Fact 3: The number of professional software developers in such Asian countries as China and India is increasing rapidly, such that (according to International Data Corp., the source of this particular fact), "the total software population of the Asia/Pacific region will overtake North America's in 2006." The study goes on to say that the growth rate of the programming population is 25.6% a year in China and 24.5% in India.

Fact 4: Asian Universities are beginning to dominate the Top Institutions portion of the Top Scholars and Institutions survey conducted and published by the *Journal of Systems and Software* each year in October. In the latest survey findings, published in October 2005, among the leading institutions of the world based on counting the number of software engineering research publications emerging from them, three of the top five institutions are Asian. Korea Advanced Institute of Science and Technology is number one, National Chiao Tung University of China is number two, and Seoul National University of Korea is number 4. The non-Asian institutions in the top five are Carnegie Mellon University (including its Software Engineering Institute), at number three; and Fraunhofer Institute for Experimental Software Engineering, at number five. What is striking about this particular fact is that as recently as three years ago, in earlier such survey findings, Asian schools were only marginally represented in the top 10, and the top institutions were clearly North American.

Fact 5: The Asian countries are beginning to work together to make IT a priority. According to [1], India and China are working on a "two pagoda" strategy in which India excels in software, and China in hardware. They envision that an "Asian century" in the IT industry will emerge.

Fact 6: Asian students are beginning to dominate the ACM-sponsored International Collegiate Programming contest. According to the July 2005 *Communications* "President's Letter" column, the most recent competition was won by a Chinese University (Shanghai Jiao Tong), and the sole U.S. entry (the University of Illinois) finished seventh [2].

Well, there you have it. These facts seem to add up to this:

- Student populations: The number of Asian students enrolling in computing courses is increasing; U.S. student enrollment is decreasing. The difference is dramatic.
- Student competition: Asian students are winning international programming contests.
- Practitioners: Asian practitioners are increasing at a rate sufficient to pass U.S. practitioner populations in 2006.
- Researchers: Asian institutional software engineering researchers are rapidly accelerating their publication productivity, to the point where they are leading the world in that category.
- Business collaboration: Asian nations are beginning to work together to make sure their advancements continue.

Now let me share a deeply personal thought with you here. I believe in something I call "the test of common sense" for help in making life's decisions. By that I mean this: when it comes time to make a decision about something, I step back a few paces and ask myself "does the conclusion I'm about to reach make sense?"

Let me apply that test here. Common sense tells me that the U.S. has dominated the computing profession for more than five decades now. It's hard for my common sense to accept the possibility that we're about to reach the point where that U.S. dominance is going to be overthrown.

So here's my dilemma. All of the facts stated in this column combine to suggest that something dramatic is happening in the computing world. But my common sense tells me that suggestion isn't valid. That's why I invited your consideration at the beginning of this column, as I would like to learn your opinion on this matter. C

References

1. McDougall, P. Tech powerhouse. *InformationWeek* (Apr. 18, 2005).
2. Patterson, D. Reflections on a programming olympiad. *Commun. ACM 48*, 7 (July 2005), 15.

Robert L. Glass (rlglass@acm.org) is the publisher/editor of *The Software Practitioner* newsletter, and editor emeritus of Elsevier's *Journal of Systems and Software*. He is currently a visiting professor in the ARC Center for Complex Systems at Griffith University, Brisbane, Australia.