

We are living in the worst economic times since the 1930s. The US economy contracted at an annualized rate of 3.8% in the fourth quarter of 2008, the corresponding figure for Japan is 12.7%, and Iceland may become the first post-depression Western economy to suffer from an outright fiscal collapse. Economists tell us that one of the reasons for this worldwide recession is a 'housing bubble' where banks overestimated a borrower's ability to pay back a loan and where house buyers--armed with cheap loans--overestimated the true worth of a house.

The recent Internet bubble is still fresh in some of our minds, where there was a similar overestimation of the true worth of Internet-enabled businesses. That bubble crashed too, with consequences suffered by the entire economy.

Unfortunately, bubbles are not uncommon in networking research. Certain topics appear seemingly from nowhere, become 'hot,' propelled by interest from both leading researchers and funding agencies, and just as mysteriously die off, leaving behind a flood of papers, mostly in second- and third-tier conferences, written by authors only too keen to jump on a trend. Bubbles lead to an overexpenditure of research effort on marginal topics, wasting resources and breeding a certain degree of cynicism amongst our brightest young minds. Moreover, they drain resources from more deserving but less hyped ventures. Can our experience with economic bubbles shed light on research bubbles and teach us how to avoid them?

Both economic and research bubbles share some similarities, such as having unrealistic expectations about what can be achieved by a company, the real-estate market, or a new technology. Bubble participants either naively or cynically invest time and money in solutions and technologies whose success is far from assured and whose widespread adoption would require the complete overthrow of legacy infrastructure. To avoid being caught in a bubble, or to merely avoid being caught in the tail end of one (being at the leading edge of a bubble is both fun and profitable!), ask tough questions about the underlying assumptions. In the midst of the housing bubble, could one point out housing prices could down as easily as they could go up? Could anyone have believed in the '90s that videoconferencing, ATM, RSVP and other 'hot' topics would soon be consigned to the midden heap of history? I think so. It only requires the willingness to question every assumption and draw the inevitable conclusions.

I think that in the end, what really inflates a bubble is money. Cheap money from venture capitalists, banks, and funding agencies makes it profitable to enter a bubble and make it grow. So it is important that the gatekeepers of funding be vigilant. They should be prepared to turn down applications for funding that smack of riding the bubble. Experienced researchers should willingly serve on grant panels, then should be prepared to be critical with even their favourite areas of research if necessary.

Finally, bubbles can be identified and quashed by an active media. The press should have more deeply questioned the Internet and housing bubbles. Research conferences in our field should do the same for research bubbles. Paper reviewers and program committees thus play the same role as investigative journalists.

This is not to say that all speculative ideas should be systematically de-funded and rejected. There should always be room for open-minded, blue-sky research. However, this activity should be limited and clearly identified. Perhaps every conference should have blue-sky sessions where all assumptions are left unchallenged (our community has done this with recent papers on 'clean-slate' designs). The best of these ideas, when proven to be sound, could then be funded and widely adopted.

Of course, I am assuming that that we can get out of bubbles by rational means. Humans are all too fallible, however, and bubble thinking plays on human foibles. Worse, there is an incentive structure that encourages bubble formation: people at the leading edge of a bubble are disproportionately rewarded and people at the tail end can point to large body of literature (emerging from top-ranked places!) to justify their work, which reduces their cognitive effort. So, bubbles may be here to stay.

Nevertheless, given the destructive effects of bubbles over the long term, I suggest that we look out for them, deflating them before they deflate us!