

SCiP 2005

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Notes from the Program Chair

Welcome to the 35th annual meeting! It has been a privilege for me to oversee the formation of this year's program. This year's program is a true international conference; we received submission from all over the world from Australia to the U.K. I would not have been able to pull if off without the help of Katja Weimer-Hastings (I am not sure I will adequately fill her shoes next year!), Chris Wolfe and the members of the steering committee. I am honored to have Geoffrey Hinton as our keynote speaker and I want to extend thanks to Ulf Reips and Curt Burgess for organizing our symposia this year. Overall, I want to thank everybody who helped organize the conference this year, from the submission reviewers to our program chairs; with your help I think we have put together fabulous, interesting program of events. Finally, I want to thank the vendors for their support, please stop by their tables while at the conference. Please enjoy SCiP 2005!

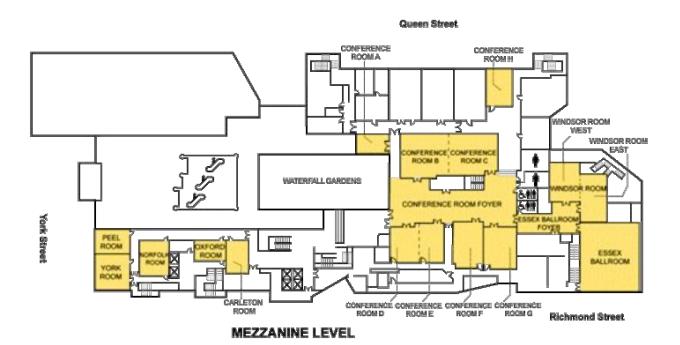
Kay Livesay

Welcome from the President

Welcome to the 35th annual meeting of the Society for Computers in Psychology. It is fitting that we mark this milestone in the cosmopolitan city of Toronto, Ontario, Canada, Fitting because Toronto is a city of immigrants from around the world and SCiP has become an increasingly international society. In this program you will find presentations from half a dozen countries. At the close of our business meeting we will welcome our first European president, Ulf Reips. Fitting because Toronto is a dynamic city, and SCiP is a dynamic organization always adapting to emerging technologies and advances in psychological science. It is also fitting because Toronto is a friendly city, and SCiP is a great place to meet and chat with people doing some of the most innovative researchers in the field. This meeting provides opportunities for psychologists to learn about cutting edge research and practical solutions to pressing research problems. I encourage you to attend our paper sessions, poster session, symposia on 10 years of Internet-based Experimental Research and Mental Representation, and a special address by our keynote speaker Geoffrey Hinton. I would like to extend my thanks to Program Chair Kay Livesay, Secretary/Treasurer Katja Wiemer-Hastings, and SCiP Web master Xiangen Huang. I hope you will find our meeting rewarding and enjoyable.

Christopher R. Wolfe

Conference Floor Map



7:30 am Registration – Conference Room Foyer Refreshments (coffee and treats) in the Windsor Room				
Conference Room B/C	Windsor Room	Conference Room D/E		
8:00-9:30 - Computer Learning and Instruction chair: Anne Britt	Vendors and	8:00-9:30 – Computer-based Research Tools chair: Ira Fischler		
8:00 Arnott, E., Wiemer-Hastings, P. & Allbritton, D. 8:15 Kremer. J. & Blasko, D. 8:30 White, R. & Nygren, T. 8:45 Britt, A., Wiemer-Hastings, K., Butler, J. & Okey, D. 9:00 Plant, R., Trapp, A. & Hammond, N. 9:15 Maclin, K. 9:35-10:50 – Modeling Semantic Content chair: Curt Burgess 9:35 Westbury, C. & Hollis G. 9:55 Durda, K., Buchanan, L. & Caron, R. 10:15 Shaoul, C. & Westbury, C. 10:35 Christiansen, M.	posters	8:00 Phelan, C. & MacLin, O. 8:15 Naumann, A., Brunstein, A. & Krems J. 8:30 Reimers, S. 8:45 Munoz, B., Magliano, J., Sheridan, R. & McNamara, D. 9:00 Maclin, O., Dixon, M. & Daugherty, D. 9:15 Heathcote, A., Sutton, K. & Bore, M. 9:35-10:50 - Computer-based Assessment chair: Joseph Magliano 9:35 Magliano, J, Millis, K., Levinstein, I. & Boonthum, C. 9:50 Birchmeier, Z., Bunn, J., Sheeks, M. & Stasser, G. 10:05 Jones, M., Mangalath P. & Kinstch, W. 10:20 Thissen-Roe, A., Scarborough, D., Chambless, B. & Jetton, M. 10:35 Kosheleva, Y.		
10:50 – Break - Refreshments in the Windsor Room!				
11:05-12:20 – Cognitive Modeling chair: Toshihiko Matsuka	Vendors and	11:05-12:20 – Symposium: "10 years of Internet-based experimental research:		
 11:05 Matsuka, T. & Chouchourelou, A. 11:25 Maki, W. S. 11:45 Vincent, R., Goldberg, Y. & Titone, D. 12:05 TBA 	posters	past and future" Organizers: Ulf-Dietrich Reips and John Krantz		

12:20-1:15 – Lunch – please see page 6 for suggested restaurants nearby 1:15-1:45 – Poster Session – in the Windsor Room				
3:15-4:45 - Key	note Address in (Conference Room B/C		
"Can computer simulati	Geoffrey Hin	ton allow us to see into the mind?"		
4:50-5:50 – Presid	lential Address in	n Conference Room B/C		
	Christopher W	Volfe		
"Cognitive	Technologies for	Gist Processing"		
5:50-6:20 - Bu	ısiness Meeting in C	Conference Room B/C		

LUNCH OPTIONS WITHIN a half-kilometer radius of the hotel

Address SHERATON Center: 123 Queen Street W, Toronto, Ontario M5H 2M9



In Hotel:

Bistro on Two (International Cuisine) Traders Bar and Grill (Casual) Le Biftheque (Steak Cuisine, Casual)

Outside of Hotel (Distance in kilometers; 0.1 kilometer = 0.06 mile)

On Queen Street

Star Wok (0.1 km) 123 Queen Street W

Cafe On the Square (0.2 km) 100 Queen Street W

Duke Of Richmond Pub (0.5 km) 20 Queen St W (Eaton Centre)

