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THE FIRST CONFERENCE ON INNOVATION JOURNALISM CONFERENCE PAPERS



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THE FIRST CONFERENCE ON INNOVATION JOURNALISM

CONFERENCE PAPERS

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D. Nordfors, VINNOVA Information VI 2003:5, ISSN 1650-3120 (Oct. 2003)

When Tech Meets Business in Journalism

Adam Edström, Editor-in-Chief Elektroniktidningen, InJo fellow with Fortune.

Engineers and scientists rarely praise tech articles in business publications, more often than not deeming them superficial or outright misleading in their coverage of technology.

Meanwhile, business and marketing professionals tend to shy away from the technical trade press, finding the articles there unintelligible or suffering from acronymitis.

Is there a common ground? Can good journalism bridge the gap between tech and business, for mutual benefit and without simplifying either subject? Personally, not only do I believe there is a common ground, I also believe that there's a pent-up demand for a publication that insults neither the engineers nor the economists. Based on my experience from Elektroniktidningen and my short stint at Fortune I'll try to outline what such a publication could look like.

Elektroniktidningen and Fortune are, of course, two quite different publications. Both are fortnightly, but one is a rather small Swedish technical trade publication, with a circulation of some 15 000 copies, editorial staff of 7 people, read mainly by 25 000 engineers in Sweden. The other is global business magazine with a circulation touching a million, a staff of almost 100, and is read around the world by top business managers and their wannabes.

I won't talk much about the business side of publishing, suffice to say that the recently published Fortune 500 issue in itself had more ad revenue than Elektroniktidningen has accumulated since it's inception in 1992.

Different as the two publications might be, in terms of journalism covering innovation based on technology or other natural sciences they face some of the same challenges. Neither has a systematic approach to technology or innovation research. Both rely on the gut feeling of individual reporters and editors, networks in industry and academia, industrial analysts and other sources, both for inspiration and for research. The Swedish electronics industry might be small enough for any journalist with engineering background to learn in five or ten years, but the U.S. plethora of innovation-rich companies is definitely too large a hunting ground.

- We believe in serendipity, in smart ad-hocery, says Managing Editor Rik Kirkland.
- We've got some really smart people working here who can get the bigger picture.

Publishing is not a science. And even if it was, the goal is hardly ever to cover and judge each and every piece of new technology, not even a representative portion thereof. There has to be an element of sexiness, of "wow", in every story. Trendy technology, cool companies and exuberant personalities are more palatable to the readers, and thus deserve bigger coverage. This is true for both Elektroniktidningen and Fortune.

- I only publish stories about technology that I like myself or that my parents would like, says Dan Roth, Technology Editor.

Presumptuous as it may sound, the editorial coverage of the two publications is getting closer to each other. Elektroniktidningen has for some years now consistently tried to increase its coverage of the business aspects of technology. Kirkland (who is not Editor-in-Chief since that title has been held by Time Warner's CEO ever since Henry Luce founded the publication in 1930), aims for more technology in his publication. The annual Cool Companies issue was revived this year. An Innovation section will be re-launched by the summer, after a few years in oblivion. And an editorial advisor with solid Silicon Valley background will soon join the staff.

- We got burned after the dot-com crash. We probably retreated too far, says Dan Roth. Another reason for the tech revival is Kirkland's concern with the aging profile of the readership. The average Fortune reader is almost 50 years old, and older readers tend to skip the stories the under-35's devour – like cover stories about Google or Skype. To fulfil the demands of both those who lost belief in tech after the dot-com bubble and those still faithful is a delicate balance. But Kirkland and indeed most of his tech journalists claims that there's been a recent change in attitude towards innovation.
- It used to be all about the grand vision. Now there's more emphasis on execution. The scandals in American business have brought a new consensus – we can't grow [as a nation] just by supersizing our companies and markets.
- We'll never be a Wired, nor will we evolve towards a science magazine, but innovation could be our fourth pillar, besides companies, people and trends.

Robert Friedman, Fortune's International Editor, has a slightly more practical view, at least on the surface, saying that: “a good Fortune story consists of 40 % people, 40 % business and no more than 20 % other content”.

