A magazine highlighting research at the University of Oregon

Fall 1995, Volume I, Number 1

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  Tips for putting your business on the World Wide Web

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INQUIRY

Fall 1995

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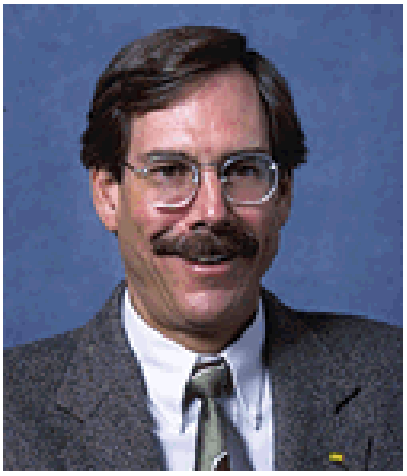

STEADMAN UPHAM

Vice Provost for Research and Graduate Education
and
Dean of the Graduate School

. Research at the University of Oregon touches the people of Oregon in vital and important ways. While much of the work we undertake entails basic research exploring the frontiers of knowledge, we are equally devoted to application and delivery of our research-through patents, licenses, and other intellectual property-directly to business and industry in the state. Other activities of our researchers create programs that improve the state's social and economic well-being and help Oregonians achieve a better quality of life. The research presented in this issue of INQUIRY embodies all of these ideals.

. At the University of Oregon, we also undertake research to improve the quality of our teaching. Whether we talk about early intervention strategies that aid people with developmental disabilities or about the experimental new technology-known as "crystal memory"-that promises to revolutionize data storage, we are concerned that research at the UO has direct relevance to our teaching mission and our instructional programs. We engage in primary research to improve the learning environment for students.

. That these activities stretch beyond the walls of the university is testament to the high quality of our faculty and staff and to our commitment to improving the lives of all Oregonians.

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Doing Business on the Information Superhighway

Should your business expand onto the Internet? What are the costs and benefits? Where do you find out how to do it? These are some of the practical questions that Stephen Fickas explores as an associate professor of Computer and Information Science at the University of Oregon.


STEPHEN FICKAS

"Many businesses and organizations are deciding that it's time to get beyond the hype about the information superhighway and begin putting this new and very powerful tool to work," says Fickas. "But businesses that choose to pursue this path face a surprising lack of available information about how to do it right."

Fickas and several colleagues are helping UO students-and local businesses-get this vital information by tailoring interdisciplinary course work to meet the need. In a class known informally as the "UO Design + Business Collaboration," students work their way through the numerous practical challenges awaiting any business trying to establish itself on the World Wide Web (WWW), the increasingly popular and user-friendly second-generation stretch of the information superhighway. Students with backgrounds in business, graphic design, journalism, marketing, and computer science form teams, each assigned to design and build a functional WWW "home page" for a Northwest business or organization. (The home page is the WWW equivalent of the front door to a business establishment; it serves as an on-line entryway for electronic customers.)

UO students are compiling information from the class and formatting it onto an interactive CD-ROM

OPPORTUNITIES ABOUND IN THE FIELD OF ELECTRONIC COMMERCE– BUT THERE ARE PITFALLS AS WELL

disc titled "The Design and Business Collaboration Series Volume 1: Getting Down to Business on the WWW." The disc will be available to the general public later this fall or winter. Until then, here are a few key points to keep in mind if you are considering entering the world of electronic commerce:

Tips From Cyberspace

Know your market A home page should be as targeted, appropriate, and inviting as a retailer's window display. For example, WWW users arriving at the home page for the Convention & Visitors Association of Lane County Oregon (CVALCO) are usually interested in information about either recreation or convention planning. In response, the students designed the CVALCO home page to quickly split customers into two groups. After separation, those seeking recreation information encounter bright colors and a more playful treatment, while convention planners find room availability and seating capacity information presented in a let's-get-down-to-business format.

Take full advantage of the web By taking stock of your needs, you can assess those areas where a WWW presence could be of greatest use. Design + Business students discovered that the University of Oregon Bookstore has a pressing need for additional floor space, but architectural limitations prevent it from expanding. The web offers the bookstore almost unlimited "virtual floor space" where customers-including students' far away, present-buying parents-can browse a catalog of goods with the click of a mouse.

Costs and benefits Opportunities abound in the field of electronic commerce-expansion to a global customer base, leveling of the playing field with larger competitors. But there are pitfalls as well, Fickas warns. A poorly designed home page or one that is an unreliable mix of current and outdated information may confuse or frustrate a customer. To avoid this problem, expect to pay a professional consulting team for design and maintenance work, and make sure the team has a balanced set of skills, including marketing and graphic design. Remember these costs in your calculations of whether the WWW is for you.

"In one sense today's World Wide Web offers the kind of wide-open opportunities offered by the Wild West," Fickas observes. "You could say that our information helps people choose if they want to make the trek, and for those pioneers who do, it gives them tips and experience-based knowledge about the frontier."

Information about the CD-ROM can be obtained by calling Stephen Fickas at (541) 346-4314 or sending him E-mail at fickas@cs.uoregon.edu

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Research

- *Clinical Requirements Engineering*. This project makes a case for integration of requirements engineering (RE) with clinical disciplines. The first paper listed below provides an overview, looking at two examples that employ a clinical RE approach: (1) that of introducing email into the life of a brain-injured individual, and (2) introducing digital darkroom tools into my life. The former uses a Brownfield approach by starting with an existing clinical process, cognitive rehabilitation, and then defining an RE process that fits. The latter uses a Greenfield approach that postulates a new clinical RE process that focuses on the problems some of us have using digital darkroom tools.