On Adélaide Street

Continental Cafe (0.2) 130 Adélaide Street W

Casa Manna; Pun Deli (0.2) 120 Adélaide Street W

Mexico Sundream-Fresh Grill (0.3) 100 Adélaide Street W

Duke Of Westminster Pub (0.4) First Canadian PI / 77 Adelaide St W

On Bay Street

Trinity Food Express (0.3) 483 Bay Street

Jenzer Deli (0.3) 390 Bay Street

Mega Wraps (0.3) 372 Bay Street

Quizno's Subs (0.3) 360 Bay Street

Saffers Grill & Wine Bar (0.4) 200 Bay Street

On King Street

Modern Wok (0.4) 145 King Street W

Szechuan Fine Chinese (0.4); Toby's Goodeats; Bourbon St Grill; Oasis Cafe 100 King Street West

Dioro Pasta & Pizza (0.4) 121 King Street West King's Garden Chinese (0.5); SEI Sushi 214 King Street West

On Simcoe Street

FUNE Japanese (0.4); Monsoon 100 Simcoe Street

On Dundas Street

H2o Restaurant & Bar (0.5) 123 Dundas Street West

Bangkok Thai (0.5) 112 Dundas Street West

Others

Jump Cafe & Bar (0.3) Commerce Court East

Ruth's Chris Steak House (0.3) 145 Richmond Street

Computer-Based Learning and Instruction

8:00-9:30 am Conference Room B/C

chair: Anne Britt

8:00 Intelligent Tutoring in the Real World: Preliminary Results for RMT in Research Methods Courses

- E. Arnott, DePaul University, earnott@depaul.edu
- P. Wiemer-Hastings, DePaul University, peterwh@cs.depaul.edu
- D. Allbritton, DePaul University, dallbrit@depaul.edu

RMT (Research Methods Tutor) is a dialog-based tutor designed to improve student understanding in psychology research methods. Currently, RMT is being used in two psychology research methods courses at DePaul University. During the 2004-2005 academic year, 93 students used the tutor. Two main hypotheses were tested: 1) the tutor condition would result in larger gain scores than the control condition, and 2) there would be an interaction between learning mode and pretest scores such that those who have a lower pretest score (initial ability) would benefit more from the tutoring condition than those with highest pretest scores. Although neither hypothesis was supported, the qualitative pattern of the data showed trends in the direction of the hypothesized interaction and the superiority of the tutor condition. A number of installation and participation problems were encountered which may have reduced statistical power. Future directions will focus on minimizing these problems.

8:15 Evaluation of Student/Personal Response Systems in the College Classroom.

- J. Kremer, Penn State Erie, The Behrend College, jdt107@psu.edu
- D. Blasko, Penn State Erie, The Behrend College, dgb66@psu.edu

Personal Response Systems (PRS) are becoming a mainstream component of many college courses. As use of this technology grows, educational professionals need to know whether the technology improves the learning experience for the student. An evaluation was conducted of the usability of PRS for novice and experienced students. Although faculty and students were generally satisfied with the experience, issues with reliability of the software and hardware and the process of registration detracted from the experience.

8:30 Interactive Web Tools for Teaching Judgment and Decision Making

R. White, Ohio State University, white.756@osu.edu, http://quantrm2.psy.ohio-state.edu/White T. Nygren, Ohio State University, nygren, 1@osu.edu, http://quantrm2.psy.ohio-state.edu/Nygren

While Internet-based demonstrations have been developed for many psychology course topic areas, there are currently few Web resources for courses on the psychology of judgment and decision-making. Some theories in decision making, such as utility and prospect theory models, may seem abstract and challenging for some students. Tools that will be made available at the Demonstrations in Judgment and Decision Making website will provide interactive demonstrations of decision making concepts.

8:45 SWAE: A program for Supporting Written Argumentative Essays

M. A. Britt, Northern Illinois University, britt@niu.edu

K. Wiemer-Hastings, Northern Illinois University, katja@niu.edu

J. Butler, Northern Illinois University

D. Okey, Northern Illinois University

Support for Writing Argument Essays (SWAE) uses regular expression matching and xml tags to identify common problems in students' essays (e.g., personalizing, listing unelaborated reasons, and non-committing) to provide students with automatic and immediate feedback. Prior research with argumentation skills found that immediate feedback is necessary for learning more advanced argumentation skills. We show that SWAE identified problems in essays equivalently to human raters and discuss how this tool may be used to improve writing.

9:00 Raising The Bar For The Teaching Of Computer-based Research Methods

R. Plant, University of York, UK, <u>r.plant@psych.york.ac.uk</u>,

A. Trapp, University of York, UK

N. Hammond, The Higher Education Academy, UK

http://www.psychology.heacademy.ac.uk/

Most departments run computer-based research methods courses. Often a balance needs be struck between overloading students and the complexity of the issues being taught. Even with modern "easy-to-use" experiment generators students can quickly become bogged-down. Many find it hard to assimilate and integrate their computer-based research classes with other courses and academic literary work. Here we outline an innovative web-based resource to support computer-based teaching and research.

9:15 Using TextSmart as a Tool to Analyze Open-Ended Feedback from Teaching Evaluations

M. K. MacLin, University of Northern Iowa, kim.maclin@uni.edu

O. H. MacLin, University of Northern Iowa, otto.maclin@uni.edu

Using the content analysis software package TextSmart, we analyzed open-ended responses from teaching evaluations from psychology courses. We present information on how to use the software, as well as report our findings as an example of a useful method for the effective conceptualization and use of open-ended student feedback regarding teacher effectiveness and course satisfaction.

Computer-Based Research Tools

8:00-9:30 am

Conference Room D/E

chair: Ira Fischler

8:00 Evaluating the New Jersey Method using PC Eyewitness

- C. M. Phelan, University of Northern Iowa, cphelan@uni.edu,
- O. H. MacLin, University of Northern Iowa, otto.maclin@uni.edu

One important variable in eyewitness identification research is lineup presentation procedure. While some policy makers have adopted sequential presentation because it has been shown to reduce false identifications, it has been modified in the field to allow witnesses multiple passes through the lineup. Using the computer program PC_Eyewitness, we examined the effect of a second pass and found that the sequential advantage was eliminated when participants took a second pass with a sequential lineup.

8:15 DEWEX: A system for designing and conducting Web based Experiments.