While no such elaborate recipes have been proposed at Elektroniktidningen, I've always preached that our readers put technology first, money thereafter and people is a trailing number three. We have assumed that our readers like and understand technology, and while we've never really grasped how much business content they would like the proportions have changed to the advantage of the latter.

At Fortune there's a widespread suspicion of technology per se-stories. Peter Petre, Senior Technology Editor at Large, says that only recently has he felt a need for more such stories. Dan Roth is even more wary. Asked what his readers really want, he answers that they “want to go to cocktail parties and sound smarter than their friends”. But even he acknowledges that “innovation in itself can be cool”.

“The problem for Fortune”, says Roth, “is if we should wait until the innovation is approved by the market, and therefore old news, or if we should write about it when it's new, interest is low and the technology is difficult to judge”. “Our biggest issue is to figure out what's for real and what's bullshit”.

(A historical factoid – when the transistor was invented in 1947 it took six months until any widespread publication mentioned it. Today any university spin-off with self-esteem hires an army of PR consultants long before the first prototype is conceived.)

Timing is not a problem for Elektroniktidningen. We have always put great pride in being first to publish stories about new technology or new tech companies. If we hype the wrong thing – well, so be it. That’s our stance on the old “publish and be damned” statement. Admittedly, we hyped digital TV a decade too early, but that was when the inventions were made, the standards agreed on and the prototypes designed. That the market didn’t appreciate this until much later was not our problem, at least not a problem we recognized at the time.

Some Fortune editors still talk with embarrassment about the July 1972 cover story touting the Wankel engine as the replacement of the four-stroke, calling it an invention that would “reshape the [car] industry’s future”. And speech recognition has been ballyhooed as the next big thing for ten years.

- Bread and butter for Fortune is what’s going on in six months. What’s Wal-mart doing with RFID? What will happen to network security? There is such a thing as being too early, where we’ll be in 5 years will always be an additive [in Fortune], says Kirkland.

Pressure to shorten design cycles and shorter product generations contribute to the convergence of business and tech journalism. In the early 1990’s it took years and years for an invention to reach the market and a few more years before it appeared on the radar screens of the business publications. Internet has of course changed that. Today a good article can trigger readers to venture on personal fact-finding missions. My conclusion is that the role of journalism is changing from enlightening to trend spotting. And in order to compete with the information-rich society, both tech and business journalism have to become more entertaining.

Resourceful publications, like Fortune, should have ample opportunity to venture this road, if willing. Smaller magazines might find it harder. The “new economy” years put hitherto unseen productivity pressure on both business and tech publications. Not only was there a tremendous reader demand for tech stories in the heydays of the bubble – the influx of ad pages made publications understaffed and unable to maintain the journalistic quality. Classic journalistic skepticism and due diligence were thrown out the window. “The Wall Street hype machine co-opted the language of science and technology to promote stocks. The code of ethics changed” says Peter Petre.

As a result basically any PR company could successfully pitch anything new and tech to any editor. Now, in the wake of the burst bubble, the information infrastructure is still there, but ad pages are not. And while understaffing might still be an issue at publications forced to downsize, some magazines, including Fortune, have the highest ratio of editors per page in history. Readers should benefit from this situation, assuming that editors have learned something from the experience.

- We got a lot of bad habits during the dot-com days. But it’s easy to reverse, all we have to do is go back to more classic journalism practices, says Peter Petre.

Fortune might not be the place to look for the coveted common ground of business and technology. The business roots and the trademark are too strong. Sure, Fortune will

publish some great tech stories, but the predominant focus on big companies and the widespread editorial assumption that readers don't know anything about technology but do know a fair deal about business prevents any major change of direction. Still, Fortune editors offer several nuggets of advice for a tech/business combo publication.

“It would need wide-eyed skepticism”, says Rik Kirkland. “Wide-eyed as the wonder of a kid, that magic quality of being amazed. Skepticism as in Wait a minute! What can you do, and what can't you. Now, and in three years.”

That publication is neither Fortune nor Elektroniktidningen. Actually, I don't know of any publication that fits this description. But it would be a cool challenge to create one.