  Fickas, S. Clinical Requirements Engineering. Invited paper at the *27th International Conference on Software Engineering (Extending the Discipline track)*, St. Louis, May 2005 (pdf).

  The project web site contains related papers: http://www.think-and-link.org

  One of our findings from the Think-and-Link project is that users often state unachievable goals. However, over time some or all may become within reach. We call these deferred goals. They lead naturally into monitoring: we watch for opportunities to adapt the deployed system to meet deferred goals. Below is a baseline paper in the area.

  Fickas, S., Feather, M.S., Requirements Monitoring in Dynamic Environments, *Proceedings of the Second IEEE International Symposium on Requirements Engineering*, IEEE Computer Society Press, York, England, March 1995 (pdf).

  The following paper links requirements monitoring with GORE (Goal-Oriented Requirements Engineering):

  Feather M, S. Fickas, A. van Lamsweerde, C. Ponsard , Reconciling System Requirements and Runtime Behavior, *Proceedings of IWSSD'98: 9th International Workshop on Software Specification and Design*, Ise-

Shima (Japan), April 16-18 1998, IEEE Computer Society Press (April 1998) (pdf).

We have done some preliminary work on the range of interfaces needed to support customization. This is reported below.

Sutcliffe, A., Fickas, S., Sohlberg, M., Ehlhardt, L., Investigating the usability of assistive user interfaces, *Interacting with Computers*, Volume 15, Issue 4 , 1 August 2003, Pages 577-602 (abstract)

The implication of deferring goals is that eventually you will return to them, and hopefully, achieve them. This may require a change to the deployed system, i.e., an adaptation. For the think-and-link system, we have been able to use a parameterized application, turning on and off features. I am working with Bill Robinson on a more sophisticated adaptation architecture for a navigation assistant. A description of Bill's tool, ReqMon, can be found off his web page: http://www.cis.gsu.edu/~wrobinso/papers/. The navigation-assistant project home page is here: www.go-outside.org.

- *Wearable and ubiquitous computing*. The Wearable Computing Lab was founded in 1995. The lab's web page is here: www.cs.uoregon.edu/research/wearables/. The most recent topics from the lab are listed below.
  - We have an interest in middleware layers that support context-aware computing. An early effort in this area is the CAT (Context-Aware Toolkit) project. We are working on extending this to a more heterogeneous environment that includes 802.11, Bluetooth, and mote-based devices.
  - Field-testing UBICOMP apps is sometimes painful. We are working on a simulator that will allow some testing to happen in a virtual environment. The simulator project can be found here: iPaq simulation project.
  - The lab is involved with a major application: designing a wearable navigation-assistance device. Our first test user population are those that are currently housebound by a cognitive impairment. The project, called GO (Get Outside), is described here: www.go-outside.org. In summer 04 we completed a two year study of the population in terms of focus groups and weekly-meetings of a special-interest group at an assisted-living facility. We are now working on field studies that center on observing real trips with multi-modal devices. Following paper provides another glimpse into the project:

    Fickas, S., Sohlberg, M., A Community Safety-Net for the Brain-Injured Traveler, *CHI 2005 Workshop, Engaging The City: Public Interfaces As Civic Intermediary* Portland, 2005 (pdf)

    Contact fickas@cs.uoregon.edu for more details.

- *Composite System Design*. The general theme of this project is a wholistic look at the design of socio-technical systems. We argue that many interesting systems have a mixture of human, hardware and software agents, agreeing to cooperate toward some shared goals. A baseline paper that describes our approach is given below.

  Fickas, S., Helm, R., Automating the design of composite systems, *IEEE Transactions on Software Engineering*, Vol. 18, No. 6, June, 1992 (pdf)

  A shorter, lighter paper ties circus trains into the mix.

  Fickas, S., Desert Island Column, *Automated Software Engineering Journal*, Vol. 1, No. 1, 1993 (html)

  Two current projects have strong ties into the composite system viewpoint.

- The Think-and-Link project has been an excellent test bed for our ideas. It became clear early on that email is a quintessential socio-technical system. The project has faced the gamut of problems, including (a) hardware: many of our users do not currently have a computer - we have to define a setup for them that works into their living context, (b) software: the email client and email server, and (c) human stakeholders: the email buddies and careproviders. We found that if we failed to integrate all of these, the deployed system would even tually be adandoned.

- The GO project focuses on community navigation, again, a profoundly composite-system application. On the social side, we have found the need to work with city officials, the local transportation district, and businesses as agents in the system. On the hardware side, we are forced to look at a range of UBICOMP devices/agents, and the software to integrate them into a coherent navigation system. Our current mix of devices includes (a) wireless iPaqs with GPS, (b) sensor networks (mica2 motes, Intel iMotes), (c) consumer devices using Bluetooth (cell phones), (d) RFID tags/readers, and (e) kiosks and public displays. A current project is to instrument, deeply, one interesting urban route within Eugene. Contact fickas@cs.uoregon.edu for details.

- *Operational Envelopes*. The base conjecture of this project is that engineered artifacts will not work dependably in every possible environment. When a system is designed, cost/benefit analysis should be applied to determine the likely environmental conditions it will face, and then design and implementation can concentrate on those subset of conditions. This results in an operational envelope for the system: inside the envelope, the system is dependable; outside the envelope, dependability bets are off. The following projects explore this concept.

