

Essay: Disputing the Economy of Alchemy

by R. F. (Chip) German Jr.

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I can't remember the point at which I was first introduced to base-metals-to-gold alchemy—probably during a course on World History in my later elementary school years, or maybe it was a Looney Tunes cartoon theme of the late 1950s or early '60s. Certainly, to a kid of modest means who was fascinated that entire civilizations could be built and destroyed over gold, the notion of creating the source of wealth from cheap, readily exploitable components had an attraction, same as any get-rich-quick scheme. Spend little and rule the world. Try to find a more attractive plan.

Now I'm in charge of information technologies at a higher-education institution. From my vantage point, as I look over the entire higher-ed landscape, I see much of that same alchemy notion at work at colleges and universities. Many are trying to get the full array of benefits of information technologies with minimal investments. What's wrong with that? Everything.

If you think of access to information as something that is (or, at least, was) in short supply and as something that is a significant source of riches, then the alchemy approach could seem attractive. In fact, modern alchemists of information have succeeded on a grand scale; through the exploitation of (relatively) cheap components, access to information has improved by almost incalculable proportions, far outpacing the development of mechanisms to help global audiences assess the quality and dependability of that information. Getting information-rich quick really has worked the way an alchemist might have hoped, although many information alchemists found their wealth fleeting in the dot.com bust. It probably would have been true with gold, too. If someone had figured out how to create it cheaply out of base metals, how long would raw gold have held its high value?

Much as I would hope otherwise, the information-alchemy phenomenon echoes what certainly must have been the real motivation for the original metallic alchemy—to get something for almost nothing, with only cosmetic attention given to bettering the human condition. This is not in the territory of the best and highest of human aspirations.

It is precisely because colleges and universities don't see the use of information technologies as critically linked to the most exalted and profound elements of their missions that many apply the economy of alchemy to such activities. None of those colleges and universities—in fact, none of their funding sources (such as state governments for those institutions that are publicly funded)—regard the commonly defined "product" of information technology as among the things that they value the

most. And, because of the usual phrasing of that product—"better access to information"—I can understand why.

The best colleges and universities are fond of commoditization when it reduces the cost of things they need but do not highly value. Let's look at the same point from another angle: the best colleges and universities tend not to assign the highest value to things that can be commoditized. In many respects, information access has been commoditized, so, naturally, colleges and universities do not highly value "simple" information access.

In addition, skeptics of the information age, many of whom sit in faculty offices, argue that better access to information in itself is not beneficial if we have to sacrifice the higher qualities of our humanity to get it. I agree. Just because I have better, easier access today to all things Shakespeare than I did in 1970 doesn't mean that I will more effectively derive meaning from his work now than I did then, listening to Irby Cauthen's spellbinding lectures (even in a large lecture hall at the University of Virginia). What can be missing now in an age of better access to information is the quality of inspiration that accompanied direct exposure to a great teacher.

What do the best colleges and universities, and the individual professors who comprise their core identities, really value? In institutions focused on teaching, it is the inspirational transmission of information in an atmosphere designed to promote discovery, motivating and enabling the connection of meaning to that information, thereby allowing the creation of knowledge and, with some luck, maybe the achievement of wisdom. This work, no matter what particular words its practitioners use to describe it, represents one of humanity's highest callings. I do the job that I do because I want to be a partner with the faculty in this endeavor. And I believe that the information technologies and technologists that I manage can be direct contributors to the accomplishment of those goals. So do a growing number of faculty, as well as some institutional leaders (I am thankful that my institution has healthy proportions of both).

So, let's return to the original question. What's really wrong with the alchemy model for thinking about and funding information technologies in higher education? It is wrong mostly because it starts from a flawed assumption. What was called "computing"—these days expanded to "information technologies"—in higher education is not properly named at all. Computing and information technologies are names for tools or components that can be commoditized and are not especially valued as core components of the character of the best higher-education institutions. They are necessary but neither sufficient nor unique. However, we are not our tools. What we who perform this function in higher education really do is a core process of education—the purposeful catalysis of knowledge-creation. Unfortunately, phrases like that don't sit well as organizational names (the Department of Purposeful Catalysis of Knowledge-Creation).

