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## Entrepreneurial Fellowship Program: The Art and Science of Business



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hat if you were a graduating senior, just about to earn your master's or PhD, or were a postdoc here at Caltech and had a great idea for a business? Or, what if you were one of the above and simply wanted to learn more about the world of business and entrepreneurship? Now switch gears and imagine you were a student at [Art Center College of Design](#), had an idea for a business that required technical expertise, or wanted to learn about the financing, marketing, and management of a successful start-up company. An exciting opportunity debuted this year—the Caltech and Art Center Entrepreneurial Fellowship Program (EFP). With funding from the National Science Foundation's new "Partnerships for Innovation" program and from the private sector, the EFP uniquely brings together CVs, VCs, and portfolios—in short, people who solve problems from different viewpoints—in an intense nine-month educational environment.

The program is led by Caltech's Ken Pickar, J. Stanley Johnson Visiting Professor of Mechanical Engineering, and Art Center's Michael Dobry, Director of the Office of Design Transfer, with Richard Murray (Chair, Division of Engineering and Applied Science) as Principal Investigator, and John Ledyard (Chair, Division of the Humanities and Social Sciences), as co- P.I. The EFP grew out of the needs of students who wanted to make the transition from the academic environment to the world of busi-

ness. The program addresses the growing demand for Caltech and Art Center people with fluency in the languages of science, engineering, and design who want to learn the language and practice of business, particularly of high-tech business—and to do so without an MBA or repeating the failures of so many underdeveloped start-up companies.

Over the course of the non-degree granting program, the Fellowship recipients (Fellows) are exposed to a rich experiment in education. They refine the design and technology behind their proposed products and services, and perfect their business plans. The Fellows also study traditional business skills, develop their presentation and communication skills, and network with entrepreneurs, venture capitalists, and corporate leaders. The curriculum emphasizes real-world research and experience, evaluated, for instance, by a series of *charettes* (a French term often used in architectural design, denoting concentrated, rigorous short-term projects, administered on the fly, with the express purpose of strengthening decision-making skills, developing leadership thinking, and encouraging effective teamwork).

The curriculum stresses a learning process that is itself entrepreneurial in nature, with methods drawn and blended from traditional MBA curricula, corporate training programs, and non-traditional business disciplines. Many of the methods and much of the content of instruction reflect the realities of a busi-

ness start-up atmosphere, emphasizing the cultivation of strategic business thinking and risk taking. As prelude to the program's selection process, applicants form interdisciplinary teams of two or three people. Each team creates a business plan for a proposed start-up company that commercializes technologies that the applicants developed or have been exposed to during their studies. Teams are judged on the merits of the business model, use of innovative technology, and the candidates' qualities of enthusiasm, passion, and commitment. Each Fellow receives a stipend and benefits for the length of the program. Caltech's course, Entrepreneurial Development (E 102), open to Art Center students, provides an excellent precursor to the application process.

Of the 75 applicants from Caltech and Art Center, nine Fellows were selected, in four project teams, and they officially began work on July 9, 2001. Their innovations range from a fluids-based means of information display to enhanced synthesis of computer animation. The teams and their projects for the first year are:

- ▶ Frederick Romberg (MS '00) (Caltech) and Daniel Schenck (Art Center). *Bubble Imaging Technologies*: developing three-dimensional liquid-motion technology for dynamic displays.
- ▶ Boris Axelrod, (BS '01) Yasufumi Shiraishi (BS '01), and Serge Sverdlov (BS '01) (Caltech). *Centoid*: development of economic algorithms that will make the collection of small sums of money over the Internet extremely efficient.

- ▶ Matthew Carroll (Art Center) and Robert Sneddon (Caltech). *KnowNet*: an Internet communication system for forming "trust networks" for the rapidly growing knowledge management industry.
- ▶ Eagle Jones (BS '01) (Caltech) and Joey Jones (Art Center). *Synthesized Animation*: development of real-time motion synthesis software to enable easier and faster creation of computer animation and games for the entertainment and Internet industries.

The success of all entrepreneurial endeavors depends on teamwork. The EFP is no exception, and great efforts have gone into bringing on partners as advisors, mentors, and sponsors. These partners have been enlisted as Berlitz instructors, so to speak, to help translate the many dialects of business language; the partners also provide the Fellows with personal and intellectual relationships in the financial, marketing, and legal communities—relationships critical to entrepreneurial success. In addition to their advising and mentoring roles, many partners have brought their companies into the program; Intel, ITU Ventures, National Collegiate Investors and Innovators Alliance, Mohr Davidow, Motorola Ventures, and O'Melveny Consulting are all providing invaluable financial support to the EFP.

The physical and metaphorical point of convergence for the Fellows is the space they share in Moore Laboratory. The participants from Caltech refer to the room as a lab. Art Center folks call it a studio. EFP administrators understand it as an office. The space is, in truth, all the above and more. It's a place where the associated activities of labs, studios, and offices come together in the service of dynamic education.

**To learn more about the program as a Fellow or partner, please e-mail Dr. Ken Pickar at [pickar@caltech.edu](mailto:pickar@caltech.edu) or visit <http://www.efp.caltech.edu>**

Photo, left to right standing: Yasufumi Shiraishi, Serge Sverdlov, Joey Jones, Boris Axelrod, Eagle Jones, Daniel Schenck, Frederick Romberg; seated: Matthew Carroll and Robert Sneddon.