  - Using forward-engineering, we studied the use of model-checking to explore operational envelopes in an onboard, fault-protection system developed at JPL. The following paper presents the details.

    Feather, S. Fickas, A. Razermera, A., Model-Checking for Validation of a Fault Protection System, *Proceedings of IEEE International Symposium on High Assurance Systems Engineering*, Boca Raton, 2001 (pdf).

  - Using reverse-engineering, we are interested in recovering an operational envelope from a deployed system. The ROPE project is one current example of this approach.

Courses

My teaching schedule for the 04/05 year is as follows:

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Fall:   CIS 170 - Foundational Ideas in Computer Science (completed - see notes
below)
Fall:   CIS 607 - Seminar on Sensor Network Design (completed - see notes below)
Winter: CIS 607 - Continuation of SN Design seminar
Winter: CIS 650 - Graduate Software Engineering
Spring: CIS 610 - Building Mote-Based Systems
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I am always interested in sharing notes on the courses I teach. Please drop me a line if you have comments or questions about these courses. As an outline, I can give you the general structure of each course.

- CIS 170 (pre-major). This is the first year the course is being taught. I am using Dewdney as the main text (the

66 excursions book). I mix theory with some practice in the form of algorithmic/procedural programming in Java.

Post hoc notes: Students liked the topics from Dewdney. I want to also give a plug to David Eck's book, The Most Complex Machine. In particular, I used several of the tools from his textbook's web site, and this was a real hit with students. I will think about using his book in future.
Main concern of students was with the Java programming. Some thought I moved too fast through the programming pieces. Their suggestion is to have a separate lab section that concentrates on programming. A good idea for future. Other problem was the mixture of programming experience across students. Two camps broke out during the quarter: (1) complete novices, and (2) students taking a Java programming course concurrently. My take is that a lab section could help to level the field a bit.

- CIS 607 (grad). This is the first year this course has been taught. The course has a research component (survey of the literature) and a small practice component (simulation using VisualSense and TOSSIM, implementation on mica2 motes and Intel iMotes in my lab).

  Post hoc notes: Highly successful, from my point of view. Will post web page with outcome of seminar in this space shortly. Seminar will continue in winter 05.

- CIS 650 (grad). I generally attempt to have a theory track, a research track and a practice track in this course. Most recently, the theory track has focused on formal modeling. I currently use FSP/LTSA (and the Jeff&Jeff book). The research track focuses on papers in the field. The practice track varies, some years looking at tools, and other years, methodologies.

- CIS 610 (grad). Building Mote-Based Systems. This is the first year the course is being taught. Our (ambitious) target is to build a mote-based network into an assisted living facility in Eugene. We will use this to support some of the research of the GO project (www.go-outside.org) that focuses, at least partly, of getting out of an apartment. This course is supported by hardware grants from Intel. I expect that we will use Crossbow technology for the course (www.xbow.com). We are also working with two RFID vendors, Axcess Inc (www.axcessinc.com) and SkyeTek (www.skyetek.com), to integrate RFID with mote-based systems.

Other

Collaborations. I benefit from the collaborators I work with, and would like to acknowledge their contribution.

- I work with Alistair Sutcliffe and Gerhard Fischer on HCI issues related to both the Think-and-Link project and the GO project.

- I work with Martin Feather, Bill Robinson and Axel van Lamsweerde on issues related to requirements monitoring and GORE.

- I am a member of the IFIP 2.9 Requirements Engineering working group, and gain much insight from interactions there.

- I work with Zary Segall on wearable computing issues.

- My participation in the Think-and-Link and GO projects has brought me many interesting colleagues outside of

computer science. This includes McKay Sohlberg (cognitive rehabilitation), Laurie Elhardt (education/training), Bonnie Todis (long term, qualitative, experimental methodologies), and a host of staff and residents at the assisted-living centers in Eugene.

- I work with Bob Hall on the challenges faced by software engineering in the brave new world of open systems. We jointly held a workshop on the topic: Workshop on Requirements Engineering and Open Systems (REOS).

- I work with Holly Arrow (Psych) and John Orbell (Poli Sci) on a project to insert task-oriented agents into a (human) group process focusing on clubs. A paper appearing in the Workshop for Knowledge-Based Electronic Markets (AAAI 2000) gives a bit of background on this work: Join the Club.

A glimpse of outside life. The Eugene Water Board shutdown a public fountain in mid-summer. I worked to get it turned back on.
I am claiming victory: third installment of the saga, as reported by columnist Karen McGowen. I am sure there is some moral to the story in here.

Administrative trivia. I maintain an MSDN license for the department. Here is the list: MSDNAA list.