Innovation Journalism in Popular Scientific Press

Patric Hadenius, Editor Forskning & Framsteg, InJo fellow at Technology Review

Abstract:

This talk will focus on what methods of innovation journalism can be used in a popular science magazine. It starts with a description of MIT's magazine of innovation, Technology Review, TR, its marketplace, departments, features, and conditions for accepting a story, and necessary components in a story. Then the talk will move on to comparing with Forskning & Framsteg, F&F, a magazine roughly equivalent to Scientific American. While there are more similarities than expected, the focus will be on differences between F&F and TR. The most important discrepancy is probably how TR is instrumental to its readers, while Forskning & Framsteg concentrates on general knowledge. The key question then remains: is instrumentality imperative to innovation journalism?

Very Similar

When executive editor David Rotman, at a TR editorial meeting, gives an advice on how to write a caption, it's like a *deja vu*. He says: "Write about what you can see in the picture, not a short summary of the article". Now, guess what, the exact same advice was given by F&F's editor-in-chief just weeks before I left Sweden.

Actually the most striking experience working at TR is how alike they are. Advice, problems, solutions, struggles, the deadline sheets, headline meetings, art meetings, department brainstorms, and just about everything, is very comparable.

But of course there are differences too, some due to the different sizes of the magazines, in circulation and staff number, some due to differences in culture, and the again some due to the fact that one magazine is an innovation magazine, and the

other is a popular science magazine. It is this last difference – the market position – that this talk will focus on.

Technology Review

The magazine TR has a circulation of 315,000 copies, it comes out 10 times per year. Its mission is to promote the understanding of emerging technologies and their impact on leaders. TR's editorial mission says: "All TR content must pass a rigorous editorial litmus test. The criteria for the products we deliver to our sophisticated community include. • A clear, strong message with a definitive point of view • Why this article matters to you and your business, • Deep analysis of the profit potential and impact of emerging technologies, • Stories that will illustrate a trend rather than round up."

Maybe the best way to describe TR's litmus test, is in the words of senior editor David Talbot: "everything gets a reality-check". To publish a story the technology covered needs to actually make some progress – being commercialized, finding new or wider applications. And for technology in the laboratory, news could mean concrete evidence of an important advance. So, a hydrogen fuel cell that has 20 percent better efficiency could be very newsworthy, even though it's still too costly to make much impression in the marketplace. Maybe a big company is licensing that advanced technology – that could be a piece of news. And TR could also write stories about policy trends that are affecting technology.

TR doesn't write about things just because they are cool. The magazine need some evidence that they are important for some reason, and having traction (or are likely to) out there in the real world. You won't find a story about technology for keeping someone alive on a space flight to Saturn, or technology for vertical-takeoff planes that could slash airport delays, even if people might be doing research on all this stuff.

Also TR doesn't write straight business stories. They wouldn't publish stories about how legal woes will affect Microsoft, or about mergers or about spin-offs or stock trends.

Core areas of coverage is: biotechnology/healthcare, computers/electronics, energy, nanotechnology, security, software, telecommunications/Internet, and transportation. The readers are 48 years on average, 68% are male, 96 % are college educated, close to 50 % have graduate study, 13% are CEO's.

Prototype department

A more close look at the distribution of articles in TR reveals that of the 86 page April issue, ads accounts for 29 pages, features for 32 pages, the rest is regular departments and columns, that's one third of the magazine.

Prototype is the first department in the book. It's about technology straight from the lab. Here you'll find short news stories on technology's first draft. This is the department with solutions just when they are ripe for commercialization. See appendix 1 for an example, a story on a new software for searching images with a camera enabled cell phone. It is a story on a prototype that is working, but has several years before it hits the market. The particular technology has some patents pending, but no start-up. Other stories have start-up's just forming, but if there is a product already on the shelf, it's no use pitching for a Prototype, then it's time for innovation news.

Since prototype news items are very short – usually less than 200 words – the order of writing is: solution, problem, future.

Innovation news department

This is the department that picks up just after technology has left the lab. It calls itself “the forefront of emerging technology, R&D, and market trends”. In this section you

will find either stories on one company and their brand new product, or on a new field, a niche, and the exciting products in this field. See appendix 2 for an example.