- A. Naumann, Chemnitz University of Technology, anja.naumann@phil.tu-chemnitz.de
- A. Brunstein, Chemnitz University of Technology, angela.brunstein@phil.tu-chemnitz.de
- J. F. Krems, Chemnitz University of Technology, krems@phil.tu-chemnitz.de http://www-user.tu-chemnitz.de/~anjna/

DEWEX is a server-based environment for developing World-Wide Web based experiments that provides many features for creating and conducting complex experimental designs on a local server. It is freely available and allows both using default features where only text input is necessary and easy configurations by the experimenter. The tool also provides substantial log file protocols on the local server which can be interpreted and analyzed very easily.

8:30 Task switching over the web using Macromedia Flash

S. Reimers, Warwick University, S.Reimers@warwick.ac.uk

Our laboratory has been involved in running psychological experiments using Macromedia Flash, from small tests on subject panels to forty-minute experiment conducted in conjunction with BBC Television, with n = 255,117. One example of Flash-based research is discussed in depth: an online task-switching experiment, with 12,000 participants. This study suggests that reaction times can be reliably measured using Flash, and that participants enjoy the experience of flash-based RT experiments.

8:45 Investigating Think-Aloud Data Collection Modality: Spoken and Transcribed Versus Typed.

- B. D. Muñoz, Northern Illinois University, bmunoz@niu.edu
- J. P. Magliano, Northern Illinois University, jmagliano@niu.edu
- R. A. Sheridan, Northern Illinois University. rsherida@niu.edu
- D. S. McNamara, University of Memphis, dsmcnamr@memphis.edu

The goal of the present study was to assess whether modality of producing think-aloud protocols had an impact on reading strategies or comprehension. Participants verbally produced or typed think-aloud protocols while reading. Reading skill was also assessed. The results indicated that only reading skill had an impact on strategies or comprehension. These results bode well for computer-based interventions and assessment tools that rely on having users type their verbal protocols rather than speak them.

9:00 Dual Monitor Preference Paradigm: A New Method to Examine Preference

- O. H. MacLin, University of Northern Iowa, otto.maclin@uni.edu
- M. Dixon, Southern Illinois University, mdixon@siu.edu
- D. Daugherty, University of Northern Iowa, pruitt@utep.edu

The study of preference in animals has previously been examined using the two-key procedure. Behavioral researchers have been able to examine choice using concurrent chains to determine response distribution across the available reinforcement schedules. Baum (1974) identified four biases that occur when animals are given choice. In the present study we examined these biases in humans related to casino-type gambling using a dual monitor preference paradigm.

9:15 Measuring 3D Understanding on the Web and in the Laboratory

- A. Heathcote, University of Newcastle, Australia, Andrew.Heathcote@newcastle.edu.au
- K. Sutton, University of Newcastle, Australia, Ken.Sutton@newcastle.edu.au
- M. Bore, University of Newcastle, Australia

We developed a psychometric test to measure understanding of three dimensional (3D) concepts represented in drawings and tested it in laboratory and web-based settings. The test consisted of five subtests using tasks previously used to investigate 3D understanding and a new test based on the idea of true length. Reliability coefficients were acceptable for both laboratory and web-based data, however, web-based participants produced significantly lower overall scores. Issues regarding complex web-based experimental tasks are discussed.

Modeling Semantic Content

9:35-10:50 am

Conference Room B/C

chair: Curt Burgess

9:35 Characterizing Large Datasets using Genetic Programming

- C. Westbury, University of Alberta, chrisw@ualberta.ca
- G. Hollis, University of Alberta, hollis@ualberta.ca

NUANCE (Naturalistic University of Alberta Nonlinear Correlation Explorer) is a platform-independent program that uses evolutionary programming to characterize relations between predictors and a dependent value (Hollis & Westbury, in press). Using new features in NUANCE, we have undertaken a large-scale synthetic analysis to map ther relationship between 15 predictors of a behavioral measure of lexical access. The results serve as a 'proof of concept' showing that NUANCE may be fruitfully used for such large-scale analyses. Both methodological and empirical findings will be discussed.

9:55 Analyzing Large Corpora to Measure Semantic Ambiguity for 61,000 English Words

- K. Durda, University of Windsor, durda1@uwindsor.ca
- L. Buchanan, University of Windsor, buchanan@uwindsor.ca
- R. Caron, University of Windsor, rcaron@uwindsor.ca

In this paper, we present a method for determining semantic associates of over 61000 English words. We analyzed word co-occurrences in a large corpus of text and then calculated various metrics to describe the semantic neighbourhoods for these words. Some of these measures were then used, together with graph theoretic clustering techniques, to calculate a measure of ambiguity for polysemous words such as *bank* and *bat*.

10:15 Towards a more psychologically relevant high-dimensional model of lexical semantics

- C. Shaoul, University of Alberta, cyrus.shaoul@ualberta.ca
- C. Westbury, University of Alberta, chrisw@ualberta.ca

The HAL (Hyperspace Analog to Language) model of lexical semantics uses word co-occurrence from a large corpus of text to calculate semantic distance between words. We have implemented a system called HiDEx (High Dimensional Explorer) that extends HAL in two ways: It removes the influence of orthographic frequency in the measure of the neighborhood density and it allows the number of words in a neighborhood to vary instead of remain constant. These two changes to the HAL model produce measures of word neighborhood density that are correlated with human lexical decision times.

10:35 Cues to Lexical Categories at the Edge of the World

M. Christiansen, Cornell University, mhc27@cornell.edu

A crucial step toward attaining adult syntactic competence is the discovery of lexical categories such as nouns and verbs. Although distributional information derived from patterns of word co-occurrence is helpful in lexical-category discovery (Mintz, 2002; Redington *et al.*, 1998), it must be integrated with other sources of information to ensure reliable acquisition (Monaghan *et al.*, in press). Here we point to potential cues internal to words—*word edges*—and quantify their usefulness for lexical-category classification through a series of (leave-one-out cross-validated) discriminant analyses involving English, Dutch, French and Japanese corpora of child-directed speech from CHILDES.

