

JOCK DOUGLAS MACKINLAY

CURRICULUM VITAE

January 2003

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PERSONAL DATA	Born: Nuremberg, Germany Citizenship: United States Marital Status: Married, two children	
EDUCATION	Ph.D., Computer Science Stanford, 1986 Advisor: Michael R. Genesereth Title: Automatic Design of Graphical Presentations Stanford, 1980 M.S., Computer Science UC Berkeley, 1975 B.A. (with honors), Mathematics and Computer Science	
PRESENT POSITION	1986-Present	Member of Research Staff User Interface Research Group (Xerox) Palo Alto Research Center Palo Alto, CA, 94304
PREVIOUS POSITIONS	2000-2001 1979-1986 1977-1978 1976-1977	Visiting Professor, University of Aarhus, Denmark Research Assistant, Stanford University Systems Analyst, Minimax Research Corporation, Berkeley, CA Systems Analyst, Bank of America, San Francisco, CA
EDITORIAL POSITIONS	1997-Present	Associate Editor <i>ACM Transactions on Computer-Human Interaction</i>
XEROX PROFESSIONAL ACTIVITIES	1995-2000 1998-Present	Technology Assessment Panel, Novel Marking Rated patent proposals approximately monthly Intellectual Property Working Group
OTHER PROFESSIONAL ACTIVITIES	2002 1996 1992 1991 1991, 1992, 1995, 1999, 2001	Advisory Board Human-Computer Interaction Lab, University of Maryland Papers Co-chair, CHI'96, ACM Conference on Human Factors in Computing Systems Conference Chair, UIST'92, ACM Symposium on User Interface Software and Technology Program Chair, UIST'91, ACM Symposium on User Interface Software and Technology Papers Review Committee, CHI, ACM Conference on Human Factors in Computing Systems

	1990, 1992, 1993	Papers Review Committee, SIGGRAPH, ACM Conference on Computer Graphics and Interaction
	1990, 1997, 1998	Papers Review Committee, UIST, ACM Symposium on Human Factors in Computing Systems
	1989	Panels Chair, UIST'98, ACM Symposium on Human Factors in Computing Systems
PROFESSIONAL MEMBERSHIPS		Association for Computing Machinery Special Interest Group on Computer-Human Interaction (SIGCHI) Bay Area Chapter of SIGCHI IEEE Computer Society
COURSES & LECTURE SERIES	2001	<i>User Interfaces of Mobile Devices</i> , Spring term advanced course, co-taught with Polle Zellweger, University of Aarhus, Denmark
	2000	<i>Information Visualization</i> , Fall term advanced course, University of Aarhus, Denmark
	1992	<i>Automatic the Design of Effective Graphics for Intelligent User Interface</i> , Full day tutorial (with S. Feiner and J. Marks) Tutorial at CHI'92, ACM Conference on Human Factors in Computing Systems, May 5, 1992 Tutorial at Visualization'92, IEEE Conference on Visualization, October 20, 1992 Tutorial at VL'92, IEEE Symposium on Visual Languages, September 18, 1992
	1987	<i>Documentation Graphic</i> , Full day tutorial (with R. Beach, M. Stone, and C. Bigelow) Tutorial at SIGGRAPH'87, ACM Conference on Computer Graphics and Interaction Tutorial at CHI'87, ACM Conference on User Interfaces in Computing Systems
	1984	<i>Introduction to Computer Programming</i> , Stanford University
PRODUCTS	1996	OASYS-Win, Fujitsu, Ltd (Visualizations based on perspective wall [Mackinlay, Robertson, & Card, 1991] and cone trees [Robertson, Mackinlay, & Card, 1991])
	1995	Visual Recall (Visualizations based on perspective wall [Mackinlay, Robertson, & Card, 1991] and cone trees [Robertson, Mackinlay, & Card, 1991])
STUDENTS	2002-3	PhD. Committee for Chris Stolte, Stanford University, Department of Computer Science
	2002	PhD. Committee for Kasper Hornbaek, University of Copenhagen, Department of Computing
	1999-2000	PhD. committee for Mei Chuah, Carnegie Mellon University, School of Computer Science.
	1992	MS. committee for Grace Colby, MIT Media Lab.