Partly because they are longer than prototype-items, the order of innovation news is more straightforward: problem, solution, technology, company, market. The stories range from 300 words up to 600 words.

Other departments

One regular department in the back of the book is called Launch pad. It is a one-page portrait of a hot university startup. In the April issue the story is about a company called NanoInk, a new company coming from Northwestern University. The setup looks a lot like the department Innovation news, but focus is on the company rather than the technology. Launch pad stories answers questions like when the company was founded, how much the company has raised, market forecasts. In this department competitors are usually dealt with in a sidebar.

Other departments in the magazine includes, Trailing edge; about innovation history, Point of impact; a Q&A with an important decision maker in a hot field, Visualize; popular mechanics, and Demo, a kind of popular science approach to a behind the scenes story. This last department, Demo, actually is a regular feature, rather than a department, but readers probably don't care.

Features

In the April issue there were five features, out of which one was a cover story on hybrid cars, two were in a special report on virtual connections and one was a Q&A with a famous VC, the last feature was on a new cure for malaria.

There is a focus on good storytelling, a narrative, with portraits of key people in the field. But explaining the technology is equally important, how it works and how it is better than what used to be around. The market, companies in that market and what is expected to happen, is the third leg of a good TR feature.

It is like a cross between a Scientific American and Fortune feature. David Rotman says that technology features in Fortune could almost always work in TR, with the same amount of economics, adding some technology, but reducing the amount of storytelling slightly.

Forskning & Framsteg

Forskning & Framsteg – Research and Progress – is a Swedish popular science magazine covering all kinds of research, from science to the social sciences and humanities. More than 30 years ago, the magazine was founded to cover Swedish research and innovation. Still today, leading research and innovation organizations in Sweden are contributors to the non-profit organization behind F&F.

Technology research and innovation is on the top-three list of what readers want to read more about in F&F. It is also an important part of the editorial policy to write about the technological frontline and innovations. The magazine has four goals: • to give general knowledge from a research standpoint, • to cover the frontier of knowledge, • to focus on the readers preferences, • to be respectable as a voice that is listened to in the Swedish society.

F&F is comparable with Scientific American. It has about the same position in the innovation system, and probably about the same kind of readers, and is also written mainly by experts, not by journalists.

F&F has a circulation of 50,000 copies, comes out 8 times per year. About 58% of the 250,000 readers are male and the age is close to the Swedish median, 48 years. More than 50 percent has university education, 14 percent have a PhD. One important characteristic of the popular science reader is that she or he wants to know rather than needs to know.

Three kinds of science writing

There are several types of texts covering science: scientific writing, science information, popular science and science journalism. Unlike innovation journalism, popular science has been around for a while, and the borders to other genres of texts covering science are quite established. Still there is some confusion between the two areas of popular science and science journalism, where experts, scientists, most often write the former, while of course journalists write science journalism. Also popular science tends to be more educational and science journalism tends to be more critical.

Since F&F is partly written by experts, some of it's content is definitely popular science, but the editorial staff writes about one half of the contents, and most of those stories could probably be treated as science journalism. The news section is written by the editorial staff only, and is science journalism.

Fokus – focus department

The news section of F&F is divided into two main parts; one could be called Focus in English, the other Wide angle. The first is news oriented and the second is more wide-ranging, with Q&A's, short essays, lists, web tips and trivia.

The editorial goal for the first news section, Focus, is to cover important and recent advancements in science and humanities. It is seen as a service to the reader; all major scientific breakthroughs shall be covered here. Reading this should be sufficient to have a light understanding on what is going on. Even news that has been covered in other media will be presented here if they are significant enough. It is a broad mix ranging from astronomy and quantum physics to history and anthropology.

The Focus section is followed by a short essay kind of page, called Page X, with a scientific view on a public problem. This page has a photo story next to it and after that comes the Wide angle pages. These are typical popular science magazine short items.

Features

There are several different types of features in F&F; the two main ones are typical popular science essay and journalistic science reporting. In the April Issue there was nine features, actually one more than the usual eight. Three of the nine features were written by editors at the magazine, six were written by scientists. The features cover physiology; fat people and sugar, biology; turtles navigation, philosophy; prudence concept, technology; blue laser technology, history; the evolution of monuments and statues, language; writing easy language, IT; multiplayer computer games, and sociology; massmedia and alarms.