Here, we have moved from alchemy to a sort of chemistry. I am choosing the words "purposeful catalysis" carefully. The word "catalysis," of course, refers to a chemical reaction. I'm not a chemist, a fact that is obvious to all who are. But, when used by chemists, the word often means the process by which a substance promotes and accelerates a reaction involving other substances without being permanently changed by it. For people in my line of work in colleges and universities, our ultimate goal is to shape our use of information technology so that it catalyzes the interaction between teacher, learner and information to create knowledge. The catalyst/tool—information technology—is unchanged by the "reaction" of knowledge-creation, but the "reaction"

itself can be promoted and accelerated by the presence of the catalyst/tool, if applied appropriately.¹

The notion of appropriate application of the catalyst takes me to the other word—"purposeful." This catalysis isn't random; its use, when most effective, has been meticulously designed by persons who understand its potential value.

The best people working in my field have long had this higher-order sense of mission, even if intuitively felt and unexpressed. It isn't my invention. But, at a time when some institutions are inclined to apply the economy of alchemy to information technologies, we need to get much more explicit and expressive about our true aim.

Certainly, some of the catalysis functions we perform in pursuit of the knowledge "reaction" are less obvious and less direct than others. We provide infrastructure such as networks and servers, and we manage so-called "administrative" systems whose purpose can be defined as supporting the business of higher education. But the way we perform those functions is not the same as in IT organizations in the commercial world. We build and operate infrastructure and administrative systems in very particular ways specifically because we understand what our institutions are here to do, because we understand the higher calling of enabling the creation of knowledge.

Those who really understand this calling understand that the fundamental unit of the knowledge-creation reaction that our institutions value is the teacher-learner human association, which I'll call the knowledge association. But membership in that association isn't strictly limited to an individual teacher and an individual learner. Often there are other students; sometimes there are other faculty and, at some institutions, graduate assistants. Faculty partners, such as librarians, commonly are members of these associations, as can be colleagues at other institutions, students at other institutions, and so on. The knowledge association can be small and simple or large and complex (the word network comes to mind). It is in these units of the knowledge reaction that catalysis is most important and can be most effective, and that is why information technology specialists are increasingly serving as faculty partners in such associations as well.

Although formal roles may be obvious at the establishment of the association, they may become fluid as the association continues. Many times in my twenty-two years of working in higher education, faculty members of all disciplines and ranks, usually with great pleasure, have described wonderful moments when the teacher becomes the learner, and the learner, the teacher. When the atmosphere of fluid roles in pursuit of knowledge is at its most productive, partners of faculty, such as librarians and information technologists, enter the knowledge associations, and the teacher/learner role-distinctions recede, to be called back in play regularly as necessary for order and effective progress. Of course, the associations are rarely overtly formed or dismantled, and they exist for moments, repeated frequently in the contexts of the interactions of faculty and students, as well as in many other moments of scholarly activity.

The information-technology specialists in higher-education institutions are poised, with sufficient resources and growth in numbers, to become full partners in these knowledge associations, helping manipulate the IT catalysts/tools in the knowledge reaction to the direct benefit of teachers and learners. We are approaching the critical mass

¹ Keep in mind that we've long seen one form of information technology whose role as a catalyst/tool in knowledge-creation is unquestioned in our institutions—the book. In a sense, those of us working in the activities awkwardly named "information technologies" are working with later generations of the same catalysis process that has been at the heart of our institutions throughout the history of higher education.

necessary—represented by the full range of IT specialists who understand colleges and universities and the work done within them—to make major advances in the meticulous design required for our purposeful catalysis of knowledge-creation.

For the specialists throughout a higher-education institution's IT organization to truly understand their colleges and universities and the work done in them is a lofty and daunting goal. An IT leader's greatest challenge is to guide and motivate his or her entire staff to effectively take as their own the mission of the institution. Including that mission simply as a touchstone in a strategic plan or as a reference in a budget proposal is not enough.

At the same time, IT leaders are enduring constant pressure to operate more like commercial enterprises, increasing efficiency to hold down costs—the economy of alchemy and the drive to commoditization—messages that undercut the notion that our work is truly intimately tied to institutional mission. I have no problem with increasing efficiency, but the measure to which I want to be held in that context is my organization's effectiveness in direct or indirect contribution to my institution's true product, the ineffable and arguably immeasurable creation of knowledge in its students.