SUMMER INTERNS SUPPERVISED	2002	Zhiyun Li, Hub and spoke browser
	2000	Lance Good, Spatial hypertext for sensemaking
	1999	Susan Harkness Regli, Fluid Documents studies
	1997	Takeo Igarashi, Fluid Documents
	1993	Rob Deline, 3D Visualization
OTHER	1994-2000	Board Member or Board President Palo Alto Community Child-Care (PACCC)

BIBLIOGRAPHY

BOOKS

Card, S. K., Mackinlay, J. D., & Shneiderman, B. (1999). *Information Visualization: Using Vision to Think*. San Francisco, California: Morgan-Kaufmann.

PAPERS IN REFEREED ARCHIVAL JOURNALS

Mackinlay, J. D. (2000). Opportunities for Information Visualization. *IEEE Computer Graphics and Applications*, January/February, 22-23.

Rao, R., Pedersen, J. O., Hearst, M. A., Mackinlay, J. D., Card, S. K., Masinter, L., Halvorsen, P. K., & Robertson, G. G. (1995). Rich Interaction in the Digital Library. *Communications of the ACM*, 38(4), 29-39.

Robertson, G. G., Card, S. K., & Mackinlay, J. D. (1993). Non-immersive Virtual Reality. *IEEE Computer*, 26(2 February), 81-83.

Robertson, G. G., Card, S. K., & Mackinlay, J. D. (1993). Information Visualization Using 3D Interactive Animation. *Communications of the ACM*, 36(4 April), 57-71.

Card, S. K., Mackinlay, J. D., & Robertson, G. G. (1991). A Morphological Analysis of the Design Space of Input Devices. *ACM Transactions on Information Systems*, 9(2 April), 99-122.

Mackinlay, J. D., Card, S. K., & Robertson, G. G. (1990). A Semantic Analysis of the Design Space of Input Devices. *Human-Computer Interaction*, 5(2-3), 145-190.

Mackinlay, J. D. (1986). Automating the Design of Graphical Presentations of Relational Information. *ACM Transactions on Graphics*, 5(2, April), 110-141.

Mackinlay, J. D., & Genesereth, M. R. (1985). Expressiveness and Language Choice. *Data and Knowledge Engineering*, 1(1, June), 17-29.

REFEREED CONFERENCE PAPERS

P. Zellweger, J. Mackinlay, L. Good, M. Stefik, P. Baudisch. City Lights: Contextual views in minimal space. *Conference Companion of CHI 2003, to appear*.

Olston, C., & Mackinlay J. Visualization Data with Bounded Uncertainty, *IEEE Symposium on Information Visualization, October 2002*.

Bouvin, N.O., Zellweger, P.T., Grønbaek, K., Mackinlay, J.. Fluid annotations through open hypermedia: using and augmenting emerging Web standards. *Proceedings of 11th International World Wide Web Conference (ACM Refereed Paper Track), May 2002*.

Kirkeby, A., Zacho, R., Mackinlay, J., Zellweger, & P. TrekTrack: a round wristwatch interface for SMS authoring. *Proceedings of ACM Ubicomp'2001*.