Differences

I said in the beginning that there are more similarities than differences between these two magazines, and this is not only true to the way work is done, but also on the actual stories. But let's concentrate on the differences. And they are actually not that hard to find either. Just look at them. If you compare them by their layout they certainly are poles apart. Different formats, no ads, different type, use of photo. Adding to this is the fact that by covering for example animal and plant biology there are always opportunities to have eye-catching photo essays.

If we plough deeper, into the actual reporting, there are differences there as well.

The most important difference is, I think, what the readers use the reporting for. TR is far more instrumental to its readers. TR reports on what readers need to know to stay informed as researchers, scientists, venture capitalists, bureaucrats, decision makers in technologically intensive markets, even students deciding on what to study. this instrumentality is also very effective as a tool to decide what to publish or not. It can be used to kill a story that is too researchy, because it simply doesn't give any useful information. In F&F any new knowledge could be worth a story, and the measure is more fuzzy.

The other great difference is of course the stage at which research and development will be reported. A market place diagram, showing where in the innovation process the different magazines fit, illustrates this very well: first comes Science, then comes F&F, then comes TR, and then comes Fortune. They have different roles in the innovation system. This affects every story, since there is often something real, even if it's just new software, to report on. There is actually something concrete to hold on to, and a problem that this concrete gizmo solves. This closeness to the market, to commercialization induces other problems, but those are fortunately covered by other talks on this conference.

There is one third difference between the reporting in F&F and TR. But I don't think this one has to do with science journalism versus innovation journalism. This is about the optimistic view of technology in society. Here my sense is that TR is more positive to change and to the benefit of technology, while F&F – being totally optimistic about the role of science and research – is more skeptical to the use of new technology. I have been told that TR used to have a critical voice, but that it changed. There is a more optimistic popular science magazines around, and probably could be a more skeptic innovation magazine too. But I think that a positive approach comes partly with a magazine being instrumental Turning technology down can be interesting, but not as useful as pointing to new cool applications of it.

This brings us to the final question: Is there a place for innovation journalism in a magazine like F&F? Is it possible to have stories that are instrumental to its readers? Is it possible to write about gizmos, start-ups, and venture capital?

The answer if of course: yes. Not only would it work great, it would probably vitalize a popular science magazine – especially if the optimistic attitude is brought along. Most innovation news reporting in TR would fit with just a few minor changes in F&F. Some news in F&F could actually also work in TR, but not so many. All the features in TR would work in F&F, but with major rewrites, since storytelling is so different. The two features on technology in F&F would work fine in TR, also here

with some rewriting. In the features TR uses more people and surroundings, while F&F uses more facts. It probably wouldn't hurt to get some of those people into the F&F-stories, but it would have to be done carefully not to chock the readers.

Changing to Popular innovation

Ok, now we know it can be done. But how? Let's try to take a typical new story in TR and convert it to F&F.

This is one that I wrote on Holographic storage for TR (see appendix 2). It will be published in the may issue of TR and tells the story about a new storage device that promises terrabyte space on a DVD-size disc. The hook is, here comes terrabyte storage, the angle is long awaited technology finally comes out.

If I was to write the same story in F&F I could use the same hook. Possibly downplaying the future need for such a device a little bit. I would omit the details that tell about the launch of this device and the predicted market, and talk more on the history of holographic research. It would still be an innovation driven news story but with a slightly different content.

Looking at other news items, I find that there is probably a standard order in which one could translate an innovation story to work in a popular science magazine: Use the same hook, but check for to optimistic statements. Often the same angle can be used. Replace market statements with reports from basic research, and the story is all set.

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Appendix 1:

Pointing With Your Cell Phone

Not sure you've made it to the right building on a crowded college campus? Think you might like to buy a car like one you see across the street, but don't know what kind it is? Why not use your phone – not to make a call, but to take a picture and use that image to search for the desired information? Technology developed at MIT's Computer Science and Artificial Intelligence Laboratory will, once it's loaded on your phone, send the image to a database, compare it to other pictures, and then present you with a list of matches, together with facts such as the address and name of the building, or the make, model, and price of the car. Called iDiexis, it works together with a server that crawls the Web for pictures, preprocesses them – identifying shapes and other major details – and stores them on a dedicated database. "Others have demonstrated the use of photos and image comparisons for searching, but this is the first one that is mobile," says project leader Trevor Darrell. The researchers hope the service will be available on your phone in two years.

