From the Editor-in-Chief . . .

VALUE-ORIENTED ELECTRONIC COMMERCE

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The Internet is abuzz with electronic commerce. All too often these days, however, electronic commerce is little more than a euphemism for a Web site with an online catalog and the minimal technology needed to have buyers fill out forms to place orders. As with any buzzword, "electronic commerce" will keep getting used for the most-restrictive, least-common denominator scenarios. That is only to be expected.

However, commerce involves a number of important activities besides the customer reviewing catalogs and placing orders, and the seller creating catalogs and shipping goods. Some upcoming approaches concentrate on how the customer and seller may negotiate on a price, how they may participate in an auction and come to an agreement about the prices at which the merchandise ought to move. These are all useful, if not essential, components of electronic commerce. But let's look beyond them to see what we can achieve over the Internet.

> **Economists know the price of everything and the value of nothing . . . there are a lot of economists on the Internet.**

Price-Oriented Electronic Commerce

It is said that an economist is a person who knows the price of everything and the value of nothing. It looks like there are a lot of economists on the Internet.

What I mean is that many people seem to find simple market mechanisms such as auctions enticing. Accordingly, many auction sites have been set up, and a lot of current research on electronic commerce emphasizes auctions. While the early research considered the familiar kinds of auctions, the newer work deals with more complex forms that can handle more realistic problems. Approaches are emerging that can handle bundled goods respecting the constraints among goods that someone may wish to purchase. An example of a bundled good is a trip that includes an air ticket and a hotel stay.

Simply put, markets are an approach to achieve resource allocation among a group of interested parties. These parties may be distributed, although the markets themselves are centralized. As Herb Simon (who won both the Turing Award for his work on computer science and the Nobel Prize for his work on economics and organizations) observed, if markets have one good property, it is that they clear. In other words, they find a buyer for each piece of merchandise by matching the buyers' and sellers' prices. For this reason, I think auctions will settle down as a useful computational metaphor for various kinds of resource allocation problems.

I rather suspect, however, that auctions will find most of their applicability in settings where the goods being traded satisfy some simple properties. The goods will usually be commodities—of more or less uniform quality at least for some purposes, with a small enough unit and likely availability in large quantities. For me the archetypals of auctionable commodities are electric power and telecommunications bandwidth, but even goods that can last a bit—like nonperishable food—might be appropriate.

However, I believe certain kinds of goods and services will never be right for auctioning. And I don't just mean because of the personal hesitation that I—and others like me—feel for buying a stranger's "antiques" from a garage sale, whether virtual or physical. But quite often, as Herb Simon also observes, a little bit of organization can improve the quality or optimality of resource allocations. I will go further and predict that the interactions must have additional structure so we can conduct electronic commerce in settings where not everything of interest can be reduced to a single price scalar.

Whereas markets will be with us and serve some useful purposes, we might be missing something.

Negotiating over Value

All commerce can at some level be viewed as the formation and management of contracts among various parties. And, I think, markets—and other current approaches for electronic commerce, for that matter—involve contracts that are based on the kinds of contracts used in traditional commerce. Because of the cost and inflexibility of traditional communications, traditional contracts tended to be quite rigid. However, traditional commerce also included a variety of precontractual and noncontractual interactions among the trading parties, so the rigidity of the contracts wouldn't always hurt as much. In the brave new world of (price-oriented) electronic commerce, we seem to have got rid of much of the informal interaction, but not gone beyond online versions of traditional contracts.

Naturally enough, this leads ultimately to reduced value for the participants. Consider the situation where you wish to have some graphical work done to prepare, say, an online advertising brochure. You have some preliminary ideas, but you are not a graphic artist and would like an artist to produce a professional-looking brochure for you. Suppose you find a graphic artist, send them your hand-drawings and notes, and fill out a form to order a completed brochure. The graphic artist can then make the brochure as you ordered. But as a professional, the graphic artist may have a stronger appreciation of aesthetics and presentation than you. They should offer you some guidance to help refine your order. Clearly, they should not unilaterally change the parameters of the order. They might suggest a different layout; you might say that the new layout won't browse well on the kinds of palmtop computers on which you would like your brochure to be viewed, and so on. What this means is that you will be negotiating with the graphic artist. You won't necessarily be haggling over the price, but you will be negotiating nevertheless.

Because present-generation systems do not support this kind of back-and-forth interaction, they essentially force the participants to follow the letter rather than the spirit of their mutual contracts. They can't handle cases where the negotiators are really on the same side. Most of the new work on electronic commerce, too, seems to be concentrating on other aspects of commerce. However, the good work on electronic commerce will never have the kind of impact we imagine unless we can develop approaches that handle customized interactions, with negotiations over value rather than price. This I call the challenge of value-oriented electronic commerce. ∎

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