Computer-based Assessment

9:35-10:50 am

Conference Room D/E

chair: Joseph Magliano

9:35 Developing the Reading Strategy Assessment Tool (R-SAT)

- J. P. Magliano, Northern Illinois University, jmagliano@niu.edu
- K. K. Millis, Northern Illinois University, kmillis@niu.edu
- I. Levinstein, Old Dominion University, ibl@cs.odu.edu
- C. Boonthum, Old Dominion University, cboont@cs.odu.edu

The goal of this research is to develop the Reading Strategies Assessment Tool (R-SAT), which will be a computer-based assessment of reading skill. Test takers will answer questions while reading texts. Computer algorithms will be used to assess the quality of the answers by comparing them to "semantic benchmarks" that reflect different levels of understanding. In this presentation, we present an experiment that was designed to identify candidate texts and target sentences for R-SAT.

9:50 Experiences with and attitudes toward communication media predict a preference for FTF, but personality factors moderate the potential benefits of using CMC

- Z. Birchmeier, Miami University, birchmzp@muohio.edu
- J. Bunn, University of Indianapolis, bunnja@uindy.edu
- M. Sheeks, Miami University, sheeksms@muohio.edu
- G. Stasser, Miami University, stassegl@muohio.edu

In Study 1, survey responses indicate that face-to-face contexts were favored over CMC for many purposes. Perceived social presence in each media acts as a mediator between experiences with and preferences for IM and Email. Introversion and social discomfort are also significant predictors of media preferences. In a longitudinal Study 2, shy individuals who also desire to be sociable reported greater increases in satisfaction with and closeness in their online relationships.

10:05 Automatic Scoring of Open-ended Inference Questions

- M. Jones, University Colorado at Boulder, mike.jones@colorado.edu
- P. Mangalath, University Colorado at Boulder, praful@psych.colorado.edu
- W. Kintsch, University Colorado at Boulder, wkintsch@psych.colorado.edu

We examine model-based methods of automatically scoring responses to open-ended inference questions that require the reader to deduce a cause or theme not present in the text. We tested the performance of LSA, *n*-grams and a holographic binding model to represent the responses under various machine-scoring algorithms. Because inference responses are often idiosyncratic, we found that a scoring model that used generalized syntactic information in addition to semantic outperformed either semantic alone or semantics with *n*-grams.

10:20 A computerized assessment system to predict the performance of sales associates

- A. Thissen-Roe, Unicru, athissen-roe@unicru.com
- D. Scarborough, Unicru, dscarborough@unicru.com
- B. Chambless, Unicru, bchambless@unicru.com
- M. Jetton, Unicru, mjetton@unicru.com

Unicru provides a system by which individuals can apply for jobs by way of a networked computer. Incorporated within the job application is a psychological assessment, which predicts suitability for employment of performance on the job. Centralized servers process the application for hiring managers and also maintain a database of item responses and test scores. Opportunistic criterion data such as sales volume, attendance and job tenure are used to establish predictive validity. We describe the process of validating and refining a test that predicts sales volume, with results from one validation cycle.

10:35 Enhancement of Student Paper Grading with CWAT (Computerized Writing Assessment Tool)

Y. A. Kosheleva, University of Nebraska-Lincoln, ykoshele@unlserve.unl.edu

Eight teaching assistants from a large Midwestern university pilot-tested a computerized assessment system for student written projects (CWAT). The CWAT facilitates providing response-contingent feedback and automates grade computation and design of performance reports. Data collected from the participating graders indicate higher satisfaction-with-grading for CWAT-assisted than for conventional grading. The CWAT was perceived as more useful by graders with stronger beliefs in the importance of feedback for student learning and graders with greater grading loads.

11:05-12:20 am

Conference Room B/C

chair: Toshihiko Matsuka

11:05 Model of Category Learning Based on Dynamic, Multi-Objective Multi-Hypothesis testing

- T. Matsuka, Stevens Institute of Technology, tmatsuka@stevens.edu
- A. Chouchourelou, Rutgers University Newark, arieta@psychology.rutgers.edu

In the present work, we attempt to generalize and extend a recently introduced computational model of human category learning (SCODEL). Both models are based on hypothesis-testing-like learning algorithm based on a stochastic optimization method. The uniqueness of the currently introduced model (DMOH) lies in that it mathematically accounts for dynamically balancing the influence of different types of contextual factors and bears the capability of creating and testing multiple hypotheses.

11:25 MINERVA Comes of Age: Extending a Multitrace Memory Model to Associative Judgment and Free Association

W. S. Maki, Texas Tech University, Bill.Maki@ttu.edu

In the MINERVA class of models, each experience is represented as a unique trace in memory. Traces consist of vectors of features representing environmental co-occurrences. Performance is determined a parallel match between current experience (a probe) and the stored traces. In MINERVA 3, matching is limited to a random sample of cue-relevant traces and both cue and target words influence retrieval. MINERVA 3 correctly simulates the linear relation between associative judgments and free association probabilities.

11:45 Anagram Software for Cognitive Research That Enables Specification of Psycholinguistic Variables

- R. D. Vincent, McGill University, bert@phalarope.com
- Y. K. Goldberg, McGill University, vkg18@yahoo.com
- D. Titone, McGill University, dtitione@psych.mcgill.ca www.mcgill.ca/coglab/

Anagram tasks are frequently used in cognitive research, however, currently available software does not allow experimenters to flexibly generate new anagrams or to characterize existing anagrams using psycholinguistic criteria. We present anagram software that interfaces with CELEX-2, an internationally recognized psycholinguistic database. This software allows users to capitalize on lexical variables thus enabling direct control of psycholinguistic variables that may influence the cognitive processes involved in anagram solution.

12:05 TBA

Symposium: 11:05-12:20

"10 year of internet-based experimental research: past and future"

Organizers: Ulf-Dietrich Reips and John Krantz

This symposium marks the end of the first decade of Web experimenting and opens up the view for future developments appearing at the horizon. Its historic perspective illuminates the leading role SCiP meetings have had as a central platform for the methodological discussion about Internet-based research. The presenters, many of whom are the pioneers and promoters of this field, will provide data, insights and outlooks on chances, challenges and practice in Internetbased experimental research.

Collecting data in surfer's paradise: Internet-based research yesterday, now, and 11:05 tomorrow.

Ulf-Dietrich Reips, Universität Zürich, u.reips@psychologie.unizh.ch

This talk will introduce the topic of the symposium. It is argued that the influence of Internet-based research methodology has not yet lived up to its potential. While it is used by ever more researchers, there are limits as to how and by whom (mostly along discipline and generation lines). Data from Web experiments that have been conducted during the first decade of Internet-based research will be presented along with descriptives of the development this methodology has taken.

