLOGY SQUARE
CAMBRIDGE, MA 02139

This issue of the Lisp Pointers newsletter has been funded by I.N.R.I.A. and Sun Microsystems. Neither group has directed or controlled its publication. The opinions expressed herein are solely those of the authors, editors, publisher and other contributors and do not necessarily reflect the opinions of I.N.R.I.A. or Sun Microsystems or the opinions of companies affiliated with individuals involved with this effort.

Dear Colleague,

I was asked whether there were lists of other free publications dealing with AI programming languages or expert system shells. Anyone out there know of any?

This issue is a little light on departments because of the holidays at this time of year. You should find the articles to be excellent compensation. If you've recovered from the season, you might consider whether you have something serious or amusing for the newsletter. Anyway, Valentine's Day is coming so I know you'll all be sweethearts and look through your files for something for us.

It was noted that a figure in Philip Greenspun's article of last issue was duplicated. My apologies.

Our thanks to Sun Microsystems and I.N.R.I.A. for sponsoring this issue. We are still very interested in feedback on the inclusion of Lisp Pointers into ACM SIGPLAN. Your comments and questions are welcome.

Sincerely,

A handwritten signature in cursive script that reads "Mary S. Van Deusen".

Mary S. Van Deusen, Editor

Epilogue to "Two Lisp Puzzles"

Christian Queinnec Jérôme Chailloux

November 9, 1988

We received many answers to our puzzles which we want to summarize here. Firstly we have to say that the presented solutions in the last article did not involve all the usual modern Lisp stuff since we constrained our students' answers to be built out of only 50 essential primitives. The `maplist` function, for example, was not in the set : it has therefore to be rewritten to be acceptable.

Thanks to Wolf-Fritz Rieckert

The shortest solution within COMMON LISP is probably :

```
(defun xpl (l)
  (nreverse (maplist #'reverse (reverse l))) )
```

A similar function for Scheme can be easily obtained.

Thanks to Steve Miner

This one is another variation around `xpl3` and `xpl4`

```
(defun xpl (l)
  (xpl8 l nil) )
(defun xpl8 (l ans)
  (cond ((endp l) ans)
        (t (xpl8 (butlast l) (cons l ans))) ) )
```

Thanks to Guy Steele

Two other solutions involving a left- or right- associative `reduce` are

```
(defun xpl (l)
  (reduce #'(lambda (x y)
              (mapcar #'(lambda (z) (cons x z))
                    (cons '() y) ) )
          l :initial-value '() :from-end t ) )
(defun xpl (l)
```

```

(reduce #'(lambda (x y)
          (append x (list (append (car (last x))
                                (list y) ))) )
        l :initial-value '() ) )

```

Thanks to Olivier Danvy

Aside these rather classical variations, we also received the following one. Take a seat, a breath and a look. You already know what it does but how it works is left to your sagacity.

```

(define (xpl l)
  (map (lambda (k) (k '()))
       (xpl9 l (lambda (x) x)) ) )
(define (xpl9 l c)
  (if (null? l) '()
      (let ((k (lambda (a) (c (cons (car l) a))))
          (cons k (xpl9 (cdr l) k)) ) ) )

```

Thanks to Michael Berry

We also received an APL solution which is short enough to be transcribed here (as far as I understand) : xpl: a, a ,"> w.

Finally it also appeared that this problem was older than we thought. Patrick Greussay asked it under the french name "énoncé" in the seventies.

LISP AND SYMBOLIC COMPUTATION: An International Journal

NOW AVAILABLE

Scope:

- Programming language notations for symbolic computing (e.g., data abstraction, parallelism, lazy evaluation, infinite data objects, self-reference, message-passing, generic functions, inheritance, encapsulation, protection, metaobjects).
- Implementations and techniques (e.g., specialized architectures, compiler design, combinatory models, garbage collection, storage management, performance analysis, smalltalks, flavors, common loops, etc.).
- Programming logics (e.g., semantics and reasoning about programs, types and type inference).
- Programming environments and tools (e.g., knowledge-based programming tools, program transformations, specifications, debugging tools).
- Applications and experience with symbolic computing (e.g., real-time programming, artificial intelligence tools, experience with LISP, object-oriented programming, window systems, user interfaces, operating systems, parallel/distributed computing).