Appendix 2:

Home Holographic Storage

You could store a whole lot of things on a one-terabyte computer disc – say, a million novels, or hundreds of full-length movies. A Lucent Technologies spinoff is hoping to bring you that kind of capacity using a long-talked-about technology: holographic storage, in which a laser records data in three dimensions on a polymer medium. The technology can store up to 300 times as much data as traditional optical drives of the same physical size, and the startup, Longmont, CO-based InPhase Technologies, says they'll start selling the holographic drives next year.

InPhase's initial product, with discs capable of storing 200 gigabytes and reading and writing data at 20 megabytes per second – four times as fast as today's DVDs – will

be relatively expensive and marketed to companies and government agencies. Because they can read large chunks of data at high rates, the drives could be ideal for uses such as image searching and comparison. That's why InPhase's first target market will be organizations with large image-archiving needs, such as the mapmaking agency that supports the U.S. defense and intelligence communities. But the company hopes holographic storage will eventually be available to consumers, and along with another startup company, a Polaroid spinoff in Maynard, MA, called Aprilis, also in the holographic business, they are licensing the technology to companies such as Sony and Sanyo, which should have products on the market within four years. In fact, says analyst Wolfgang Schlichting, a research manager at IDC, an information technology consultancy in Framingham, MA, it's the work done by electronics manufacturers to create accurate and cheap lasers and sensors for CD players, digital cameras, and DVD drives that is making holographic disc drives affordable.

Schlichting thinks the technology is a promising successor to today's magnetic and optical storage products but points out one big remaining limitation: the holographic medium – a photosensitive polymer that records and stores the data – isn't yet rewritable. In the meantime, InPhase expects to market its own non-rewritable, 200-gigabyte holographic drives late next year. But a rewritable drive is just a couple of years away, they say. – Patric Hadenius

The Scent of Journalism: Interactions of Innovation Journalism and the Corporate Innovation System

Abstract:

“Innovation Journalism” is a new and as yet ill-defined term. This paper analyzes it in the scope of its effect at the receiver, the corporation, and how the innovation system within the corporation interacts with information. As such, it can be framed in various theories: Information foraging, opportunity cost, cohesive elements, etc. The paper presents an analysis of some of these, and points to the need for further research on receiver terms.

Introduction:

From a conceptual point of view, any organization can be modelled in terms of interacting systems. The cohesion of system is determined by the opportunity cost (as described by Coase)[1] – but in addition to the monetary cost defined by Coase, opportunity cost must be defined in terms of the other resources in a corporation, primarily the time of its employees.

The actors within the systems are constrained by these opportunity costs in terms of how and with whom they can interact. But they are also constrained in terms of their own environment, and habits they share (which can either be tantamount to group-think, or form a corporate culture; or both).

Opportunity costs does not only constrain the corporation into an organizational framework, however. It also constrains the various organizations within the company. Any company can be regarded as a set of interacting systems, which partially overlap. These are held together by the opportunity costs, i.e. outsourcing of a system can occur when a function is performed more cheaply and easily by alternate organizations. These organizations, in turn, make the outsourced function their core activity, and by this focus can generate savings and profits. But this is standard economic theory, and will not be further investigated here.

Organizations within the company, performing their function as systems, interact with organizations on the outside of themselves. For some functions, e.g. administration, legal, strategy etc, these organizations are required to be within the company. In another dimension, e.g. the professional dimension of the organization, the interaction takes place with peers outside the corporation. Members of the innovation system within the company interact with their peers outside the company, in similar organizations in other companies, academia, etc. The interaction with peers can be personal, but since the cost for this is vastly larger than alternate methods, this is constrained by the opportunity cost for the interaction (the budget for this will be limited, and prioritized for activities where the company can have a direct effect, such as standardization).