- Zellweger, P., Bouvin, N.O., Mackinlay, J., & Jehøj, H.. Fluid annotations in an open world. *Proceedings of ACM Hypertext 2001*, 9-18.
- Zellweger, P., & Mackinlay, J. The Fluid Reading Primer: animated decoding support for emergent readers. *Proceedings of ED-MEDIA 2001*, Tampere, Finland.
- Zellweger, P. T., Regli, S. H., Mackinlay, J. D., & Chang, B.-W. (2000). The Impact of Fluid Documents on Reading and Browsing: An Observational Study. *Proceedings of CHI'2000, ACM Conference on Human Factors in Computing Systems*, The Hague, Netherlands. to appear.
- Chang, B.-W., Mackinlay, J. D., Zellweger, P. T., & Igarashi, T. (1998). A Negotiation Architecture for Fluid Documents. *Proceedings of UIST'98, ACM Symposium on User Interface Software and Technology*. pp. 123-132.
- Chi, E. H., Pitkow, J., Mackinlay, J. D., Pirolli, P., Gossweiler, R., & Card, S. K. (1998). Visualizing the Evolution of Web Ecologies. *Proceedings of CHI'97, ACM Conference on Human Factors in Computing Systems*. pp. 400-407.
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- Zellweger, P. T., Chang, B.-W., & Mackinlay, J. D. (1998). Fluid Links for Informed and Incremental Link Transitions. *Proceedings of Hypertext'98*. pp. 50-57.
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- Robertson, G. G., & Mackinlay, J. D. (1993). The Document Lens. *Proceedings of UIST'93, ACM Symposium on User Interface Software and Technology*, Atlanta, Georgia, November. pp. 101-108.
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- Rao, R., Card, S. K., Jelinek, H. D., & Mackinlay, J. D. (1992). The Information Grid: A Framework for Information Retrieval and Retrieval-Centered Applications. *Proceedings of UIST'92, ACM Symposium on User Interface Software and Technology*, Monterey, California, November. pp. 23-32.
- Card, S. K., Mackinlay, J. D., & Robertson, G. G. (1991). The Information Visualizer: An Information Workspace. *Proceedings of CHI'91, ACM Conference on Human Factors in Computing Systems*. pp. 181-188.
- Mackinlay, J. D., Robertson, G. G., & Card, S. K. (1991). The Perspective Wall: Detail and Context Smoothly Integrated. *Proceedings of CHI'91, ACM Conference on Human Factors in Computing Systems*. pp. 173-179.
- Robertson, G. G., Mackinlay, J. D., & Card, S. K. (1991). Cone Trees: Animated 3D Visualizations of Hierarchical Information. *Proceedings of CHI'91, ACM Conference on Human Factors in Computing Systems*. pp. 189-194.

- Card, S. K., Mackinlay, J. D., & Robertson, G. G. (1990, April 1-5). The Design Space of Input Devices. *Proceedings of CHI'90, ACM Conference on Human Factors in Computing Systems*, Seattle, Washington. pp. 117-124.
- Mackinlay, J. D. (1990, March). Representations for Knowledge-Based Graphical User Interfaces. *Proceedings of AAAI Symposium on Knowledge-based Human Computer Communication*, Stanford, California.
- Mackinlay, J. D., Card, S. K., & Robertson, G. G. (1990, August). Beyond WIMP Interfaces: Exploiting Human Abilities and Experience. *Proceedings of SIGGRAPH'90 Workshop on Software Architectures and Metaphors for Non-WIMP User Interfaces*, Dallas, Texas.
- Mackinlay, J. D., Card, S. K., & Robertson, G. G. (1990). Rapid, Controlled Movement Through a Virtual 3D Workspace. *Proceedings of SIGGRAPH'90, ACM Conference on Computer Graphics and Interaction*. pp. 171-176.
- Robertson, G. G., Card, S. K., & Mackinlay, J. D. (1989). The Cognitive Co-processor for Interactive User Interfaces. *Proceedings of UIST'89: ACM Conference on User Interface Software and Technology*. pp. 10-18.
- Weiser, M., Hayes, B., & Mackinlay, J. D. (1989). Learning from a Visualized Garbage Collector. *Proceedings of 5th USENIX Computer Graphics Workshop*, Monterey, California, November.
- Mackinlay, J. D. (1988). Applying a Theory of Graphical Presentation to the Graphic Design of User Interfaces. *Proceedings of UIST'90, ACM Symposium on User Interface Software and Technology*. pp. 10-18.
- Mackinlay, J. D., & Genesereth, M. R. (1984). Expressiveness of Languages. *Proceedings AAAI'84*, Austin, Texas. pp. 226-232.

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- Zellweger, P. T., Chang, B.-W., and Mackinlay, J. D. (1999). Fluid Links for Informed and Incremental Hypertext Browsing. *ACM CHI'99 Technical Video Program*, May 1999 6:36 minutes. Abstract in *Conference Companion of CHI'99, ACM Conference on Human Factors in Computing Systems*. 1999, 7-8.
- Chang, B.-W., Mackinlay, J. D., Zellweger, P. T., and Igarashi, T. (1999). A Negotiation Architecture for Fluid Documents: *ACM UIST'98 Video Proceedings*.

INSTALLATIONS

- Gold, R., Chang, B., Zellweger, P., & Mackinlay, J. D. *Fluid Fiction: Harry the Ape*. Interactive, hands-on exhibit as part of the eXperiments in the Future of Reading show, San Jose Tech Museum of Innovation, San Jose, CA, 1 March - 4 September 2000. eXperiments in the Future of Reading is now appearing at a museum in Phoenix, AZ.

