PRESIDENTIAL ADDRESS

Past, present, and future (?); or the more things change the more they stay the same

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The presidential address from the 27th Annual Meeting of the Society for Computers in Psychology, here slightly revised, traces a history of the Society through the papers that have been presented at previous annual meetings. Certain themes, such as the use of computers to facilitate teaching and research, emerge as constants over time. Computer technology has changed dramatically over those 27 years, however, as can be seen merely from the titles of the papers presented at the annual meetings. The present paper also proposes a direction for the Society's future: the continuation of its strong history of facilitating communication among psychologists interested in applying the most current technology to their teaching and research.

I would like to focus my presidential address on an exploration of the history of the Society for Computers in Psychology and on the possible directions in which this organization might move in the future. To explore these options, I will begin by examining previous conference presentations, which should provide not only a frame of reference, but also a historical perspective for those not familiar with the society.

THE MORE THINGS CHANGE ...

Hardware

It is very clear that some things have changed a great deal in the 27 years of the Society's history. Probably the greatest changes have occurred in the area of hardware. In 1993, Washburn, Rumbaugh, and Putney presented a paper entitled "Apparatus as Milestones in the History of Comparative Psychology."¹ The evolution of computer hardware suggests a similar model. As new technology emerged, it was immediately reflected in papers at the annual meetings. Examining the proceedings from the annual meetings is like looking at a history of computer hardware development.

At the first meeting in 1971, the papers focused heavily on the use of minicomputers, time sharing, and random access. Mention was made of the possible emergence of microwave networks that would enable individuals to communicate 10 times faster than would traditional telephone lines.

The year 1976 saw the introduction of papers on computer conferencing. In 1977, papers on the uses of micro-

processors appeared. One breakthrough in 1978 was reflected in papers on the impact of color displays! A significant change in orientation occurred in 1981, with microcomputers heavily represented; at that time, the hardware of choice comprised Apple II, Radio Shack, and IBM machines. Another milestone was reached in 1984, with the introduction of papers on networking and supercomputing. Macintosh and Commodore microcomputers joined the array of topics in 1985. Yet another major turning point was reached in 1994, with the introduction of the Internet into the University community, a trend that continued to be observed in 1995, with numerous papers on the use of the World-Wide Web in a variety of novel ways.

Users' Groups

Another way to track the changes in the popularity of microcomputers is to consider the users' groups that have been supported at various annual meetings. The first of the microcomputer users' groups met in 1975 to discuss Data General and DEC. The 1988 meeting saw a change in the users' groups: The DEC group was joined by concurrent meetings of users of IBM and of Apple II and Macintosh machines. In 1989, the groups focused on IBM and Macintosh computers. A major milestone arrived in 1991 when members acknowledged that there was no significant difference between the brands of machines and held a combined users' group meeting. Since that time it has become evident that the platform is truly incidental, and the users' groups have ceased to exist.

Software

Another major undisputed area of change has been in the software individuals have favored and reported on. At the initial meeting in 1971, the papers focused on as-

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sembly languages. By 1986, the emphasis had changed to cover issues related to writing one's own software. In 1987, there was an explosion in the availability and use of a variety of desktop experimental labs. HyperCard was the software of the 1988 meeting, and object-oriented programming debuted in 1990. With the increased emphasis on the Internet, many papers in 1994 were devoted to Mosaic. This emphasis shifted in 1995 to the use of html and, finally, to Java in 1997.

THE MORE SOME THINGS CHANGE, THE MORE SOME THINGS STAY THE SAME

What's in a Name?

During the time when the major changes in hardware and software took place, some things remained reassuringly similar, despite the surface appearances of change. One surface change involved the name of the organization. In 1971, the original name was the National Conference on the Use of On-line Computers in Psychology (NCUOLCP)—an acronym no one wanted to use very frequently! The current name (and its much more user-friendly acronym) of the Society for Computers in Psychology (SCiP) was adopted in 1982.

Affiliation

From the very beginning, the Society had a close affiliation with the Psychonomic Society. Initially, NCUOLCP met the day before the Psychonomic Society at a university in the same city. This was due in large part to the efforts of the early directors of the Society and to the proximity of their own institutions to the location of the annual meeting (St. Louis for 3 years in a row). Ultimately, SCiP decided to join the Psychonomic Society in holding its meeting in a major hotel, again on the day preceding the Psychonomic annual meeting.