Joining one of my labs. If you are a student interested in working in one of my labs, contact me by email: fickas@cs.uoregon.edu. If you would like a lab tour, contact one of my lab managers:

Wearable Computing Lab	Andrew Fortier (andrew@cs.uoregon.edu)
Sensor Network Lab	Zebin Chen (zbchen@cs.uoregon.edu)
Think-and-Link Lab	Jason Prideau (jprideau@cs.uoregon.edu)

Computer and Information Science
at the University of Oregon

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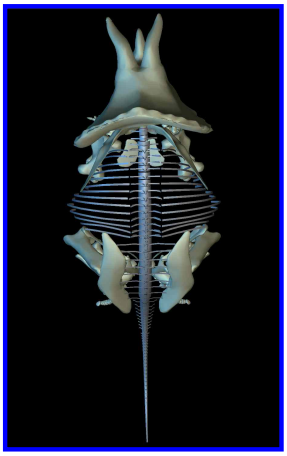
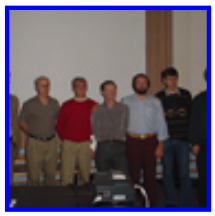


Bioinformatics Research Published in *Nature*


CIS graduate student, Bryan Kolaczkowski, and UO assistant professor of biology, Joe Thornton, used a small supercomputer to simulate the evolution of thousands of gene sequences on a hypothetical evolutionary tree. (cont.)

Colloquium Honors Work of Prof. Andrzej Proskurowski


The Department recently hosted a special Colloquium honoring CIS theory faculty Dr. Andrzej Proskurowski on the occasion of his birthday. (cont.)

Welcome to New AI Faculty Dejing Dou


The CIS department welcomes our newest faculty member, Assistant Professor Dejing Dou, whose research focuses on practical as well as theoretical aspects of Artificial Intelligence, Databases, Biomedical Informatics and the Semantic Web. (cont.)

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INQUIRY

Fall 1995

Fishing for Big Answers In Small Places

JUDITH EISEN

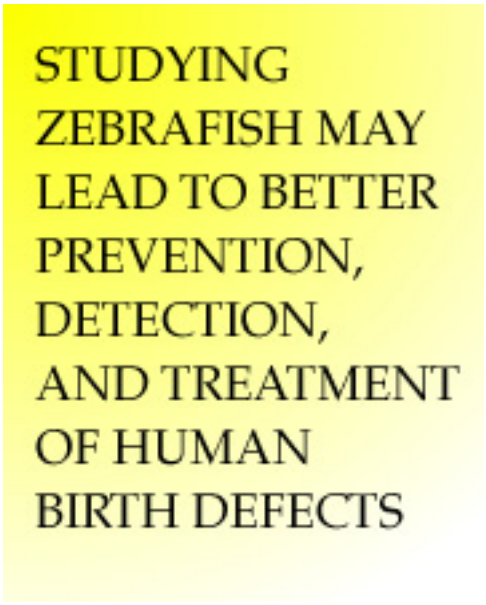
. Why are so many researchers at the University of Oregon excited about a zippy, inch-long tropical fish common to many home aquariums? Because by studying the development of the zebrafish, biologists are clarifying how a one-celled egg can become a billion-celled organism-and learning about developmental problems such as those that lead to human birth defects. One of the nation's leading scientists in this area is Judith Eisen, an associate professor of biology and a member of the UO Institute of Neuroscience.

. Eisen has studied zebrafish embryos since 1983. The embryos, which develop outside the mother and have transparent "eggshells," are ideal subjects because they allow researchers to observe development without disturbing it.

. "I'm particularly interested in the cells of the embryonic nervous system and their genetic control," says Eisen, a recipient of the prestigious National Science Foundation Presidential Young Investigator Award. "That's where we find the greatest diversity and complexity. To me, that's where the action is."

. Her dogged pursuit of this knowledge has received notice from science watchers and granting agencies across the nation. Eisen came to Oregon as a fellow of the Muscular Dystrophy Association. Since then she has been named a Searle Scholar and won a Research Career Development Award from the National Institutes of Health (funding her position for five years).

. Eisen and the members of her laboratory bring the force of modern technology to bear on the pinpoint-sized eggs. The bustling laboratory is a jumble of computers, microscopes, incubators, time-lapse imaging cameras, and micromanipulators. Over the years, the lab has also acquired an impressive collection of fish-theme posters, drawings, postcards, wall hangings, and cartoons ranging from the humorous to the beautiful. It is in these upbeat surroundings that she pursues her serious work.



. "Lots of things can go wrong during development," she explains. "For example, things that lead to neurological disorders, spina bifida, muscular dystrophy, and ALS [Lou Gehrig's disease]. If we understand normal development we can learn about abnormal development. This knowledge will lead to better methods of prevention, detection, and treatment."

. Nearby, four other laboratories are abuzz with activity, all scrutinizing the same subject. Together, these labs make the UO the worldwide leader in this rapidly expanding study of zebrafish-a position held since the late 1970s and early 1980s, when pioneering UO biologists first cloned the tiny striped fish.

. A number of influences led Eisen to developmental biology. As far back as she can remember, she recognized the scientific approach to be the way she naturally interprets the world. The gutsy achievements of Olympian Wilma Rudolph and aviator Amelia Earhart impressed Eisen in her youth. Throughout her graduate and postgraduate science education, the decision to "always study what seems most interesting" served as a guiding star.

. Though she maintains that many barriers remain for women in science, she is quick to point out that a series of supportive teachers and professors encouraged her throughout her schooling.

. And now, as a university teacher and researcher herself she is in a position to encourage the next generation of scientists.

. "I tell my students that the big lesson of basic research is that you never know what important bit of information you might discover. You could find the answer to a big question in a very small place."

. It is this kind of pioneering drive that characterizes the pursuit of science at the University of Oregon.