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- Mackinlay, J. D. (1991). Search Architectures for the Automatic Design of Graphical Presentations. In J. W. Sullivan & S. W. Tyler (Eds.), *Intelligent User Interfaces* (pp. 281-292): ACM Press.

PATENTS

- Mackinlay, J. *Bristlelines: a visualization for discovery relationships between sorted web documents and their usage data*. . U.S. Patent 6,499,034 (Issued December 24, 2002)

- Sheridon, N. K., Mackinlay, J. D., & Stone, M. C. Fabrication of a Twisting Ball Display Having Two or More Different Kinds of Balls. U.S. Patent 6,492,967 (Issued December 10, 2002).
- Sheridon, N. K., Mackinlay, J. D., & Stone, M. C. Fabrication of a Twisting Ball Display Having Two or More Different Kinds of Balls. U.S. Patent 6,421,035 (Issued July 16, 2002).
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- Howard, M. Biegelsen, D. Bobrow, D., Hebel, C. Mackinlay, J. Sheridan, N. & Silverman, A. *Modifiable display having fixed image patterns*. U.S. Patent 6,340,965 (Issued January 22, 2002).
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- Mackinlay, J., Chang, B., Zellweger, P., Igarashi, T., & Niemeyer G.. *Animated spreadsheet for dynamic display of constraint graphs*. U.S. Patent 6,256,649 (Issued July 3, 2001).
- Zellweger, P., Chang, B., Mackinlay, J., Fishkin, K., & Igarashi T.. *Spatial morphing of text to accommodate annotations*. U.S. Patent 6,230,170 (Issued May 8, 2001).
- Zellweger, P., Mackinlay, J., Chang, B., Igarashi, T. *Spreadsheet view enhancement system*. U.S. Patent 6,185,582 (Issued February 6, 2001).
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- Mackinlay, J. *Computer controlled display system for displaying a three-dimensional document workspace having a means for prefetching linked documents*. U.S. Patent 6,088,032 (Issued July 11, 2000).
- Pitkow, J. Pirolli, P. Mackinlay, J. Card, S. *Method and apparatus for clustering a collection of linked documents using co-citation analysis*. U.S. Patent 6,038,574 (Issued March 14, 2000).
- Sheridon, N. K., Mackinlay, J. D., and Stone, M. C. (1999). Fabrication of a Twisting Ball Display Having Two or More Different Kinds of Balls. U.S. Patent 5,982,346 (Issued November 7, 1999).
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- Weiser, M. D., & Mackinlay, J. D. (1998). One Button Searching of Long Lists. U.S. Patent 5,786,819 (Issued July 28, 1998).
- Mackinlay, J. D., & Stone, M. C. (1998). Additive Color Tristate Light Valve Twisting Ball Display. U.S. Patent 5,737,115 (April 7, 1998).
- Mackinlay, J. D., & Johnson, W. A. L. (1997). Paper User Interfaces for Image Manipulations such as Cut and Paste (Continuation of 5,438,430). U. S. Patent 5,666,214 (Issued September 9, 1997).
- Mackinlay, J. D., & Robertson, G. G. (1997). A Context Preserving Systems Using a Perspective Sheet. U.S. Patent 5,689,287 (Issued November 18,1997).
- Robertson, G. G., & Mackinlay, J. D. (1997). Image Lens. U.S. Patent 5,670,984 (Issued September 23,1996).