From the Society's inception on, the proceedings of the annual meeting have been published. From 1972 to 1982, the proceedings appeared as a special issue of *Behavior Research Methods & Instrumentation*. In 1983, the name of the journal was changed to *Behavior Research Methods, Instruments, & Computers*, but the fact that the journal publishes the SCiP proceedings has continued until the present. In large part this consistency can be attributed to excellent relations with the editors of the journal: Joseph Sidowski, 1972–1989; N. John Castellan, 1989–1993; and Robert Proctor, 1994 to the present.

The Society has always enjoyed a very productive association with the National Science Foundation (NSF). The first meeting in 1971 was supported with a grant from the NSF. In 1975, Walter A. Sedlow, Jr., presented a paper on "Grant Program for the Division of Computer Research: National Science Foundation" as part of a session on funding possibilities. Today, SCiP still enjoys that same relationship with the NSF and works closely with Joseph Young and Mike McCloskey from the NSF.

Membership

One area in which there have been both changes and continuity is the membership of the Society. None of the members of the first steering committee are still active in SCiP, although their names are familiar to many: Daniel E. Bailey, Edward C. Carterette, Frank M. Goode, Bert F. Green, Richard B. Millward, Peter G. Polson, Joseph B. Sidowski, William Siegel, William R. Uttal, and Donald I. Tepas, the president. Many of the members from those first meetings continue to appear as active participants at the meetings, however. In 1971, Joseph L. Young (who is currently the NSF representative) presented a paper entitled "AVALA, a Small On-Line System With Off-Line Communication With a Large Computer." In 1972, Howard L. Kaplan (with C. Douglas Creelman) talked about "Simultaneous Independent Threshold Estimates: Multiple PEST." And in 1972, Walter Schneider (with Karl W. Scholz) spoke on the topic of "Requirements for Minicomputer Operating Systems for Human Experimentation and an Implementation on a 4K PDP-8 Computer."

The Society has always actively encouraged student involvement. The first student award was presented to Timothy Post in 1977. The most recent winner of the Castellan Award for the best student paper was Katja Wiemer-Hastings of the University of Memphis, for her paper "Abstract Noun Classification: Using a Neural Network to Match Word Context and Word Meaning."

The number of papers presented at meetings has vacillated between 27 and 49, with a mean of 36.7. Consistency, while accommodating changes, has been demonstrated in the psychological content of the papers. Over the 27 years of meetings, all the traditional areas of psychology have been well represented, and newer concerns have been presented as they emerged, such as synthetic speech generation, in 1976; neural networks and parallel processing, in 1984; connectionism, in 1987; and brain imaging, in 1992.

THE MORE THINGS STAY THE SAME

When I began my review of the conference proceedings from the past 27 years, I anticipated being able to chart changing themes in the conference presentations. I actually found that there were a number of very consistent presentation themes.

Design of Facilities

There has always been an interest in the best physical configuration of facilities. In 1974, Karl W. Scholz and Beatrice Holly discussed setting up "A 64-Station Computer-Assisted Teaching and Research Facility." In 1994, David M. Sargent and Thomas Deelman brought researchers up to date on "Expansions on a Computerized Operant Laboratory: Considerations for Combining Teaching and Research."

Facilitating Instruction

One theme very evident over the years is that of the best way to facilitate instruction by using the appropriate technology. During the first conference in 1971, J. A. Connolly and T. F. Lambert set things in motion with their presentation "Computer-Managed Instruction: IBM System 360." In 1982, J. E. Spivey considered "Software Development for Computer-Assisted Instruction in Experimental Psychology," and in 1997, Donald A. Hantula took teaching to the Internet in "The Virtual Industrial/Organizational Psychology Class: Three Years of Learning and Teaching in Cyberspace."

Certain psychology courses have always received special attention. Not surprisingly, introductory psychology has been featured. With the advent of microcomputers in 1983, Cynthia R. McDaniel provided "Some Ideas for Beginners on Using a Microcomputer in an Introductory Psychology Class." In 1997, William S. Maki and Ruth H. Maki made use of the Internet in their "Teaching Introductory Psychology on the Web: Designing Courseware for Distributed Learning."* Statistics courses have also received their share of attention. In 1974, Richard Lehman discussed "Computer Aids in Teaching Statistics and Methodology." Michael C. Levy presented "Microcomputer-Based Tutorials for Teaching Statistics" in 1982, and in 1997, Kavitha Srinivas and M. Jeanne Sholl again visited the subject in a new context with "WebScholar: A Set of Java-Based Instructional Tools for Teaching Statistics and Research Methods on the Internet."*

Conducting Research

With teaching as one thread in the conference, another has been the best way to conduct research using the newest technology. One area of concern has always been stimulus presentation. In 1984, G. Perlman discussed the best way to present computerized surveys in "Electronic Surveys." In 1989, David A. Washburn addressed the issue in "PC-Compatible Computer-Generated Stimuli for Video-Task Testing." Nicole English updated this topic in 1997 with "Using Web-based Electronic Questionnaires in a Correlational Study."*

Paired with stimulus presentation has been an interest in data generation. In 1974, Paul G. Salmon and Robert J. Tracy provided a starting point with "Computer-Generated Computation Exercises." In 1992, Walter K. Beagley introduced his revolutionary "Eye Lines: Generating Data Through Image Manipulation, Issues in Interface Design, and the Teaching of Experimental Thinking."

