ONLINE COURSES:

THE GOOD, THE BAD, AND THE UGLY

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Off-campus learning — taking many different forms and different names, such as university extension, external courses, and distance learning — has a long history in the United States and other countries. It has often been a means of social mobility for people who otherwise would have been unable to continue their education.

Over 25 years ago Prof. Ellen Cunningham of Saint Mary-of-the-Woods College (currently retired professor and former chair of the Department of Science and Mathematics and member of the Board of Directors of the Kovalevskaia Fund) gave a presentation on this subject in Managua at the Central American conference on "Women in Science, Technology, and Medicine," which was sponsored by the Kovalevskaia Fund and the Nicaraguan federation of professional societies.

Prof. Cunningham explained:

> Saint Mary-of-the-Woods College...is the oldest Catholic college for women in the United States. About fifteen years ago [i.e., around 1972], we were pioneers in establishing a new form of undergraduate education for women, our Women's External Degree Program.
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> 'External degree' means that the student comes to the campus for about one day at the beginning of her semester (which may be almost any month of the year). On that day she meets her instructors as well as her academic advisor, and plans her classes and assignment schedule for the semester. She then goes home and works individually in her own time, sending work to the instructors for comments and

corrections, perhaps talking with the instructors occasionally on the telephone. Because of its flexibility, this external degree format has proven to be an enormous benefit to women with full-time jobs and/or family responsibilities; it has enabled a great many older women to finish their college degrees even though classes at fixed times would have been impossible for them.

In the 40 years since distance learning was instituted at the College, it has evolved into something much larger, more comprehensive, and more high-tech.

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Recently Ann and I took part in an extension course in forest management run by Washington State University (WSU). Our interest in the subject arose because of the roughly 440 acres (180 hectares) of forest land we purchased in western Washington as a long-term investment for the Kovalevskaia Fund. (See my article "'The Word for World Is Forest': A Long-Range Funding Source for Women in Math in Developing Countries," published in *The Mathematical Intelligencer* in December 2011, available at http://link.springer.com/article/10.1007%2Fs00283-011-9237-0.) The main campus of WSU is at the other end of the state from Seattle, but extension courses are given in several cities. Nevertheless, the time and location of the forest management classes were not convenient for us. I went to two classes, and Ann and I went on a Saturday field trip.

It's too bad that we weren't able to take all or part of the forest management class online. (WSU has several online degree and certificate programs, but not in forest management.) We would have gladly paid a fee to enroll and take the field trip, particularly if a real person were available to answer our questions by email. Part of what we'd be paying for would be a certificate of

completion, which might come in handy when we apply for federal or state grants or cost-sharing programs.

Online courses have the potential to greatly enlarge opportunities for several categories of learners — people in the workforce wanting to upgrade their qualifications, hobbyists (such as Ann and me — forestry can be considered our hobby these days), retirees, people forced to stay at home because of childcare or eldercare responsibilities, people living in remote areas. At its best, online education is a 21st-century version of what Ellen Cunningham was reporting on at the 1987 conference in Managua.

However, when we consider online courses as an alternative to on-campus university education for the typical undergraduate, we encounter a totally different set of issues.[*]

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In the United States, belief in the power of technology to transform education goes way back. Almost a century ago a famous American said, "I believe that the motion picture is destined to revolutionize our educational system and that in a few years it will supplant largely, if not entirely, the use of textbooks" (Thomas Edison, 1922). Seventeen years ago another famous American wrote, "The [information] highway [i.e., the Internet] will alter the focus of education from the institution to the individual. The ultimate goal will be changed from getting a diploma to enjoying lifelong learning" (Bill Gates, *The Road Ahead*, 1996). A much more recent comment of the same sort

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[*] Such courses should not be confused with MOOCs (massive open online courses), which in general are free of charge and not for credit. However, MOOCs are being increasingly converted into university-based for-credit courses that charge tuition.

comes from *New York Times* columnist T. L. Friedman, who in an op-ed last January enthused: "...there is one big thing happening that leaves me incredibly hopeful about the future, and that is the budding revolution in global online higher education." Such faith in technology as a panacea for the problems of education is rarely shared by people who have actual experience teaching.

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The appeal of technological fixes is understandable, since one cannot deny that the quality of undergraduate education in the U.S. has been declining. There are many reasons for this. Today's students who enter good universities intending to go into demanding programs in science and technology typically have weaker preparation, less intellectual and developmental maturity, and much worse study habits than such students would have had a generation or two ago. They have emerged from secondary school with minimal exposure to any type of sophisticated thinking; indeed, their teachers have been effectively discouraged from devoting time to critical thinking skills. In most American schools all that matters is improving students' performance on standardized multiple-choice tests. As a result, many university programs are faced with a sad choice — either dumb down their courses or else be prepared for high attrition and failure rates.

Another reason for the decline is inadequacy of the resources devoted to undergraduate education. Most large public universities have seen a sharp decrease in the proportion of their budget that's supported by the state. To make up for these cuts they have raised tuition rapidly and have also greatly expanded fundraising from private sources. But the private funds are often used for purposes that have no direct relation to academics. For example, at the University of Washington, where I teach, a central focus of private fundraising

now is to pay for a quarter-billion-dollar refurbishment of our football stadium. A major change at American universities over the last few decades has been the increasing proportion of resources that go for peripheral purposes (such as athletics, fancy buildings, and a gigantic, top-heavy bureaucracy). It should come as no surprise that many students — and their parents — feel that they are paying more and getting less.

