Human Processes

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Harrison-Broninski's Second Law

It could be argued that Computer Science is not really science at all, on the basis that it attempts not to discover truths about nature, but rather to develop better understanding of a specific form of machinery. In effect, Computer Science is engineering – and despite the clean rooms and molecular positioning of modern chip design, not that far removed from the oily world of spanners and blue overalls.

Some Computer Scientists would counter this by saying that computational processes occur throughout the natural world. This may or may not be true, but the vast majority of computing research is not about understanding such lofty matters. The daily concern of most Computer Scientists is to make computing machinery more efficient and more effective in helping people get things done.

Perhaps for this reason, Computer Scientists are attracted to the notion of there being universal Laws of Computing. The most famous of these is Moore's Law:

> *The complexity for minimum component costs has increased at a rate of roughly a factor of two per year*
> Moore, Gordon E., "Cramming more components onto integrated circuits", Electronics Magazine 19 April 1965, p. 4

Usually seen in its popular and slightly changed form as "the number of transistors that can be placed inexpensively on an integrated circuit doubles every 18 months", this is a typical computing "Law" in that its astonishing longevity is due more than anything to it having become a marketing and engineering target for semiconductor manufacturers. In other words, Moore's Law is mostly a self-fulfilling prophecy.

Other popular Laws of Computing include my favorite, the demonic Hofstadter's Law, which is not so much a Law of Computing as a truism about life in general:

> It always takes longer than you expect, even when you take into account Hofstadter's Law.
> Hofstadter, Douglas, "Gödel, Escher, Bach: An Eternal Golden Braid", 1979

A particularly concrete prediction is Bell's Law:

> Roughly every decade a new, lower priced computer class forms based on a new programming platform, network, and interface resulting in new usage and the establishment of a new industry.
> Bell, Gordon, "Bell's Law for the Birth and Death of Computer Classes", Communications of the ACM, January 2008, Vol. 51, No. 1, p. 86–94

This is similar in conception to Moore's Law. However, it has not proved very accurate, particularly in recent years. The general conception according to Bell's Law is of the following computer classes:

- Mainframes (1960s)
- Minicomputers (1970s)
- Personal computers (1980s)
- Web browser client-server structures over IP (1990s)
- Web services (2000s)
- Small devices (2010s)

For a start, these classes do not correspond closely to their decades - mainframes, for example, emerged in the 1950s and minicomputers in the 1960s. It is hard these days to see a difference between "Web browser client-server structures over IP" and the current generation of AJAX Web applications powered by Web services. Further, personal computers have typically been used to run Web browser applications, and are still the dominant devices for workplace computing even in 2012 (although this may change soon with the increasing popularity of tablet computing).

So as an alternative to Bell's Law, I would like to propose Harrison-Broninski's Second Law:

> Every 15 years, workplace computing becomes radically more distributed.

You heard it here first. But what does this actually mean?

Harrison-Broninski's Second Law

We are currently in the 6th distinct period of computing:

1. 1935-1950: Alan Turing lays the foundations of computer science with his concepts of the Turing machine and prototype computer ACE;
2. 1950-1965: Workplace computing begins with the use of EDVAC II for the 1950 US Census;
3. 1965-1980: Mainframes and minicomputers make computing widely available to organizations;
4. 1980-1995: Personal computing devices make computing widely available to individuals;
5. 1995-2010: The Web makes it possible to use data and applications stored anywhere on the Internet;
6. 2010-2025: Social media make it possible to create your own digital, virtual identity.

The key difference between these periods is this - at every transition point, the use of computing is significantly less tied to a specific physical place.

Until 1950, the few computers in existence were in laboratories. From then until 1965, computers lived in large rooms staffed by white-coated attendants, and were often shared by multiple organizations. By 1980, it was possible for moderately-sized organizations to have their own computer(s), which could be located in smaller machine rooms that were easier and cheaper to set up.

Then the world changed, thanks to research at Xerox PARC that finally implemented the ideas on human-computer interaction that Douglas Engelbart had demonstrated to the world in 1968. After 1980, it was normal to have your own computer, both at work and at home.

But an even bigger step was yet to come – the Web. After the emergence of Java applets in 1995, it became easier and easier to move both your data and your processing away from any

specific device, and into the "cloud". Cloud computing means different things to different people, but for simplicity, it is cloud computing if you don't need to know where it happens.