Once the data have been generated, a way is needed to collect the responses. Stephen C. Fowler addressed this issue early on in his 1973 paper "A Minicomputer System for Recording the Dynamic Properties of Individual Operant Responses." Frederick J. Bremner and Michael Yost incorporated networking into the process in 1984, with "The Use of Computer Networks in Data Gathering and Data Analysis." Finally, in 1996, Steven E. Stern and Jon E. Farber adapted a classic experiment to the Inter-

net and presented "The Lost E-Mail Method: Milgram's Lost-Letter Technique in the Age of the Internet."

Data collection is meaningless without a means for analyzing the data, a topic that has received heavy emphasis. In 1973, William A. Leaf explained how to perform "Statistical Analysis on a Large Time-Sharing System." In 1986, Jonathan Vaughan, Douglas J. Herrmann, and Gregory Bell discussed "Evoked Potentials and Stages of Information Processing: Methods of Analysis." In 1994, Glenn E. Meyer showed the power of smaller machines with "Power & Effect: A Statistical Utility for Macintosh and Windows Systems."

Psychologists have always been interested in designing and controlling experiments. This interest has been amply reflected by Russell M. Church's 1972 paper on the "Seven Types of Data From Computer-Controlled Experiments." The 1980s saw an explosion in experiment controllers, with William L. Palya's (1987) "An Introduction to the Walter/Palya Controller and ECBASIC." Also in 1987, Walter Schneider introduced "Micro Experimental Laboratory: An Integrated System for IBM PC Compatibles." And in 1992, Douglas L. Chute provided an update on his progress in "MacLaboratory for Psychology: Successes, Failures, Economics, and Outcomes Over Its Decade of Development."

While many psychologists work with the "real thing," some continually feel the need to work with simulations. In 1974, Thomas Rywick began extolling the use of simulations in "Increasing Student Interest by the Use of Interactive Computer Simulations." In a relatively unforgettable paper, in 1993, Jeff Graham, Tom Alloway, and Lester Krames introduced "Sniffy, the Virtual Rat: Simulated Operant Conditioning."

Game technology is one area of psychology that has really come into its own with the advent of computers. In 1971, James W. Livingston, Jr., presented the initial work on "Measuring Cooperation and Competition in Decomposed Games," and in 1994, Robert W. Allan kept gaming active in "The Matching Game: Testing for the Generality of the Matching Law."

Several branches of psychology could not exist without test administration, and the influence of computerization is evident in Lawrence G. Space's 1974 paper "A Console for the Interactive On-Line Administration of Psychological Tests"; D. D. Foree, D. A. Eckerman, and S. L. Elliot's (1983) presentation "M. T. S.: An Adaptable Microcomputer-Based Testing System"; and W. Kent Anger, Diane S. Rohlman, and O. J. Sizemore's 1993 work "A Comparison of Instruction Formats for Administering a Computerized Behavioral Test."

There has been a continuing struggle to develop new and better timing devices. In 1974, Thomas W. Christian and Peter G. Polson addressed this issue in "The Precision of Latency Measures on Real-Time Computing Systems." The same topic was explored in 1994 by William L. Palya, Donald E. Walter, and Josey Y. M. Chu's presentation "An Inexpensive 1-Millisecond Ex-

periment Control Interface for IBM PCs and Its User-Friendly Control Language.”

Impact of Computers

Along with actually using computers, SCiP members have been interested in examining the effect of computer use on specific areas of psychology. In 1975, Doris Aaronson (with Edward Grupsmith and May Aaronson) reviewed “The Impact of Computers on Cognitive Psychology.” In 1993, Doris Aaronson provided an update with “Computer Use in Cognitive Psychology.”

Apart from the impact of computers on specific areas of psychology, there has been a continuing interest in reporting on the use of computers in general. At the very first meeting in 1971, Joseph B. Sidowski provided a description of the existing conditions in “Various Uses of Minicomputers in Psychology.” In 1983, Darrell L. Butler and A. M. Kring kept members abreast of the situation in a “Survey of Present and Potential Instructional Use of Computers in Psychology,” and in 1993, Peter A. Hornby and I presented “Computer Use in Psychology Instruction: A Survey of Individual and Institutional Characteristics.”