A Web-Based Program of Research on Judgment and Decision Making

Michael Birnbaum, California State University, Fullerton, mbirnbaum@fullerton.edu

This talk will summarize findings obtained from a ten-year program of Web-based research. Advantages and disadvantages will be discussed, including comparison of data between lab and Web studies

Equivalence of Internet-administered and traditional personality tests: What experimental evidence shows.

Tom Buchanan, University of Westminster, buchant@wmin.ac.uk http://users.wmin.ac.uk/~buchant

This study compared scores on a Five Factor personality inventory and a measure of depression and anxiety, administered either via the Internet or paper and pencil. Participants, who were randomly assigned to conditions, completed the measures either in the presence of an experimenter (supervised) or alone (unsupervised). There was a main effect of participation medium on Depression scores, with higher scores in those participating online. There were no main effects due to supervision, but significant interactions between supervision and assessment medium for Openness to Experience and perceived anonymity. Implications of these findings are discussed.

10 years of Internet-based experimental research: Media Development?

John Krantz, Hanover College, krantzj@HANOVER.EDU

One of the very first online studies was also one of the most groundbreaking. Norma Welch presented audio stimuli in experiments embedded in her tutorials. In fact, many of the early studies have used images, but since that time few studies have done much with media. In fact, despite the relatively media rich beginning, today's online research is dominated by surveys. This paper will examine some of the developments of media and how they have been used in research and potential obstacles for more extensive use of media in research.

Eight Years of PsychExperiments

John Williams, University of Northern Iowa, John.Williams@uni.edu

PsychExperiments was originally established in 1997 as an online psychology laboratory provides cognitive and social psychology studies. Psychology professor, Kenneth McGraw, electrical engineering professor, Mark Tew, and then psychology graduate student, John E. Williams have implemented the site as a co-laboratory, where the research and instructional community can collect, disseminate, and archive research data. Developed with funds from the U.S. Department of Education's FIPSE program (Fund for the Improvement of Post-Secondary Education) and NSF's Course Curriculum and Laboratory Improvement program, PsychExperiments has continued to provide a place for researchers, instructors, and students to view, participate in, and develop online research activities.

Challenges to using the Internet for social sciences research

William C. Schmidt, University at Buffalo, wcswcs@buffalo.edu http://www.acsu.buffalo.edu/~wcswcs

As the content of the symposium for which this paper is a part attests, the use of the Internet as a medium for the solicitation of subjects, and the collection of data is becoming widely accepted. There are however, a wide variety of factors that researchers must consider when using this medium. Then current presentations raises some challenges for internet-based social science researchers to consider when using this medium. Constructively, I will attempt to point out ways that researchers might compensate for or minimize problems associated with these challenges. Examples of study approaches exhibiting many of these concerns will be provided.

Recording and Analysis of complex behaviors on the WWW

Michael Schulte-Mecklenbeck, Columbia University, research@schulte-mecklenbeck.com

This talk wants to shed light on the development of a new experimental setting that makes use of process data collected through the Internet. Specifically the method to record data in a database, experimental tools that collect such process data like MouselabWeb and WebDiP and new methods to analyze them (Transition Matrices, Markov Models and visualization tools) are discussed. Finally the usage of Chat Bots to run experiments in a very naturalistic setting is introduced.

Poster Session: 1:15-1:45 pm

1) SCiP at 35: An Idiosyncratic History of the Society for Computers in Psychology

C. R. Wolfe, Miami University, WolfeCR@muohio.edu http://tappan.wcp.muohio.edu/home/index.html

SCiP history is divided into the Paleozoic, Mesozoic, and Cenozoic era. Personal highlights include the first symposium on psychology and the Web, Rumelhardt's explanation of connectionism, and Harnad's discussion of "freeing" the journal literature. I observe that part of our mission is learning to conduct high quality scientific research with consumer grade electronics. SCiP is an increasingly international organization and graduate students are welcome, but we should become more inclusive and make membership more meaningful.

2) Transformation of Flow in Rehabilitation: The Role of Advanced Communication Technologies

- G. Riva, Istituto Auxologico Italiano, Catholic University of Milan
- G. Castelnuovo, Istituto Auxologico Italiano, Catholic University of Milan
- F. Mantovani, Istituto Auxologico Italiano, University of Milan-Bicocca giuseppe.riva@unicatt.it

Authentic rehabilitation requires the active participation of patients, and their involvement with opportunities for action and development. Within this framework, this paper outlines the possibility of using two emerging computing and communication technologies - Ambient Intelligence (AmI) and Virtual Reality (VR) - for a new breed of rehabilitative applications based on a strategy defined as "transformation of flow." Transformation of flow is a person's the ability to exploit an optimal (flow) experience to identify and use new and unexpected psychological resources as sources of involvement. We identify the feeling of "presence" – the feeling of being in a world that exists outside one's self – as the theoretical link between the technology and rehabilitation. AmI and VR are used to trigger broad empowerment processes induced by a high sense of presence, leading to greater agency and control over one's actions and environment.

3) An Exploratory Analysis of Internet Addiction Among College Students: causes, effects and interventions.

P. J. Antinoro, Arizona State University and Yuma School District-One

This study explores the influence that personal relations and communications within Internet chat rooms has on a user's Internet Predisposition. Two measures of Internet Predisposition were utilized: a quantitative measurement based upon time spent in chat rooms and the Internet, and a four item Internet Predisposition Scale (IPS). Results of the study indicate that the IPS is significantly correlated with certain personal relations and communication variables.

4) A Quantitative Technique for Estimating the Components of Strategic Monitoring for Prospective Memory Targets: Adopting a Retrieval Mode and Frequency and Intensity of Checking for Targets

M. J. Guynn, New Mexico State University, mguynn@nmsu.edu

Prospective memory is memory to perform an intended action at an appropriate point without an explicit request and can be mediated by monitoring for the targets that indicate when it is appropriate to perform the intended action. A technique to estimate the components of monitoring – adopting a retrieval mode and checking for the targets – will be demonstrated. Future work will focus on manipulating variables that affect each component and on evaluating the resulting estimates.

5) Creating Images for Perception Research

- C. Koch, George Fox University, ckoch@georgefox.edu, http://cognition.georgefox.edu
- D. Hansen, George Fox University, dhansen@georgefox.edu
- B. Strandy, George Fox University, bdstrand@georgefox.edu
- B. Wilson, George Fox University, bwilson@georgefox.edu

Partially deleted line drawings are often used in object recognition studies. In this tutorial, software is demonstrated that allows researchers to manually delete pixels of a line drawing (percent deletion is calculated as the image is fragmented) or to select a random deletion process based on percent deletion. An online database is also described that allows researchers to catalog images for use in other studies.