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ZFIN

The Zebrafish Information Network

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Mutants / Transgenics	Search for mutations / transgenic lines by gene name, map location or phenotype.
Wild-Type Stocks	Zebrafish wild-type lines.
Genes / Markers / Clones	Search for genes, markers and clones by name, accession number, LG, vector type or sequence type.
Gene Expression	Search for gene expression patterns by gene name, developmental stage, anatomical structure, developmental or physiological process.
Genetic Maps	Generate graphical views of genetic, radiation hybrid or consolidated maps.
Mapping Panels	Summary listing of zebrafish mapping panels.
Accession #	Search ZFIN by data accession number.
Publications	Search for zebrafish research publications by author, title or citation.
Anatomy	Search the zebrafish anatomical ontology.
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Laboratories Search for laboratories by name, address or research interests.

Companies Search for companies supplying zebrafish reagents.

Nomenclature

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Zebrafish Resource Center

Info, Strains,
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Pathology
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Disease Manual

Login: **Password:** Log in
(Login required only to update personal records)

Development of the Zebrafish Database is generously supported by the NIH (P41 HG002659).

ZFIN logo design by Kari Pape, University of Oregon

Faculty

University of Oregon
Institute of Neuroscience

Judith S. Eisen

Professor, Department of Biology
B.S., 1973, Utah State; Ph.D., 1982, Brandeis University

Research Interests

Specification and patterning of neurons and neural crest cells in embryonic zebrafish

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The vertebrate nervous system is composed of a large number of neurons with diverse characteristics. My lab is interested in how neuronal diversity is generated during development: how are the correct number of cells specified for specific neuronal fates at particular times and in particular locations? Most of our attention has been focused on a small, early-developing set of individually identified spinal motoneurons and on the neural crest, a transient embryonic cell population that generates a diverse set of derivatives, including the neurons and glia of the peripheral nervous system. We use a combined cellular, molecular and genetic approach to learn the mechanisms underlying cell fate specification. For example, we study the timing of critical events during development of motoneurons and neural crest cells by labeling individual cells and following their development in living embryos and by transplanting individual cells to new locations. We are isolating genes encoding molecules that may regulate motoneuron and neural crest development and testing the roles of the proteins encoded by these genes during motoneuron and neural crest specification and differentiation. We are also isolating mutations that alter motoneuron or neural crest cell fate with the goal of identifying new genes involved in the development of these cells.

Representative Publications

- Lewis KE, Bates J, and JS Eisen.(2005) Regulation of iro3 expression in the zebrafish

spinal cord. *Dev Dyn.* 232(**1**):140-8. PMID: 15580554 [PubMed - in process]
- Cheesman SE, and J.S. Eisen. (2004) gsh1 demarcates hypothalamus and intermediate spinal cord in zebrafish. *Gene Expr Patterns* . 5(**1**):107-12. in process
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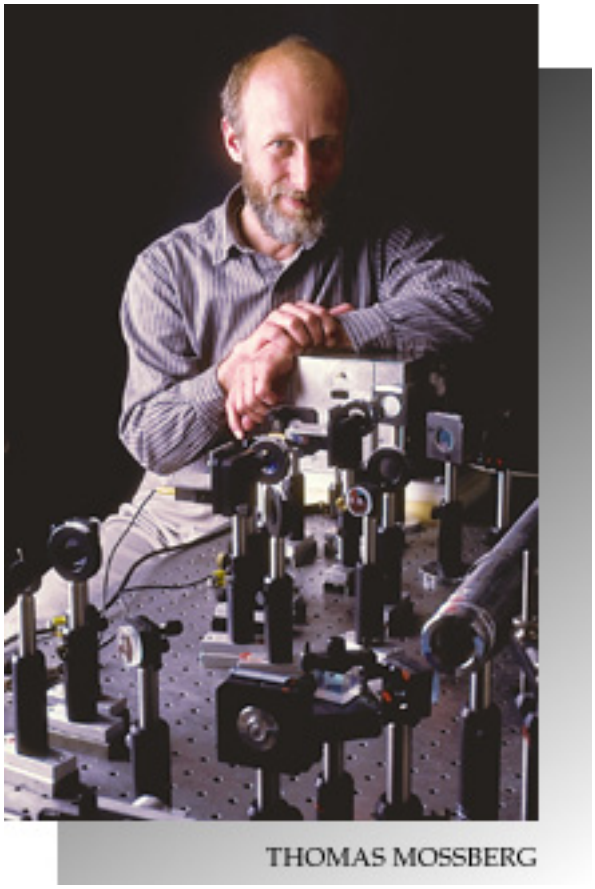
INQUIRY

Fall 1995

New "Crystal Memory" Technology Dazzles

. A horse and buggy could only go as fast as the horse, no matter how lightweight the buggy or well greased the wheels. It wasn't until the engine replaced the horse that ground transportation achieved a new level of speed and power. Similarly, today's computers are harnessed to memory storage and retrieval systems that can only gallop so fast. But there is a new engine that may take computing to the next level: crystal memory, a revolutionary method for storing and retrieving vast amounts of digital information at lightning speeds.



THOMAS MOSSBERG

. Crystal memory is not an incremental improvement over existing technology, but a completely new approach that is producing dazzling results.

. According to the technique's inventor, University of Oregon Professor of Physics Thomas Mossberg, the technique combines the kind of laser found in a home compact-disc player with a new crystalline recording medium. One special property of this medium is that it absorbs different wavelengths, or colors, of light in different ways. Adding this color-coded dimension multiplies the amount of data that can be packed into a given area.