It is easy to see that at each of these step changes, the location of processors and storage devices has become less and less important. We now have almost no contact with them, to the point where children who study IT in school now often don't even learn what a CPU is. They learn about how to *use* ICT, not about how to *operate* it.

So what is the final foreseeable step change, the one that started in 2010?

As of February 2012, Facebook has more than 845 million active users.[i] Since the world's population is now about 7 billion, this means that one person in 8 has a Facebook account. In developed countries, the figure is far higher - 41.6% of the US population[ii], for example.

Facebook is only the start of a process by which people are moving into the cloud not just their data and their applications, but their very selves – or rather, alternative versions of their own selves. Many people already have multiple virtual identities – for example, *personal* on Facebook, *public* on LinkedIn, and *workplace* on their employer's intranet. Some people have already gone far into the virtual world by establishing identities that have characteristics of a hive mind – frequent posters to specialist forums, for example.

We are just at the start of the 6th period, of course. Over the remainder of the current 15 year period we will see people establishing a new type of interactions between these digital identities – not just posts, chat and recommendations, but productive engagements that have specific goals.

Further, since these working relationships are not based on sitting in the same room as each other, or on having the same boss, people will need a new way to create, use and manage them. I believe that people will need to apply the principles of Human Interaction Management to gain value from the digital world in which they operate. In other words, they will agree on the goals of a **Plan**, divide the work required to achieve these goals into **Stages** corresponding to sub-goals, and take on **Roles** that co-operate within each Stage to provide **Deliverables** meeting the sub-goals.

Since all this is digital, it will inevitably require the support of a Human Interaction Management System such as HumanEdj. People will need their virtual identities to be efficient and effective, so will have to define and execute semi-structured, collaborative business processes - but not the kind of processes currently defined using diagramming techniques, modeling languages, and business rules. Rather, the new human interactions will be couched in the simple, everyday language of **Plans**, **Stages**, **Roles** and **Deliverables**.

And the cloud software that helps people manage these structured human interactions will conform to Harrison-Broninski's Second Law – i.e., it will be independent of location. Different people in a Plan will use different process support systems – some people in a Plan may even use more basic messaging technologies such as email to take part. In a world without boundaries, organizational or otherwise, you cannot expect people to login to the same server – any more than this is necessary in order to communicate via email.

To provide such distributed support for Plans requires a new form of technology support for processes, more akin to a Multi-Agent System than to a workflow engine. This in itself will open up new possibilities for the creation of powerful extensions to your virtual identity, extensions that automate your interactions both with people and with machines.

Processes are coming to the masses. Just not processes as you know them.

Afterword

You might be wondering about Harrison-Broninski's First Law. It is this:

> All programmers spend more time debugging than coding.

Ask a programmer how much of their time they spend debugging - they will say 25-30%. Measure it, and you will find it is about double the percentage they say.

Now you can stop wondering why so many ICT projects fail.

Author

Keith Harrison-Broninski has been regarded as an IT and business thought leader since publication of his book "Human Interactions: The Heart And Soul Of Business Process Management" (Meghan-Kiffer Press, 2005 - "a must read for Process Professionals and Systems Analysts alike"). Building on 20 years of research and insights from varied disciplines, his theory of Human Interaction Management (HIM) provides a new way to describe and support collaborative human work.

Conference organizers around the world regularly invite Keith to give keynote lectures to business, IT and academic audiences at national conferences, most recently in Poland, India, the Netherlands, the UK, Finland and Portugal.

Keith is CTO of Role Modellers, whose mission is to develop understanding and support of human-driven processes - the field that Keith has pioneered. The Role Modellers software product HumanEdj leads the industry in computerized support for innovative, collaborative human work and is free for individual use.

Keith stays active as a change management consultant, via which activity he continues to refine and extend HIM theory and the associated methodology Goal-Oriented Organization Design (GOOD).

More information about Keith and his work is available online (http://keith.harrison-broninski.info).

[i] http://www.zdnet.com/blog/facebook/facebook-has-over-845-million-users/8332
[ii] http://www.socialmediatoday.com/roywells1/158020/416-us-population-has-facebook-account

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