- Hoppe, E., Mackinlay, J. D., & Rao, R. (1996). Method and Apparatus for Concurrent Graphical Visualization of a Database Search and Its Search History. U.S. Patent 5,515,488 (Issued May 7, 1996).
- Mackinlay, J. D., & Johnson, W. A. L. (1996). Paper User Interfaces for Image Manipulations such as Cut and Paste (Continuation of 5,438,430). U. S. Patent 5,502,577 (Issued March 26, 1996).
- Robertson, G. G., Mackinlay, J. D., & Card, S. K. (1996). Moving an Object in a Three-Dimensional Workspace (Continuation of 5,359,703). U.S. Patent 5,513,303
- Stefik, M. J., Bobrow, D. G., Card, S. K., Casey, M. M., Goldstein, R. J., Lamming, M. G., Mackinlay, J. D., Want, R., Robertson, G. G., Weiser, M. D., & Russell, D. M. (1996). Interactive Contents Revealing Storage Device. U.S. Patent 5,530,235 (Issued June 25, 1996).
- Mackinlay, J. D., & Johnson, W. A. L. (1995). Paper User Interfaces for Image Manipulations such as Cut and Paste. U. S. Patent 5,438,430 (Issued August 1, 1995).
- Mackinlay, J. D., & Robertson, G. G. (1995). Avoiding Oscillation in Interactive Animation. U.S. Patent 5,384,908 (Issued January, 24, 1995).
- Mackinlay, J. D., Robertson, G. G., & Card, S. K. (1994). Moving Viewpoint with Respect to a Target in a Three-Dimensional Workspace. U. S. Patent 5,276,785 (Issued January 4, 1994).
- Robertson, G. G., Mackinlay, J. D., & Card, S. K. (1994). Display of Hierarchical Three-Dimensional Structures with Rotating Substructures. U. S. Patent 5,295,243 (Issued March 15, 1994).
- Robertson, G. G., Mackinlay, J. D., & Card, S. K. (1994). Moving an Object in a Three-Dimensional Workspace. U.S. Patent 5,359,703 (Issued October 25, 1994).
- Robertson, G. G., Mackinlay, J. D., & Card, S. K. (1994). Operating a Processor to Display Stretched Continuation of a Workspace. U. S. Patent 5,339,390 (Issued August 16, 1994).

INVITED PRESENTATIONS

- Mackinlay, J. *Combinatorics of Graphical Presentations*. (Invited Keynote) Smart Graphics Symposium, Hawthorne, NY, USA, June 11, 2002.
- Mackinlay, J. *Visualization for All*. (Invited Keynote). Australian Symposium on Information Visualization, Sydney Australia 3 December 2001.
- Also presented at:
- People, Computers, and Design Seminar, Stanford University, 25 January 2002
 - S.F. Bay Area Chapter of the ACM monthly meeting, 16 January 2002
 - BayCHI Monthly Meeting, San Francisco Bay Area Chapter of SIGCHI , 12 December 2001
 - Oracle Visualization Group Seminar, 2 November 2001
 - Computer-Human Interaction Seminar, Tampere University, Tampere Finland, 2 July 2001
- Zellweger, P., Mackinlay, J. *Fluid Documents: annotation in context IV*. (Invited Presentation), Tampere University Computer-Human Interaction Seminar, Tampere, Finland, 2 July 2001.
- Also presented at:
- SIGCHI-DK Meeting, Danish Chapter of ACM SIGCHI, Aarhus, Denmark, 8 August 2001.
- Zellweger, P., Mackinlay J. *Fluid Documents: annotation in context III*. (Invited Presentation), Multimedia Studies Department, University of Aarhus, Denmark, 17 November 2000.
- Mackinlay J., Zellweger P. *User interfaces for small devices*. (Invited Presentation), Mobile Devices graduate course, Department of Computer Science, University of Aarhus, Denmark, November 2000.
- Mackinlay, J. *Presentation, Visualization, What's Next*. (Invited Keynote) InfoVis'2000, IEEE Symposium on Information Visualization. Salt Lake City. October, 2000.