. In the world of computer memory, the two defining factors are information density (how much information can be stored in how small a space) and speed (how fast the information can be accessed). With most storage techniques there is a tradeoff between speed and density. Mossberg's team achieved imformation densities of eight gigabits per square inch, far exceeding state-of-the-art optical storage densities of around one gigabit per square inch. (One gigabit equals a billion bits.) Researchers in Mossberg's laboratory have clocked access to this information at speeds comparable with the fastest current storage methods.

. For purposes of comparison, crystal memory can store in one square inch the amount of

CRYSTAL MEMORY CAN STORE IN ONE SQUARE INCH THE AMOUNT OF INFORMATION HELD ON APPROXIMATELY 700 HIGH-DENSITY FLOPPY DISKS

information held on approximately 700 high density floppy discs.

. "This performance shatters the previous record, but we have not even come close to tapping the technique's full potential," says Mossberg, who has served on the faculties of both Columbia and Harvard.

. An article on crystal memory in the August 1995 issue of "Laser Focus World" states that "the maximum capacity of magnetic [memory storage], the most widely used urrent storage method, is theoretically too low . . . to handle expected memory requirements." A successor is needed to handle this growing demand, and crystal memory is definitely a strong contender.

. Improving the contender's chances is the fact that this technology is still in the early stages of development.

. "Within a year our work should yield results significantly greater than what we have already achieved," Mossberg predicts.

. While it promises much, crystal memory is not without problems. Difficulties include long term storage instability, irregularities in ability to erase and rewrite, and optimal functioning only in a super-cold environment.

. "These are technical hurdles, not fundamental physical roadblocks," Mossberg counters. "For example, consumer-grade refrigeration units already exist that address temperature and stability issues."

. Mossberg notes that although his lab is producing results in terms of gigabits, the work is being accomplished without gigabucks.

. "We achieved world-record results on what, in comparative terms, is a shoestring budget using just a few graduate students," he points out. "I think this says a great deal about both the strength of this technology and the value of a university for taking the most advanced knowledge to the next step."

. With the UO's help, Mossberg is starting a commercial venture to further this research. Interested parties should call Lynnor Stevenson, director of Technology Transfer Services, at (541) 346-3176.

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DR. DARKMATTER PRESENTS

The Electronic Universe

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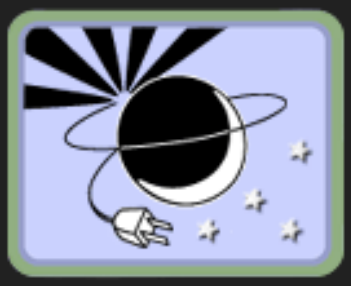

Welcome to the Electronic Universe, an educational outreach server at the University of Oregon maintained by Physics professor Dr. Greg Bothun. Here you will find materials and courseware on sciences of all fields, from Physics to Geology. Choose from the topics to the left and a short description of each will appear here.

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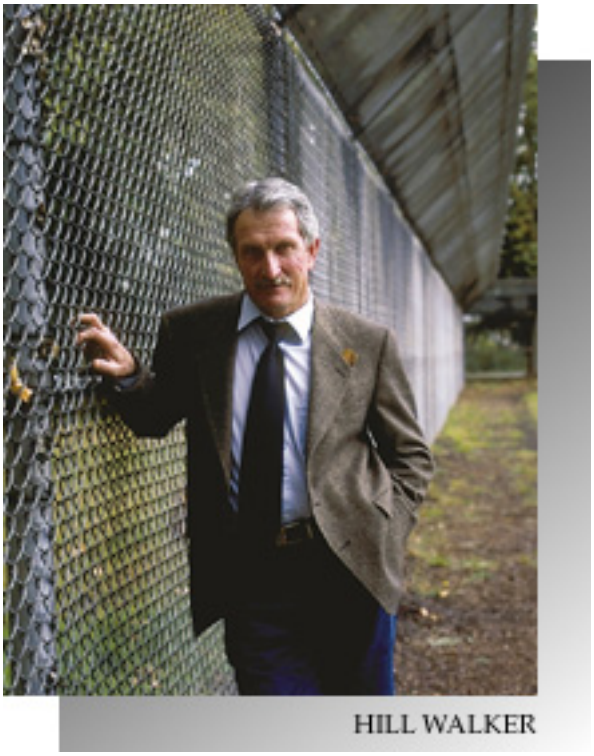
INQUIRY

Fall 1995

We Can Prevent Violence



HILL WALKER

. Who knows the best response to the waves of violent crime buffeting the state? Oregon legislators endorsed one course of action this year when they authorized a $120 million budget to expand the adult corrections system. Was this the wisest use of tax dollars? Not according to Hill Walker, director of the University of Oregon Center on Violence and Destructive Behavior. He says prisons are perhaps the most expensive way to deal with violence

. "It costs $50,000 a year to keep a juvenile offender behind bars, and that doesn't include the cost of building the detention facilities," Walker says. "Compare that to the $3,000 annual cost per child for dealing with disruptive and violent five-year-olds in proven preventive programs."