Editors-in-Chief:

Richard P. Gabriel, Lucid, Inc. and Guy L. Steele Jr., Thinking Machines, Inc.

Articles of Volume 1, Issue 1 include:

Expansion-Passing Style: A General Macro Mechanism, R. Kent Dybvig, Daniel P. Friedman, Christopher T. Hayes; *OAKLISP: An Object-Oriented Dialect of Scheme*, Kevin J. Lang, Barak A. Pearlmutter; *The Mystery of the Tower Revealed: A Nonreflective Description of the Reflective Tower*, Mitchell Wand, Daniel P. Friedman; *Technical Issues of Separation in Function Cells and Value Cells*, Richard P. Gabriel, Kent M. Pitman

Submissions and more information contact:

Jan Zubkoff
Associate Editor, LASC
Lucid, Inc.
707 Laurel Street
Menlo Park, CA 94025
jlz@lucid.com
415/329-8400

For subscriptions please contact:

Kluwer Academic Publishers
P.O. Box 358
Accord Station
Hingham, MA 02018-9990
617/871-6600

Call for Papers

North American Conference on Logic Programming

Cleveland, Ohio, October 16-19, 1989

The Symposium on Logic Programming has been renamed the North American Conference on Logic Programming. Beginning this year, it will be sponsored by the Association for Logic Programming. We are soliciting papers in the following general areas of research:

Applications of Logic Programming
Logic Programming and Databases
Theory of Logic and Functional Programming
Parallel Execution of Logic Programs
Implementation of Logic Programming Systems
Inference Machines

General Chairman: Leon Sterling

Program Chairmen: Ewing L. Lusk and Ross A. Overbeek

Program Committee

M. Bruynooghe	Ken Kunen
Saumya Debray	Catherine Lassez
Ian Foster	M. Martelli
Susan Gerhart	C. Mellish
Joxan Jaffar	Richard O'Keefe
Ken Kahn	R. Ramakrishnan
L. V. Kale	Vijay Saraswat
Paris Kanellakis	Peter Szeredi
Robert Kowalski	R. Topor
Vipin Kumar	David S. Warren

Authors should send five copies of their manuscripts to:

Ewing L. Lusk
Mathematics and Computer Science Division
Argonne National Laboratory
Argonne, Illinois 60439
U. S. A.

Papers are restricted to 20 double-spaced pages, including figures. Papers must be received by March 31, 1989. Authors will be notified of acceptance by June 10, 1989. Camera-ready copy will be due at MIT Press by July 15.

This conference is sponsored by the Association for Logic Programming.

Call for Papers

Conference on Functional Programming Languages and Computer Architecture



September 11 - 13, 1989
London, England



Sponsored by
IFIP WG 2.8 and ACM SIGPLAN/SIGARCH

The fourth in a series of conferences on Functional Programming Languages and Computer Architectures will cover the theory, design, implementation, and application of functional or applicative programming languages, and research on new computer architectures designed to support functional programming. Architectural issues relating to implementation of functional programming languages on conventional architectures are also relevant. Papers accepted for the conference must contain material not presented previously in any formal forum.

Authors should submit five copies of a full paper (not exceeding 20 pages), and ten additional copies of a 300-word abstract to the Chairman of the Program Committee (If copying facilities are not available one copy will do). Submissions should be double spaced or typeset 10-point on 16-point spacing. Names and affiliations of authors should appear on both paper and abstract. Papers will be judged on relevance, clarity, correctness, originality and significance. It is important to include specific results, sketches of their derivations, and comparisons with previous work.

Submissions must be received by **March 10, 1989**, and should include a return postal address, and an electronic address wherever possible. Authors will be notified of acceptance or rejection by **May 8, 1989**. Full versions of the accepted papers must be received in camera-ready form by **June 16, 1989**, for inclusion in the proceedings. Authors of accepted papers will be expected to sign an ACM copyright release form. Proceedings will be published by ACM Press in association with Addison-Wesley and will be distributed at the symposium.