6) Examining preference for near miss densities using the triple play slot machine

- O. H. MacLin, University of Northern Iowa, otto.maclin@uni.edu
- D. Daugherty, University of Northern Iowa, pruitt@utep.edu
- M. Dixon, Southern Illinois University, mdixon@siu.edu

As the legalization of gambling increases, so does the number of potential problem gamblers. To understand gambling behavior, it is important to understand the reinforcers involved. One such reinforcer related to slot machine play is referred to as the 'near miss' phenomenon occurring when all but one of the symbols need to win appear on the payout line. Research has shown that participants play longer with a 30% density of near misses (Kassinove & Schare, 2001). The research presented here examined preference for near miss densities using the "Triple Play" slot simulation.

7) A case study of online scheduling for psychological research

- L. A. Valdes, St. Cloud State University, lavaldes@stcloudstate.edu
- D. S. Protolipac, St. Cloud State University, dsprotolipac@stcloudstate.edu

In Spring 2005 the Psychology Department at SCSU started to use Experimentrak (Experimentrak.net), a commercial online scheduler for research participation. Students in general liked the system and there was a dramatic decrease in missed appointments. Although some of our researchers had difficulty with some of the features of the program, the department

plans to continue to use an online scheduler. A more formalized study comparing the three commercially available systems is planned.

8) Language History Questionnaire for L2 Research: A Web-Based Interface

P. Li, University of Richmond, pli@richmond.edu

S. Sepanski, University of Richmond

X. Zhao, University of Richmond

Website: http://cogsci.richmond.edu/questionnaire/L2 questionnaire.html

A web-based interface is developed to facilitate researchers to collect language history information on-line. Most researchers use their own versions of language history questionnaires for specific studies in second language acquisition. Although these versions of questionnaires all differ from one another in some respects, there is a significant amount of overlap between them. In particular, there are crucial dimensions that most investigators consider important to include in such a questionnaire. Here we identify such crucial dimensions by examining the most commonly asked questions in 41 published questionnaires, and on the basis of our analyses we propose a generic language history questionnaire. Validity and reliability of the proposed questionnaire are assessed through discriminant function analysis, multiple regression, and a split-half reliability test. Investigators in L2 or bilingualism research may use or adapt our generic form through the web-based interface. Subjects can enter some or all of the information on the web, and the results are automatically saved as a rtf output file on the desktop.

9) Assessing Three Types of Student Knowledge of Academic Dishonesty Using plagiarismtest.org

C. Burgess, University of California, Riverside, <u>curt@ucr.edu</u>

J. Scheirer, University of California, Riverside, jason.scheirer@gmail.com,

C. Decker, Chaffey College, cathy@plagiarismtest.org

http://hal.ucr.edu/~curt

Plagiarismtest.org provides an online resource for evaluating student knowledge on APA and MLA style and citation ability. The web site has undergone further upgrades. A taxonomy of academic dishonesty is available for faculty. A more general test of plagiarism knowledge assesses ethical issues and a test of general plagiarism knowledge has been added to the site. This online test helps in decreasing plagiarism and complaints in plagiarism cases, as well as providing empirical data to improve learning outcomes and aid in grievance cases.

10) Genetic Granular Cognitive Fuzzy Neural Networks for the Study of Relational Learning

D. A. Washburn, Georgia State University, dwashburn@gsu.edu

Y. Zhang, Georgia State University, zhang@taichi.cs.gsu.edu

C. Lin, Georgia State University

J. Li, Georgia State University

N. Barrett, Georgia State University

Artificial neural networks based on the basic principles of biological neural networks have been used in cognitive and computer-science applications. However, there are long-term challenges to traditional supervised learning algorithms for a neural network. This research focuses on the new

architecture of granular cognitive neural networks that can solve the two traditional problems (the black box and the curse of dimensionality) and also provide insight into the emergence of relational learning from associative experience.

11) Transcranial Doppler and Eye-Movement Measures of Inattention

- D. A. Washburn, Georgia State University, dwashburn@gsu.edu
- F. James, Georgia State University
- N. Barrett, Georgia State University

Transcranial Doppler (TCD) uses sonography to provide a noninvasive method of characterizing the brain activity of the left and right cerebral hemispheres. We examined TCD responses to a sustained-attention task, and compared these measures to other psychophysiological data from an eye-tracker / pupillometer. Both cerebral blood-flow and occulomotor behavior relate uniquely to variations in attention, suggesting that both apparatus may be useful for detection, diagnosis, and remediation of inattentiveness.

12) Political Semantics and Ideology of Newspaper Reporters

- L. A. Maier, University of California, Riverside, reesespieces4@gmail.com
- C. Burgess, University of California, Riverside, curt@ucr.edu
- M. Johnson, University of California, Riverside, martin.johnson@ucr.edu
- J. Willits, University of California, Riverside, jwill003@ucr.edu

The Hyperspace Analogue to Language model (HAL) was used to investigate the content differences of political journalism. Political belief surveys were used to categorize journalists as liberal, moderate, or conservative. Writing samples from these journalists were then obtained, which served as input to the HAL model to build semantic memory matrix for each journalist. A set of key political concepts were compared using these larger matrices. The results suggest that the model can be used to distinguish writing samples based on ideological content.

13) HAL sleeps with the fishes: Modeling dolphin whistle sequences in a high-dimensional semantic space

- A. B. Kaufman, University of California, Riverside
- C. Burgess, University of California, Riverside
- B. McCowan, University of California, Davis

The Hyperspace Analog to Language (HAL) model analyzes language in humans by encoding the complex statistical regularities in language using a global co-occurrence learning algorithm (Lund & Burgess, 1996; Burgess 2000). HAL was used to quantify contextual relationships in the Bottlenose Dolphin (*Tursiops truncatus*). Preliminary results suggest that most communication involves two emergent semantic dimensions: cognitive complexity and activity level. Challenges to building such a model will be discussed.