- Zellweger, P., Mackinlay, J., Chang B-W. *Fluid Documents: annotation in context II*. (Invited Presentation), Computer Science Department, University of Aarhus, Denmark, 28 March 2000.
Also presented at:
University College, London, England, 17 April 2000.
- Zellweger, P. T., Chang, B-W. Mackinlay, J. D. *Fluid links for informed and incremental hypertext browsing*, (video, demo, presentation), *CHI'99, ACM Conference on Human Factors in Computing Systems*, May 1999.
- Chang, B-W., Mackinlay, J. D., & Zellweger, P. *Fluid Documents: Annotation in Context*. (Invited Presentation). Xerox PARC Forum, 28 January 1999.
Also presented at:
People, Computers, and Design Seminar, Stanford University, 9 April 1999.
BayCHI Monthly Meeting, San Francisco Bay Area Chapter of SIGCHI, 11 May 1999.
- Zeltzer, D., Bisantz, A. M., Lenk, K., Mackinlay, J. D., & Simons, R. W. (1998, July 22). *Visualization: The Hard Problems* (Panel Presentation). SIGGRAPH'98, ACM Conference on Computer Graphics and Interaction.
- Gershon, N., Mackinlay, J. D., Shneiderman, B., Ware, C., & Wright, W. (1997, October 21). *2D vs. 3D* (Panel Presentation). *InfoVis'97, IEEE Symposium on Information Visualization*.
- Jacob, R. J. K., Feiner, S. K., Foley, J. D., Mackinlay, J. D., & Olsen, D. R. (1997). *UIST'007: Where Will We Be Ten Years from Now?* (Panel Presentation). Proceedings of UIST'97, ACM Symposium on User Interface and Technology. pp. 115-118.
- Mackinlay, J. D. (1997, March 21). *Using Vision to Think* (Invited Presentation). Oregon Graduate Institute.
- Mackinlay, J. D. *Lecture on Information Visualization*. Pat Hanrahan's graduate course, Computer Science Department, Stanford University
- Mackinlay, J. D. (1996, May 2). *Information Visualization on the World Wide Web* (Invited Presentation). CAESAR Institute, Bonn, Germany.
- Mackinlay, J. D., Zellweger, P. T., Chignell, M., Furnas, G., & Salton, G. (1995). *Browsing vs. Search: Can We Find a Synergy?* (Panel Presentation). Conference Companion of CHI'95, ACM Conference on Human Factors in Computing Systems. pp. 179-180.
- Gershon, N. D., Bushell, C., Mackinlay, J. D., Ruh, W. A., Spoerri, A., & Tesler, J. (1994, July 28). *Information Visualization - The Next Frontier* (Panel Presentation). SIGGRAPH'94, ACM Conference on Computer Graphics and Interaction, Orlando, Florida.
- Mackinlay, J. D. (1994). *Discussant of Paper Session: Evaluating Point Devices*. CHI'94, ACM Conference on Human Factors in Computing Systems.
- Hikmet, S., Feiner, S., Fisher, S. S., Grinstein, G., Mackinlay, J. D., & Treinish, L. A. (1990). *Interaction Issues in Visualization: Requirements, Techniques, and Devices* (Panel Presentation). Proceedings of Visualization'90, IEEE Conference on Visualization, San Francisco, CA. pp. 393-400.
- Mackinlay, J. D. (1989, June). *Computation + Graphics <= Visualization* (Invited Presentation). Workshop on Dedicated High-Performance Systems for Visualization and Simulation, Caltech.
- Mackinlay, J. D., Card, S. K., & Robertson, G. G. (1989). *A Semantic and Compositional Approach to Theory-Driven User Interface Design* (Workshop Presentation). Workshop of the Human-Computer Interaction Consortium, Vale, Colorado.
- Robertson, G. G., Mackinlay, J. D., & Card, S. K. (1989). *Virtual Input Devices for Navigation Through 3D Spaces* (Workshop Presentation). Workshop of the Human-Computer Interaction Consortium.

Mackinlay, J. D. (1988). *Search Architectures for the Automatic Design of Graphical Presentations* (Workshop Presentation). Workshop for Architectures for Intelligent Interfaces: Elements and Prototypes, Monterey, California, March 1988.

Mackinlay, J. D., Feiner, S., Blinn, J., Greenberg, D. P., & Hagen, M. A. (1988). *Designing Effective Pictures: Is Photographic Realism the Only Answer?* (Panel Co-chair). SIGGRAPH'88, ACM Conference on Computer Graphics and Interaction. pp. 351.

Mackinlay, J. D. *Automatic Design of Graphical Presentations*. (Invited Presentation)

Presented at:

Xerox PARC; 1986 March, Palo Alto, CA

Dartmouth College; 1986 April; Hanover, NH.

AT&T Bell Laboratories; 1986 April; Murray Hill, NJ.

Bell Communications Research; 1986 April; Morristown, NJ.

University of Waterloo; 1986 April; Waterloo, Ontario, Canada.

University of Toronto; 1986 April; Toronto, Ontario, Canada.

IBM T.J. Watson Research Center; 1986 May; Yorktown, NY.

Information Sciences Institute, University of Southern California; 1986 June; Marina Del Rey, CA.