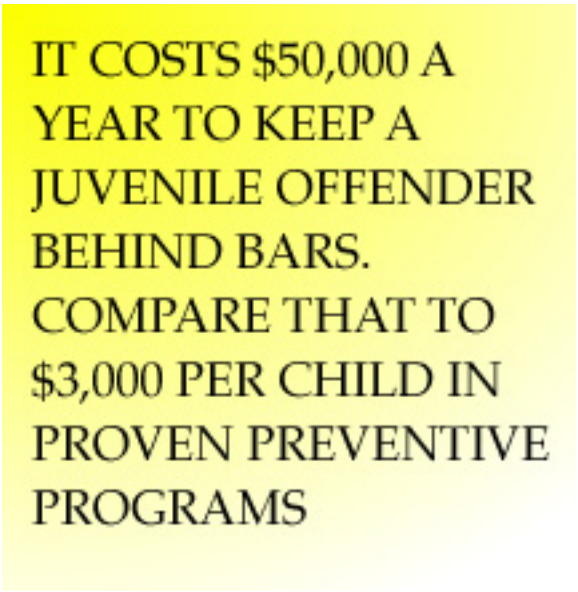
. Walker and his team of researchers have studied patterns of violence and antisocial behavior in children since 1965. UO researchers have worked with the Oregon Social Learning Center in Eugene for more than thirty years to study the families of these children. Their research has shown that serious disruptive, aggressive behavior can be accurately diagnosed in three-, four-, and five-year-olds.

. More important, Walker's research has led to a number of University of Oregon-initiated, school-based programs that are turning these kids around before they become enmeshed in the juvenile justice system:

First Steps This program targets kindergartners who act out in the classroom. Parents of children in the First Steps program get professional help to learn better ways to deal with family conflicts. This improves the child's behavior at home and contributes to success at school. In place since 1993, First Steps has served forty-six children and families to date.

. "Nearly all these children made significant gains in their social behavior and in their academic success," Walker reports. The program has been replicated in Kentucky, and plans call for First Steps to be implemented in several other school districts in Oregon and Washington during the 1995-96 school year.

. *Annual Cost: $3,000 per child*



BASE-Building a Strong Environment-was established in 1988 as a collaboration between the university and Services to Children and Families of Lane County (formerly the Lane County branch of the Children's Services Division). The program has three goals: improving the development and emotional well-being of children form birth to six, strengthening the relationship between primary caregivers and their children, and helping families achieve stable living situations for their children.

. Over the years, BASE has served 145 families, including 256 children. These families have been unable to benefit from less intensive programs such as parenting courses, drug treatment, or anger management. Parents who don't succeed in the BASE program are in danger of losing their parental rights.

. Sixty percent of the families enrolled in BASE have made progress; half have established stable homes.

. *Annual cost: $1,400 per child*

Healthy Start Funded by the Oregon Commission on Children and Families, Healthy Start provides support to parents with new babies. Healthy Start participants get information on child development that helps them understand more about raising their newborns. Counselors work with parents both before and after delivery of their baby. Fifteen Oregon counties have adopted Healthy Start programs.

. *Annual cost: $1,500 per family*

. Walker says the kind of prevention provided by these programs is not only better in the short term for the children and families but also, in the long run, for the state. And it costs far less than the $50,000-per-child-per-year cost of keeping kids in juvenile prisons.

. For more information about these and other early intervention programs at the University of Oregon, call Jane Squires, at the Early Intervention Program, at (541) 346-2634.

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INQUIRY

Fall 1995

Work-Family Issues Spur Workplace Evolution

Marianne Koch, an assistant professor of management at the University of Oregon, is conducting groundbreaking research by surveying 3,000 human resource managers in six western states on the increasingly important subject of "work-family issues." She will present her findings to state legislators next year at the Summer Legislative Leadership Institute.

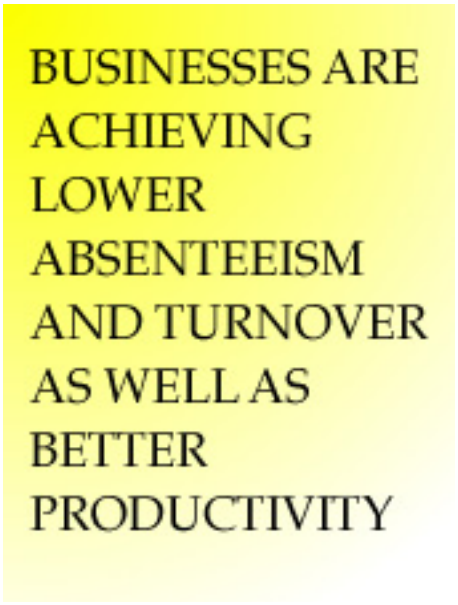
MARIANNE KOCH

What are work-family issues and why are they important?

MK: Work-family issues are challenges that arise when individuals' roles as family members and workers conflict. Work-family programs are mainly child- and eldercare programs, but they also include flexible work schedules, parental leave, spouse-relocation assistance, and employee assistance. This isn't just about productivity and compensation packages. It's about the most fundamental issues facing our society, and it raises profound questions about the place of people in our culture.

What will you learn from the work-family issues survey?

MK: This research will provide a comprehensive picture of the family-friendly programs and policies being implemented by businesses in our region We'll also learn human resource managers' perceptions of the effects these practices have on such things as productivity, absenteeism, turnover, employee recruitment, and job satisfaction.



Is there one area of most interest or concern?

MK: Yes. Nationwide, employees' concerns about caring for their parents are virtually exploding. In the '80s and early '90s, as the baby boomers were having their offspring, the big issue was childcare. Now, as the boomers and their parents are aging, eldercare will soon surpass childcare as the number-one issue.