14) SkepticalPsychology.org: A Resource for Critical Thinking about Questionable Domains

- C. Burgess, University of California, Riverside, curt@ucr.edu
- C. Christensen, University of California, Riverside, chase@skepticalpsychology.org
- T. Tillotson, University of California, Riverside
- A. Hatzopoulos, University of California, Riverside, alex@semantics.ws
- C. Decker, Chaffey College, cathy@plagiarismtest.org

Psychology, of all the scientific disciplines, probably has had its credibility most affected by pseudo-science because of its abstract concepts and the intimate relationship between a person's day-to-day life and the discipline. What passes for psychology, as seen on talk shows and in the self-help section at the bookstore, is not a product of the discipline. SkepticalPsychology.org catalogues the questionable domains of psychology. Information sources for each instance (e.g., Facilitated Communication), a description and sources for the skeptical view, and empirically-based information sources are provided. The goal of SkepticalPsychology.org is to provide a central portal for critical thinking about psychological domains.

Symposium: 1:45-3:00 pm

"Mental Representations: Human, Machines, Something in Between"

Organizer: Curt Burgess

1:45 Assumptions and Presumptions about Word Relationships for Consumer Consumption

Curt Burgess, University of California, Riverside, curt@citrus.edu http://hal.ucr.edu/

Considerable time has passed since Galton (1879) published his research with word associations (Brain: A Journal of Neurology, II) where he chronicled the metrics of mental operation. Osgood was the first to systematically attempt a description of the features of word meaning in th 1940s. As a child, he imagined meaning in the world as a high-dimensional space. B.F. Skinner, the well known psycholinguist, questioned the notion of cognitive associations, but acknowledged that at least word associations correspond to actual language use. The assumptions of our thinking about word relationships are discussed, as well as rarely mentioned presumptions. It may be that Skinner was not as radical as he should have been.

Feature-based approaches to meaning

Ken McRae, University of Western Ontario, kenm@uwo.ca http://www.ssc.uwo.ca/psychology/faculty/mcrae_res.htm

Theories of word meaning based on semantic features have been used in Cognitive Psychology for quite some time now. They had a previous life in the straight-up Psychonomics-style Cognitive Psychology of the 1970's. They died down during the 1980's in the field of Concepts and Categorization, which then became dominated by higher level "theory-theories". However, feature-based theories, and in particular, research based on semantic feature production norms, rose to prominence again, but this time with a somewhat different bent. Semantic features have proven to be incredibly useful for studying concepts/word meaning from a computational cognitive neuroscience perspective. That is, they are now being used as the basis for connectionist models of word meaning, experiments regarding how normal adults compute word meaning and produce language, theories of the types of damage underlying various neurological impairments, and neuroimaging studies. Thus, they have been proven useful for understanding humans, and potentially for machines as well.

Semantic Representation in a Dynamical Learning Model: the Role of Lexical Cooccurrences

Ping Li, University of Richmond, pli@richmond.edu http://cogsci.richmond.edu/

To pursue a scalable computational model of lexical semantic representation (DevLex), we combined a learning mechanism that detects lexical co-occurrence in context (similar to HAL) and a set of 'grounded' semantic features (based on WordNet). The representations in DevLex dynamically evolve to reflect what happens in the early stages of children's lexical acquisition. In

particular, with these 'hybrid' representations DevLex can capture the emergence of major lexical and grammatical categories through self-organization as implemented in self-organizing feature maps.

Human and Computer Generated Models of Association

Jon Willits, University of California, Riverside, jon@semantics.ws http://hal.ucr.edu

Association strength has been used as a predictive model for a number of semantic tasks like semantic priming and cued recall, despite its lack of a strong theoretical underpinning. A recent priming study has shown that the HAL model (which models associations in the learning environment) is able to account for significantly more variance in a semantic priming study than word association. Further, several statistical models (HAL, LSA, TOPICS) have been used to predict word associations themselves. It is suggested that the time may be coming for the replacement of word associations with computational models of association.

Experimental Software Design and Visual Processing

1:45-3:15 pm

Conference Room D/E

chair: Harold Greene

1:45 CogExp: A stand-alone, freeware experiment generator program for PCs

I. Fischler, University of Florida, ifisch@ufl.edu www.psych.ufl.edu/~fischler

A variety of software systems for generating computer-based experiments in psychology have been developed in recent years. CogExp, a freeware generic experiment generator available at my website, http://www.psych.ufl.edu/~fischler, is a compact (600K), stand-alone executable program that provides a simple, but reasonably powerful and flexible, framework for running a range of designs for psychology experiments on PC's. We describe its structure, capabilities and limits.

2:00 PyEPL: A Cross-Platform Experiment Development Library

 $A.\ Geller,\ University\ of\ Pennsylvania,\ aaronsg@sas.upenn.edu$

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J. Jacobs, University of Pennsylvania, jojacobs@mail.med.upenn.edu

M. J. Kahana, University of Pennsylvania, kahana@psych.upenn.edu http://memory.psych.upenn.edu/programming/pyepl

PyEPL (the Python Experiment Programming Library) is a Python library which allows cross-platform and object-oriented coding of psychology experiments. It provides functions for placing text and images onscreen, as well as playing and recording sound, and is capable of rendering 3D virtual environments for spatial navigation tasks. It interfaces with Activewire USB cards for synchronization of experimental events with EEG recordings. It is currently tested for Mac OS X and Linux.

2:15 As the eyes move during visual search

H. H. Greene, University of Detroit Mercy, greenehh@udmercy.edu

Eye movements towards the target were evaluated with direction-coded displays. All participants were denied peripheral preview by a gaze-contingent paradigm in one condition. Early in a search trial fixations did not rapidly converge on the target. Later, fixations monotonically moved towards the target. This suggests that image-driven processes are strongly influential early in a search trial. The result demonstrate the utility of fixation-by-fixation analyses for visual search theories. Finally, limitations of the methodology are discussed.

2:30 Timing of Screen Events: An Empirical Test of Software, Hardware, and Operating Systems

- G. Bradshaw, Mississippi State University, glb2@ra.msstate.edu
- I. Shields, Mississippi State University

Contemporary operating systems, designed to support multiple concurrent functions, are more autonomous than previous generations of operating systems, which raises the question about the accuracy of timing for experimental research. Here we report on a series of experiments on computer displays, including both video tube and LCD displays, tested under both Windows XP and Mac OS X, with software drivers including Superlab, Java, Quicktime, and animated GIF files.

2:45 Three common misconceptions causing bad timing for most experimenters and how to correct for them.