Not satisfied to report on current uses of computers, visionaries have foretold the future, whether correctly or incorrectly. At the 1972 meeting, Donald A. Norman went way out on a limb and predicted “The Computer in Your Briefcase.” In 1980, N. John Castellan, Jr., reported on “On-Line Computers in Psychology: The Last 10 Years, the Next 10 Years—The Challenge and the Promise.” As he later indicated, some of his predictions were too optimistic and others came to pass much sooner than he had predicted. In 1989, Joseph B. Sidowski again summarized the “Past, Present, and Future of the Society for Computers in Psychology.”*

CONTINUING CONCERNS

At the first meeting, a number of concerns were articulated that continue to receive a considerable amount of attention today. One of the primary concerns was about standardization. In 1972, N. John Castellan, Jr., set forth a proposal for “Laboratory Programming Languages and Standardization.” In 1995, the standardization issue was still of concern, but in a different domain, and John H. Krantz “Suggested Standards of HomePage Construction.”*

With the advent of the microcomputer there has been a proliferation of papers dealing with the evaluation of software. In 1984, Douglas B. Eamon and Darrell L. Butler presented a timely paper on “Instructional Programs for Psychology: A Review and Analysis.” In 1992, Paula Goolkasian provided a more focused approach in “A Review of Macintosh-Based Instructional Software.”

Improving communication among psychologists, especially those using computers, has always been a major

objective of the Society. In 1987, I, along with Peter Hornby and David Bozak, established the first on-line system for listing software related to psychology and presented the results of our efforts in “COMPpsych: A Computerized Software Information System.” Continuing the effort to facilitate communication, in 1994 Sarah E. Ransdell and I presented “Establishing a SCiP List for Year-Round Discussion: Keeping the Information Ball Rolling.” Robert Allan has indeed kept the ball rolling by establishing and maintaining the SCiP Web page.

An issue which continually raises its head concerns the level at which to aim presentations at the meeting. In 1971, Donald I. Tepas queried “to whom should they [the conferences] be directed, and at what level?” (Tepas, 1972, p. 43). In 1989, Joe Sidowski again felt it necessary to articulate that the “purpose of this organization involved education and information exchange for the masses as well as for ‘sophisticated’ users” (Sidowski, 1990, p. 96). In the 14 years that I have been a member of the Society, there have always been discussions (particularly in the 1996 steering committee) concerning offering cutting edge versus introductory workshops.

Indeed, one of the central issues for recurring discussions is, “Should the conference continue, and in what format?” After the first meeting in 1971, Donald Tepas wondered, “Should future conferences be considered?” (Tepas, 1972, p. 43). In his talk in 1989, Joe Sidowski addressed the issue, and concluded that a move away from association with the Psychonomic Society “would be suicidal” (Sidowski, 1990, p. 96). During the 1996 steering committee meeting, discussions about the affiliation with the Psychonomic Society and other possible venues for the meeting continued.

FUTURE (?)

And so this brings me to the “Future (?)” of the Society. After reviewing our past, I have come to the conclusion that the more some things (hardware and software) change, the more some things will remain the same. The Society will continue to do what it does best. Members will teach their courses and conduct research and continue to look for better ways to do both, incorporating new technology as it becomes available. Courses that cover the traditional content of psychology—the limits of memory, for example—will still be taught, but more engaging methods of pedagogy will be used. Research on topics such as the bystander effect will continue to be conducted, but the Internet will be used increasingly to gather the data. Society members will constantly apply new technology to do their work differently. The themes that have recurred since the first meeting will continue to be addressed: appropriate levels of presentations, affiliation with other organizations, and the overall function of the Society. I think it is critical to do so. This continuing questioning will keep the Society vital. The abil-

ity to share our findings with like-minded professionals will revitalize us personally.

CONCLUSION

In his introductory remarks at the first meeting of what is now SCiP, Donald Tepas (1972) said that the Society "consists of a gathering of psychologists, with varying degrees of sophistication in on-line computer applications, interested in a variety of applications" (p. 42). He went on to say that it fills "a need to improve communication and educational opportunities" (p. 43). Those words are as true today as they were then.

REFERENCES

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NOTE

1. All references for presentations from 1971 through 1981 may be found in the proceedings issue of *Behavior Research Methods & Instrumentation* for the following year; all references for presentations from 1981 through 1997 (except for those marked with an asterisk) may be found in the proceedings issue of *Behavior Research Methods, Instruments, & Computers* for the following year.

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