

It has bugs, but the games are out of this world

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Several decades ago Arthur C. Clarke forecast the birth of HAL, the oddly wired, soft-spoken computer of *2001, A Space Odyssey*. In this science fiction classic, HAL became operational at the HAL plant at the University of Illinois on January 12, 1997. (Stanley Kubrick's movie, which most people know better, made HAL five years older.)

The last time I took a close look around campus, HAL did not appear to be in Champaign. In view of other advances in computing, not many students noticed this "nonbirth."

It may be hard for the post-Star Wars generation to remember, but *2001* was an innovative movie for its time. *2001* was not supposed to be one of those silly science fiction movies, like *Flash Gordon*. Sigh.

Have you seen the *2001* classic recently? With several decades of hindsight, many things look wrong. The space station looks like a toy that George Lucas rejected. More to the point, the vision for the future of computer technology is inconsistent with what has happened. HAL could not have come out of the University of Illinois, Silicon Valley, or Route 128. While this is so for many trite and deeply technical reasons, one thing in particular caught my eye. Most computers today have something HAL lacks. They are more fun.

Humor me for a moment. There is a serious economic point buried in this observation.

Aside from the cute videophone scene and the chess game, nobody in the movie plays with a computer. Nobody treats the advanced technology as if it were a toy. Indeed, there is nothing spirited about the interaction of human beings and their technology.

In 1969 Kubrick did not, and probably could not, anticipate the culture that has since grown up around computing. The movie is simply too somber and sober.

Today's computer industry, particularly the PC industry, is in love with the culture of irreverence and adolescent behaviors. To get the point, just imagine how much more fun HAL would be if a consortium of Valley software developers were to design him today in a nine-month product cycle. HAL would still have bugs of course, but the video games would be out of this world.

Why is fun so often associated with computing technology?

Clocks and toys

First of all, for reasons that go back to the basic appeal of Tinkertoys, a large part of society just likes to build things and admire their creations. As we get older, the toys become more complex, but the appeal does not die.

The Home Brew Club, a group of PC hobbyists on the fringes of the commercial mainstream in the late 1970s, is the best example of this. Except for Bill Gates, Steve Jobs, and maybe a few others, nobody joined this society at its start to make a fortune. Virtually every PC made prior to 1980 was next to useless. The makers and the buyers thought of them as electronic toys, not as harbingers of HAL.

This spirit has never really gone away. Even today, many PC buyers wire their system, install a new card, and modify some software, all to get it to play a bar from Beethoven's ninth symphony when a new e-mail message arrives. It would make Rube Goldberg proud.

Many economists like me love to expound on the productivity advances in business associated with computing. After all, spreadsheets are useful, and networked computers might someday revolutionize work. Truthfully, however, many PC products are nothing more than a lot of fun (and also a big waste of time). No self-respecting industry expert testifying to a congressional committee would ever admit that

users' pursuit of fun fuels the industry's growth, though that does not make it any less true.

Technical historians tell us that Europeans built clocks in town squares because many people enjoyed staring at the gears as the bells mechanically rang. (Only medieval monks cared about the time; they wanted to say their prayers together at the right moment.) Western civilization only learned centuries later that accurate time had commercial value, long after hundreds of years of innovation made clocks more precise (and more fun to watch).

When we watch a fun computer program today, we are just a step away from the medieval fascination with mechanical clocks. If this historical example is any guide, our great-grandchildren might be the first generation to actually figure out how to make computers contribute to economic growth.

Go play with that new CD-ROM, and coo without guilt.

Designers' motives

Clearly, computers are fun partly because users want it that way. That still leaves open the question of how fun finds its way into products.

The answer is both complex and simple. The complex part has to do with the marketing of games, the competition between formats, and the pricing of new products. This is something nobody really understands, but we all teach our MBAs.

The simple part has to do with designers. Think about the self-images that propel their lives. Many of these people have almost no commercial motivation at heart. That is precisely why they are fun to have around and why they design fun products.

Designers seem to come in several forms. One is a professional problem solver. These people tolerate commercialism when it allows them to be greaseless mechanics. They would be as happy to fix a Rube Goldberg machine as they would a best-selling product, just as long as they are occupied with an engaging engineering enigma.

Electronics mechanics show up everywhere in all types of firms.

Sometimes their firms use them effectively, but usually not. A mechanic's definition of heaven is the arrival of frontier hardware to test beta software. Hell is duty on the product support phone lines answering questions from grandmothers.

Other designers think of themselves as artists with electronic tools. These people have the same training as the mechanics, but seem to seek some sort of aesthetic order in their work. Their true aim in life involves either creative self-expression or bragging rights. These designers take Steve Wozniak as their idol. Cheerful, creative, overworked, devoted to the holistic art of design, and just a bit off center, by most accounts the wizard of Woz was in the industry because he loved it.

Of course, the typical artists do not expect to become as much of a star or as rich as the Woz. They would not mind, but they would not complain bitterly if they did not.

Then there are the hobbyists. They are close cousins of the artists but show up in different parts of the galaxy. They may have a day job and write software at night. Sometimes they download shareware and revise it. Often they are students, unrepentant tinkers, or quixotic stargazers. This activity is not a full-time job, just a side interest.

On occasion, a hobbyist's efforts result in small-time triumphs. Judging from the number of products in mail-order catalogs and on bulletin boards, there are tens of thousands of hobbyists in the US alone.

The ironic thing is this: Designers invent, sometimes brilliantly, even if they remain oblivious to commercial factors. If they are lucky, a group of MBAs will later organize production, marketing, and finance efficiently, even if those same MBAs remain oblivious to technical issues. The success of products and the essence of commercial activity, therefore, depend on the strange brew that results from commercializing the activities of designers who have noncommercial motives.

Sometimes, spectacular products unexpectedly emerge and become popular. The computer industry is full of stories of designers who drive their supervisors crazy and produce the most

original software code in the world. Of course, sometimes embarrassments arise too. The industry is also full of stories about software applications that contain hidden calls to pornographic pictures or other nonsense.

Out of this chaos emerge addictive video games, engaging spreadsheets, and thousands of other products that vary in their usefulness and playfulness. This is an unbelievable economic process, one with decidedly noneconomic underpinnings.

To really get the point, ponder this question for a while: Would the Internet have developed so fast if so many hobbyists had not wanted to post pictures of their babies online?

Admittedly, these observations do not explain every new product. For example, they do not fully explain how Microsoft designs its products. Then again, that topic raises all the complex questions about competitive formats, marketing, and so on. As I said, Bill Gates seems to be in this game for more than just the fun of it, but that's another topic for another time.

Parting thoughts

Noncommercial motives lie behind much of what is laudable and laughable about the PC industry's entrepreneurialism. Would this industry have advanced rapidly if we were all not mesmerized by the technical prowess of the products? Would HAL have been so dull if he were designed by committee, like most client-server systems today?

More generally, the preponderance of noncommercial designs in the service of commercial motives produces much of the fun in this industry. This also explains why new ideas still emerge from unexpected places and rocket to prominence.

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