In my time in higher education, I have seen not only explosive change in information technologies but also rapid increases in the capacity of IT specialists to fully internalize and to be driven by an institution's highest values and elements of mission. This is partly because the persons working in IT in higher education are doing so by choice. As recovery from the IT business slump continues, attractive, high-paying options exist for IT specialists throughout the commercial world; yet many stay with higher education. In large part, they do so because they have taken on higher education's mission as their own. And, they find a life engaged in higher education to be challenging and satisfying in unique ways.

The challenge comes in part from a strange phenomenon that characterizes the best institutions in higher education—the fact that all who thrive in them can hold in their brains many concepts that seem to be in direct opposition to each other but that form the essential, complex matrix of a culture of active minds.

For example, we in colleges and universities hold dear both a sense of place, such as that represented by a library or by a residential undergraduate experience, and a sense of placelessness, as is exhibited often by information in a networked world. We expect orderly discipline in scholarly work in the form of the division of the body of knowledge into categories (known as disciplines), mandated sequences of courses, the processes of scientific investigation, the requirement that all academic work will be presented in standard forms with extensive citation of sources, and many other examples. Simultaneously, we value—and actually try to prepare for—serendipity, which we know is the context of many momentous discoveries.

We enjoy associating with each other in groups, defined by many attributes and coming together for many reasons, but we respect so highly the role of the individual that we are accused of being the only environment in which a vote of 35 to 1 is regarded as a tie. We are comfortable with timelessness (When is intellectual examination of any topic ever really finished?), but we constantly impose deadlines and time constraints on ourselves and each other. We always characterize our community as inclusive and egalitarian, inviting everyone to come drink from the cup of knowledge, but we are also quite prepared to establish rigid (though sometimes inscrutable) requirements for persons to qualify for specific status levels in our culture.

We vigorously defend openness and privacy, rigidity and flexibility, hierarchical authority and anarchy, simplicity and complexity, and continuity and change.

This atmosphere of myriad seemingly opposing concepts held simultaneously is an essential element of the knowledge reaction. It is freedom of the mind, and for those of us whose life work is associated with higher education, it is the air we breathe. For most of the IT specialists who stay in higher education despite better offers, the air smells like home.

That atmosphere is also our biggest challenge in designing IT to catalyze the knowledge reaction. Providing better access to information is relatively easy with commoditized tools. Infusing the specific types of information technology we use in higher education with those simultaneously present, apparently opposing concepts is tough. My favorite example is serendipity. How do we replicate in our systems the experience of walking into a library, seeking to find one book in a particular spot in the stacks, being drawn to a book two shelves over that caught your eye when you were scanning the call numbers, and then making intellectual connections, because of that chance event, that change your life and that of others? Such notions are our biggest design challenges, and our greatest hope for meeting them is that the number of higher-ed IT specialists who understand and respect the need to produce just such designs is poised to grow, with thoughtful investment, to critical-mass proportions.

The favorable intersection of three trends will lead higher education to make major strides in meeting the challenges of designing IT-based components that will be ever more effective catalysts of the knowledge reaction. First is the continuing evolution of technology, liberally defined to include not just the tools but creative thinking about new ways to use them, which has only just begun. Second is growth in the proportion of IT specialists who are there because they have heard and understood the calling of work in higher education, with all of its complexities and qualities that resist clear definition and measurement. Third is increasing recognition by the institutions of the potential of information technologies, beyond what has been achieved to date, as exceptionally valuable catalysts in the knowledge reaction. The first trend is not in question. The last two depend on effective leadership and vision (IT and otherwise) at higher-education institutions.

There has never been a more important time for colleges and universities (and their funding sources) to provide resources to the activities that develop IT, directly or indirectly, in its role as catalyst. Do not apply the economy of alchemy to this question. Take advantage of commoditization of the IT industry when it helps lower expenses, but don't presume that IT as applied to the core work of higher education is a commodity with deflating costs. Instead, provide more resources to these activities because what ought to be called the Department of Purposeful Catalysis of Knowledge-Creation functions at the heart of what our higher-education institutions are here to do.

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