How are businesses responding to work-family issues?

MK: Responses to this need are running the gamut from very informal to very formal. A boss may give employees time off for work-family issues as needed or-at the other end of the spectrum-there is an organized approach such as that used at the Eddie Bauer headquarters in Redmond, Washington. There a full-time work-life manager is responsible for developing and overseeing work-family programs and policies.

Is there a next step?

MK: Once we get a clear picture of what businesses in this region are doing, we'll focus in on organizations that appear to be doing particularly well and investigate why they are successful. How are they achieving lower absenteeism and turnover as well as better productivity, employee recruitment, and job satisfaction for employees? That information will be extremely valuable for other regional businesses in the future.

Do you have any initial thoughts about what you're likely to find?

MK: My sense is that solutions won't lie just in the hands of employers. We'll need new cooperative efforts involving employees, employers, the community, and perhaps the government.

What is some practical advice for today's employer?

MK: View these concerns as an opportunity to reorganize work in a more efficient way that allows enhanced productivity and less-stressed employees. Here's just one example. In the past ten years there's been a huge investment in technology-based infrastructure such as voice mail, faxes, and modem-linked computers. These investments can be used to increase employee flexibility in accommodating their own needs while keeping productivity high. Ideally open-minded managers will see work-family issues as a means to greater efficiency. That's a win-win situation in the workplace.

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INQUIRY

Fall 1995

A Moment of Truth For America

. Imagine life without polio vaccines and heart pacemakers. Or digital computers. Or municipal water purification systems. Or space-based weather forecasting. Or advanced cancer therapies. Or jet airliners. Or disease-resistant grains and vegetables. Or cardiopulmonary resuscitation (CPR).

. We take for granted these and thousands of other technological breakthroughs that have made American society the most advanced in history. They have made our economy more competitive, created millions of jobs, and underpinned our entire standard of living. They have vastly improved our health and extended our life span. In a very real sense, they epitomize the American Dream.

. But these breakthroughs didn't just happen. They are the products of a long-standing partnership that has, as a matter of national policy,fostered the discovery and development of new technologies. For many years, Administrations of both parties, working with Congress, have consistently supported university research programs as a vital investment in our country's future. Industry has played an equally critical role, carefully shepherding these new technologies into the marketplace.

. This partnership-the research and educational assets of American universities, the financial support of the federal government and the real-world product development of industry-has been a crucial factor in maintaining the nation's technological leadership through much of the 20th century.

. Just as important, university research has also helped prepare and train the engineers, scientists and technicians in industry whose discipline and skill have make technological breakthroughs possible. It has sparked innovation and prudent risk-taking. And as a result of the opportunity afforded such skilled workers in our technologically advanced economy, many disadvantaged young people have used high-tech jobs as a "stepping stone" to more productive and satisfying lives.

. Unfortunately, today America's technological prowess is severely threatened. As the federal government undergoes downsizing, there is pressure for critical university research to be slashed.

. University research makes a tempting target because many people aren't aware of the critical role it plays. It can take years of intense research before technologies emerge that can "make it" in the marketplace. History has shown that it is federally sponsored research that provides the truly "patient" capital needed to carry out basic research and create an environment for the inspired risk-taking that is essential to technological discovery. Often these advances have no immediate practical usability but open "technology windows" that can be pursued until viable options emerge. Such was the case with pioneering university research done on earthquakes in the 1920s, which led over time to the modern science of seismology and the design of structures that better withstand earthquake forces.

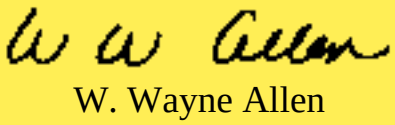
. Today, we, the undersigned-executives of some of America's leading technology

companies-believe that our country's future economic and social well-being stands astride a similarly ominous "fault line." We can personally attest that large and small companies in America, established and entrepreneurial, all depend on two products of our research universities: new technologies and well-educated scientists and engineers.

. Technological leadership, by its very nature, is ephemeral. At one point in their histories, all the great civilizations-Egypt, China, Greece, Rome- held the temporal "state of the art" in their hands. Each allowed their advantage to wither away, and as the civilization slipped from technological leadership, it also surrendered international political leadership.

. For all these reasons, it is essential that the federal government continue its traditional role as funder of both basic and applied research in the university environment. If we want to keep the American Dream intact, we need to preserve the partnership that has long sustained it. As we reach the final years of the century, we must acknowledge that we face a moment of truth:

. Will we nurture that very special innovative environment that has made this "the American century"? Or will we follow the other great civilizations and yield our leadership to bolder, more confident nations? As the Congress makes its decisions on university research, let there be no mistake: We are determining the 21st century *today*.



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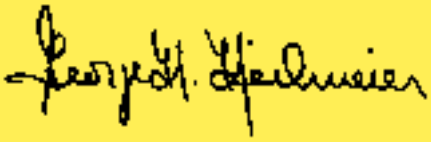

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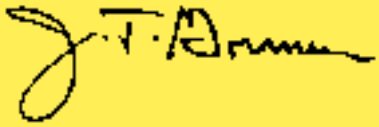

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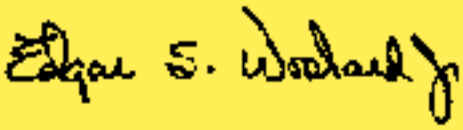

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From the *Washington Post*, May 2, 1995

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