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The main reason to doubt that online courses provide a solution to this dilemma is that it is open to question how much a typical student actually learns from such courses. Anecdotal evidence suggests that most young people have great difficulty learning subjects with high content-density — such as most math and science courses — by watching taped lectures. They are even less likely to retain the content than when they attend an in-person lecture or read a textbook — although attending lectures and studying the textbook are far from ideal learning techniques. Part of the problem is that all their lives they have associated visual media with entertainment, not with study. In theory, a recorded lecture can be paused and rewound, giving time for careful note-taking. But this is simply not what most of today's students do. At least when a serious student sits down in front of a textbook, she thinks of the activity as quiet study time, she tries to concentrate on what she is doing, and she does not "multi-task." In contrast, I have heard reports from people who teach online courses or "hybrids" (part online) that students generally put very little effort into learning from online material.

According to a *New York Times* **editorial ("The Trouble with Online College," Feb. 18, 2013):**

> **The research has shown over and over again that community col-**

> lege students who enroll in online courses are significantly more likely to fail or withdraw than those in traditional classes, which means that they spend hard-earned tuition dollars and get nothing in return. Worse still, low-performing students who may be just barely hanging on in traditional classes tend to fall even further behind in online courses.
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> A five-year study, issued in 2011, tracked 51,000 students enrolled in Washington State community and technical colleges. It found that those who took higher proportions of online courses were less likely to earn degrees or transfer to four-year colleges... [C]ourses delivered solely online may be fine for highly skilled, highly motivated people, but they are inappropriate for struggling students who make up a significant portion of college enrollment and who need close contact with instructors to succeed.

Ann, who teaches at Arizona State University (ASU), has many students who have taken all or most of their earlier courses online. They seem starved for personal contact — they eagerly stay through the break and after class talking with one another about the topic of the day. This is great as far as Ann is concerned, but it reflects a sad reality about their college experience outside of her course. The students who take most of their courses online often feel as if they have been missing out on the college experience. When they reach their senior year, another problem they have is that they have no one to go to for letters of recommendation — Ann's colleagues generally refuse to write letters for students whom they know only online.

Universities such as ASU that have several years' experience have found that online students are less likely than conventional students to develop a feeling of identification with their university. On some level they experience

alienation — for them the traditional term *alma mater* ("nourishing mother") for the university has become just a quaint anachronism.

Online students rarely develop a sense of enthusiasm about the subject. For example, Ann's Women and Gender Studies program has found that the number of majors has declined, apparently because faculty are no longer able to recruit many majors out of the introductory courses, which are now taught almost entirely online.

Online courses are almost always easier than the corresponding on-campus courses, in part because it takes a tremendous amount of faculty time to develop and maintain online equivalents of all of the requirements for student work that a traditional course has and in part because the effort students put into the course is almost always less. Thus, departments must make online courses easier or else face high attrition and failure rates.

When students decide to take online courses, they generally do so for short-term reasons that are obvious to them — convenience, financial savings (such as being able to live at home and work fulltime), and the perception that such courses are easier than traditional ones. They rarely anticipate the negative aspects, which are long-term: the weakness in their training because of having taken less rigorous courses, the difficulty in getting letters of recommendation when they are seniors, and the sinking feeling that many have upon graduation that they have missed out on the true college experience.

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In the short term many faculty also find it expedient to go along with the trend toward online courses. The administration usually offers tempting incentives (the "carrot"), such as the promise that most of the income generated will be returned to the departments. There is also a "stick" — the fear

that departments that buck the trend will be marginalized, will lose students, and will lose resources. “If we snooze, we lose,” is what my department chair said to us when he announced that in the coming year we will be offering two calculus sections online as a pilot project.

If most of our undergraduate courses are converted into online versions, in the long run I see two major consequences. First of all, we should expect steady reductions in faculty positions. Most of the human resources necessary for online courses can be supplied by information-tech personnel, graduate teaching assistants, and adjuncts. Except at the beginning, when lectures are being taped, there is very little need for a senior faculty member.

In the second place, high quality tertiary education will once again become the privilege of an elite. Students at Harvard and Stanford will continue to have personal contact with prominent scholars, do real experiments (not virtual ones) in top-quality laboratories, and enjoy state-of-the-art physical facilities. But the average undergraduate will be getting a college experience that is greatly diminished compared to what her/his parents had in the 1980s and grandparents had in the 1960s.

One of the common arguments for online education is that it will expand opportunities for the less privileged. At its best, it can sometimes do this, in a way similar to what Ellen Cunningham described in her Managua report. However, the massive conversion from on-campus to online courses will eventually result in a lessening — not an expansion — of opportunities for the average person.

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Postscript. The University of Washington has just announced that for the first time it will offer an online Bachelor’s degree. Given by the College of Education, the degree in Early Childhood and Family Studies has several notable

features that place it squarely in the tradition of external degree programs of the sort pioneered by Saint Mary-of-the-Woods College.

(1) It is a "degree completion" program open to students who already have roughly two years of transferable college credit. It is aimed at non-traditional older students (mainly women) who otherwise would probably never finish college.

(2) It is oriented toward a practical career that is in high demand — child care.

(3) The typical student would be a stay-at-home mother who wishes to earn income by running a small child care facility in her home or would like to expand a facility she already has. This student is motivated by the desire to increase her qualifications and obtain a credential that will help her establish herself.

This online degree program fulfills a social need and does not replace an existing (better) on-campus version. Perhaps this is an indication that my university (unlike ASU) will pursue online education in a cautious and thoughtful manner. I hope I am not being overly optimistic.