Program Chairman

David B. MacQueen
Attn: FPCA '89
AT&T Bell Labs
600 Mountain Avenue
Murray Hill, NJ 07974
(201) 582-7691
macqueen@research.att.com

Program Committee

Doug DeGroot, Texas Instruments, USA
Paul Hudak, Yale Univ., USA
John Hughes, Univ. of Glasgow, GB
Thomas Johnsson, Chalmers Univ. of Technology, S
Richard Kieburtz, Oregon Graduate Center, USA
Gary Lindstrom, Univ. of Utah, USA
John Mitchell, Stanford Univ., USA
Simon Peyton-Jones, Univ. College London, GB
Ronan Sleep, Univ. of East Anglia, GB
Ascandar Suarez, DEC Paris Research, F

Conference Chairman

Joseph E. Stoy
Programming Research Group
Oxford University Computing Laboratory
8-11 Keble Road
Oxford OX1 3QD
Great Britain
stoy@prg.ox.ac.uk

Local Arrangements Chairman

Chris L. Hankin
Department of Computer Science
Imperial College of Science and Technology
Huxley Building, 180 Queen's Gate
London SW7 2BZ
Great Britain
clh@doc.ic.ac.uk

Sponsored by:

**International Federation for Information Processing:
Working Group 2.8 on Functional Programming**

**Association for Computing Machinery:
Special Interest Group on Programming Languages
Special Interest Group on Computer Architecture**

IJCAI-89 TUTORIALS: REQUEST FOR PROPOSALS

Tutorials for the International Joint Conference on Artificial Intelligence (IJCAI-89) will be held in Cobo Hall, Detroit, Michigan August 20 and 21, 1989. Anyone interested in presenting a tutorial on a new or standard topic should contact the 1989 Tutorial Chair, Prof. Mark Fox. Topics covered at AAAI-88 include:

- Introduction To AI
- Knowledge Representation
- Logic Programming
- Constraint Directed Reasoning
- Planning and Reasoning about Time
- Task-Specific Problem Solving Architectures
- Qualitative Simulation
- Machine Learning
- Evaluating Knowledge Engineering Tools
- Verification and Validation of Expert Systems
- Programming in CLOS
- Neural Networks
- AI and Design
- Uncertainty Management
- Natural Language
- Truth Maintenance Systems
- Knowledge Acquisition
- AI in Hardware Diagnosis
- Managing Expert Systems Projects

Interested parties should submit a proposal containing the proposed subject, detailed outline of the tutorial, the necessary background and the potential target audience for this tutorial. In addition, you should include a brief resume covering relevant background (including teaching experience) and any available examples of work in the area (ideally, a published tutorial-level article on the subject). Evidence of scholarship in AI/Computer Science, equivalent to a published AAAI conference paper, tutorial syllabi, or extended outline, is generally required.

Those submitting a proposal for a new course are reminded that tutorials are intended to provide dissemination of reasonable, well-agreed-upon information; that is, there should be a substantial body of accepted material. We especially encourage submission of proposals for new advanced (theoretical and applications) topics. In all cases, the tutorial format should not be used to promote a product or a single venue of research, but to provide an overview of the subject and to give indications (as appropriate) to where the field is headed.

Proposals must be received by November 1, 1988. Decision about topics and speakers will be made by November 15. Speakers should be prepared to submit completed course materials by December 20.

Proposals should be sent to:

**Prof. Mark S. Fox
Robotics Institute
Carnegie Mellon University
Pittsburgh, PA 15213**

PHONE: (412) 268-3832

FAX: (412) 268-5016

ARPANET: msf@isl1.ri.cmu.edu or msf@cs.cmu.edu

Name, mailing address, phone number, and ARPA net address (if applicable) should be on all submissions.

may 29-june 2, 1989
Ninth international workshop
Conferences, tutorials & exhibition

Avignon



Expert
systems
& their
applications

TUTORIALS & PANEL SESSIONS

The technical conferences will be complemented by tutorials and panel sessions. Given by international renowned specialists and to be held on May 29-30, 1989, these tutorials will provide an introduction to expert systems, in-depth coverage of specific basic techniques, or state-of-the-art in particular application areas. Send suggestions for topics regarding panel sessions and tutorials to the Workshop Chairman at the address indicated below.

EXHIBITION

From May 31 to June 2, 1989, Avignon '89 will host a fair of commercially available products including software and hardware tools for artificial intelligence and expert systems applications relating to various areas. In addition, advanced prototypes of tools and applications developed by research organizations will be demonstrated.

To receive a complete exhibitor's package, contact the Workshop Chairman at the address below.