W. Schneider, University of Pittsburgh, wws@pitt.edu

Abstract Millisecond timing precession has been a difficult to reach goal on personal computers. Even in well developed software three misconceptions/hardware limitations cause serious problems. These problems are: a) display card refresh rates are rarely integer multiples of Hz, b) that display generation time is significant delay in stimulus generation; c) that significant numbers of display cards either falsely or poorly report top of screen events. Data on timing from 3274 users over hundreds of computers is summarized. We expect that without precautions, 80% of programs are likely to produce potentially erroneous timing problems for short interval stimulus experimental displays. Solutions for the problems are presented.

3:00 Macromedia Flash as a method to implement psychological experiments

- J. Quesada, Warwick University, J.Quesada@warwick.ac.uk
- S. Reimers, Warwick University

Macromedia Flash, a browser plug-in and programming language that specializes in deploying animations using vector and bitmap graphics, sound and program code and bidirectional streaming video and audio. This paper reviews Flash as a method to implement psychological experiments. Advantages (e.g., ubiquitous, video and audio integration, vector graphics that enable morphing, absolute positioning) and disadvantages (e.g., there appear to be issues in displaying items on the screen with millisecond accuracy, there exists variability in color and resolutions in different users) are discussed.



Keynote Address

Geoffrey Hinton University of Toronto

"Can computer simulations of the brain allow us to see into the mind?"

I will describe an efficient, unsupervised learning algorithm that creates multiple layers of representation. First it creates features, which capture the higher-order correlations between pixels. Then it creates features of features that capture the higher-order correlations between features, and so on. As each new layer of representation is added there is a guarantee that the overall model of the sensory data gets better. The top levels of the network form an associative memory in which classes are represented by low-energy valleys that have as many degrees of freedom as the allowable variations within the class.

When this recursive learning algorithm is applied to images of highly variable hand-written digits, it creates an excellent model that allows better discrimination that any previous learning algorithm. The representations in the top-level associative memory are patterns of activity distributed over thousands of neurons so it is impossible to tell what they mean just by looking at them. However, the learning algorithm also produces top-down weights that allow images to be recreated from the high-level representations. So it is easy to see what is going on in the mind of the neural network as the top level associative memory settles into an energy valley.

Presidential Address

Christopher Wolfe Miami University

"Cognitive Technologies for Gist Processing"

5:50-6:20 pm

Conference Room B/C

Business Meeting

Minutes of the Annual Meeting of the Steering Committee of the Society for Computers in Psychology Wednesday, November 17, 2004

1. Welcome and Introductory Remarks by the President Robert Proctor

President Robert Proctor opened the meeting by thanking all members of the steering committee for their contributions over the last year. He thanked Secretary - Treasurer Katja Wiemer-Hastings, Program Chair Roman Taraban, and Web administrator Xiangen Hu for their work. Special thanks were also expressed for Michael Birnbaum's generous donation to the Society to allow first-time presenting students to register for free.

2. Secretary Report

Election Results. Katja Wiemer-Hastings announced Ulf Reips as the next President-Elect, and Gary Bradshaw, Bill Maki, Jon Vaughan, and John Williams as new members of the steering committee.

Conference Registration. Pre-registration was running strong at 41, up from 26 the previous year. 21 of these registrations were done online; six students registered with waived registration fees thanks to the Michael Birnbaum endowment

Finances. The current status of the SCiP account is stable at 11,680.06, which is comparable to previous years, but also contains a considerably higher amount of income from pre-registration compared to previous years. Overall, expenses from the previous conference exceeded the income through vendors and registration. The increase in registration rates to a flat rate of \$50 (\$30 for students) may effectively deal with this imbalance, but this trend will need to be monitored carefully over the next years to decide on registration rates and need for additional income sources (e.g. website).

Katja Wiemer-Hastings moved to pay \$25 to Xiangen's assistant for his work on setting up the online payment for this year's conference registration. The motion was seconded by Chris Wolfe and passed unanimously.

3. Report of the Website

Report. Xiangen invited comments and suggestions. Some feedback on the website was that the website is overloaded. Two suggestions in this context were to provide broader links to facilitate finding of information, and to set up automatic outdating of information. Roman Taraban proposed designated personnel for regular maintenance of the website. Xiangen Hu suggested to divide the website into sections to be administered by separate individuals. The website currently has 77 registered users.

Advertising. There was consensus that the Society should explore advertising on the website. General agreement was that web site advertisers should be obviously linked to the SCiP mission. Examples include (but are not limited to) publishers of SCiP relevant books and journals; developers and vendors of computer systems and tools for research and education in Psychology, as well as software for research and education. The number of ads for the trial time will range from four to five links / logos. Given the overwhelming support for the proposal, the committee decided to offer the SCiP vendors at the present conference the opportunity to place a free ad / logo link on the web site for 6 months. There was discussion of the possibility to link web advertising to conference vendor rates to increase the attractiveness of the package.

Formation of advertising committee. Ultimately, the major functions will be the review of vendor proposals, communication of criteria and advertising conditions to potential vendors, and (if needed) active solicitation of vendors. For the current year, the main responsibility will be to set up guidelines and prices, to be submitted for comments to the entire committee. Volunteers for this committee are Kay Livesay, Ulf Reips, and Xiangen Hu.

Suggestions for other web site uses:

- **1. Forum / Discussion Groups** To be brought up for discussion at Society business meeting.
- 2. Christopher Wolfe volunteered to set up a proposal with Gary Bradshaw to set up an **expert consulting** database

4. BRM archive report

Jon Vaughan gave a report on the BRM archive. The response has been very positive, and the archive currently contains around 60 research groups. Jon Vaughan announced an editorial regarding the rationale of the archive in the August issue of BRM. The link to the archive is www.psychonomic.org/archive.

5. Report of Program Chair

Roman Taraban gave the report on the 2004 conference program. He thanked the reviewers for their assistance. There was an increase in submissions from 46 to 51. The vendor rate dropped this year, which may be economy related. Roman introduced user discussion group as a new element for the conference. Altogether, 33 spoken presentations, 8 talks in symposia, and 7 posters were accepted for the conference; 2 submissions were rejected.

New Program Chairs will be Kay Livesay, assisted by Curt Burgess.

Respectfully submitted by Secretary / Treasurer Katja Wiemer-Hastings

Minutes of the Annual Business Meeting of the Society for Computers in Psychology Thursday, November 18, 2004

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