INTERNATIONAL PROGRAMM COMMITTEE

Chairman: J.-P. Haton

- R. Altard Chairman of the Specialized Conferences "Artificial Intelligence, Telecommunications & Computer Systems"
- J.-P. Crestin Chairman of the Specialized Conference "Artificial Intelligence & Defense"
- J.-M. David Chairman of the Specialized Conference "Second Generation Expert Systems"
- M. Flouch Chairman of the "Medical Applications" track
- J. Guillon Chairman of the Research Prototype Exhibition
- J.-C. Leprie Chairman of the "Maintenance, Safety & Security" track

The complete list of committee members will be published later.

INFORMATION

All requests for information and mail should be addressed to the Workshop Chairman:

Jean-Claude Reut
EC2 - 269-287, rue de la Garene - 92000 Nanterre - France
☎ (33.1) 47 80 70 00
Telex: 612 469 - Telefax: (33.1) 47 80 68 29

With the view to easing organization, anyone interested in participating either as a speaker, as a delegate, or as an exhibitor is requested to return without delay the attached information form. An early response in filling out this form will insure that you are informed of all activities as rapidly and early as possible.

- Artificial Intelligence and Defense '89 - is organized with the backing of the French General Delegation for Armament. Being an open conference, no confidential material will be presented. The conference will embrace military applications as well as civilian applications for security or emergency situations, involving expert systems, but also vision, identification, robotics, ...

Suitable themes would cover research, developments or implementations regarding either military applications of artificial intelligence or civilian applications concerning security or emergency situations. In particular the following topics will be considered: expert systems (decision aids, threat analysis, mission planning and preparation, navigation aids, pilot aids, surveillance); command and control systems; C3I; communication, message assignment; tactical and strategic simulation, education and training; perception; vision; signal processing; image processing and sensing; psychology; identification; man-machine interfaces; speech and natural language; mobile robots; autonomous resupply and delivery systems; cryptosecurity; embedded processor architecture; distributed intelligence & reconfiguration of military systems.

INSTRUCTIONS TO AUTHORS

For both the main and specialized conferences, six copies of submitted papers (not exceeding 5 000 words - about 15 pages in 21 x 29.7 cm or 8 x 11 centimeters-ready format) must reach the Workshop chairman at the address below before January 12, 1989.

Papers must include a cover page giving:

- the title of the paper & author's name,
- the author's address, phone number, telex and telefax numbers (if available)
- a 10 line abstract together with a list of key words an indication of which of the following categories the paper comes under: research, tools, techniques, applications or one of the three specialized conferences: second generation expert systems; artificial intelligence, telecommunications & computer systems; artificial intelligence & defense.

All papers received will be refereed by an international technical committee, and each paper will be reviewed by at least three independent referees. Authors will receive the committee's decision from March 1, 1989. Accepted papers will be published in the proceedings to be distributed to the participants at the workshop.

Papers may be written in either English or French. Simultaneous translation will be provided at the conference. Oral presentations will be 30' in length.

PRIZES

As for previous conferences, several best papers awards will be presented at the conference.

PRACTICAL INFORMATION

LOCATION

Conferences & Exhibition

Parc des Expositions
Route Nationale 7
84140 Montfavet
France

Cours

Centre de Congrès
Palace of the Popes
84000 Avignon
France

DATES

Tutorials
May 29 - 30, 1989
Conferences
May 30 - June 2, 1989
Exhibition
May 31 - June 2, 1989

LANGUAGES

English and French will be official working languages. Simultaneous translation will be provided for the general conference and the specialized conferences.

ACCOMMODATION

Hotel reservations must be made directly by each participant with the local agency below.

RMG - Réservations Hôtels de Congrès
1, rue Vieille Poste - BP 146
84008 Avignon Cedex - France

Tel. (33) 90 27 50 00 - Telex: 431 922 F
Telefax: (33) 90 86 36 12

As Avignon is a touristic city, it is strongly advised to reserve as soon as possible.

REGISTRATION FEES

Conferences (3 days)	FF 4 400	(VAT ind.)
University rate	FF 2 600	(VAT ind.)
Student rate	FF 500	(VAT ind.)

Fees regarding the specialized conferences will be issued later.

Tutorials

1/2 days	FF 950	(VAT ind.)
1 day	FF 1 700	(VAT ind.)