An alternate method of interaction is to read publications, and publish yourself. This is of course vastly less satisfying than methods which afford personal interaction, but may be preferable for purposes of understanding the message (i.e. for non-native English speakers, being able to read a text with a dictionary in hand is much more satisfying than being forced to listen to someone speak fast with a strong regional accent). The interaction this way is slowed down by several factors: The slowness of the publication, the habit of consumption, and the difficulty in finding information.

The latter two of these can be explained with in the same theoretical framework. The slowness of publication can be speeded up by non-traditional methods, especially if they do not include the peer-review process (and even if they do, at times). Examples include the

Physics Pre-Print Archive at Los Alamos (<http://www.arxiv.org>), but this is an ongoing discussion in the new media community. However, the process is frequently too slow for companies (incurring too high opportunity costs in terms of time).

Information foraging

As mentioned, the habit of consumption and the difficulty in finding information can be explained within the same theoretical framework. In knowledge-based organizations, finding and retrieving information is based on the foraging for information by the actors. Information foraging, first outlined by Pirolli (1999)[2], frames the search and use of information primarily in anthropological terms. Describing the innovation system as a food web provides an intriguingly simple model for how the senders and receivers interact.

If the information inputs into the innovation system are regarded in foraging terms, the collective foraging of the system constitutes a conceptual model for the peer interaction, and is also formative of the collective (collected) knowledge of the organization. This implies that apart from the organizational model which constrains their actions based on cost, they also share a conceptual model of how to interact with their peers, within and outside the organization. This can be based in patterns inherited from the education environment shared by the actors (community of engineers, formally and informally defined); by societal factors (the “directors clubs” where businessmen meet and interact). A constraint is also the tools provided by the organization for networking (e-mail system, discussion lists, web sites, informal Friday afternoon lectures, etc).

If expressed in foraging terms, the most frequently selected sources of information become those with the most heavily associated information scent trails. This settles the habit of consumption – actors tend to search for the information which their immediate peers consume, to make sure they have the same information, and implicitly the same information sources – and also establishes a collective method of finding information which has less resistance (lower opportunity cost) than other methods.

However, this also implies that alternate information sources will have a difficult time in establishing themselves, unless they can offer lower opportunity costs or heavier scent trails (i.e. lower opportunity costs). An example of this is the establishment of new media, focussed on one single industry, such as Light Reading (<http://www.lightreading.com>), which established itself as the primary publication of the optical communications industry based on the good industry contacts of its editors and its focus.

There are other constraints on the information foraging in the innovation system. There are a number of possible alternate information sources which may interact to form the “information food web” of the innovation system. These can be constraining to various degrees (and hence, in information foraging terms, variously nourishing). Constraints are brought by requirements on the result of the innovation system; these may include positive requirements (that a customer requirements, such as defined in a standard, has to be fulfilled); or negative requirements (i.e. that a product must not use certain methods, since these have been patented). Patents are examples of information which can be used as both positive and negative requirements, depending on the terms by which the corporation has licensed the patent. If no license exists, the patent will be a negative constraint, since to implement it would constitute a violation of the patent, and be costly; if, however, the corporation has licensed the patent, it turns to a positive constraint, since it is a known method which solves a problem.

Global cohesion

Patents and standards are not the only information sources which feed into the food web of a corporation. But they are global, and they share standardized access methods. This implies that both standards and patents have similar opportunity costs in all instances of a system within an organization. That means that there is an opportunity cost of NOT using them; in addition to the fact that they constitute the common glue that holds the innovation system in the industry together, which implies that there may be an additional cost of not using them, in terms of customer requirements (which, however, has to be weighed against the development cost of the corporation for the product addressing the customer requirement).

This implies that patents and standards are part of the answer to the question of how an engineer in Sweden know that his colleagues in Japan and Germany have the same knowledge, and share the same approach to solving a problem. Another strong cohesive factor is the educational system, which attempts to impose a global standard for knowledge. While you may say that “engineer” means the same thing in Japan as in Germany, there is no formal agreement that makes it so, and in fact even those degrees where a global standardization has been attempted can vary quite widely (e.g. a Ph. D. from a small Japanese university may not at all mean the same thing as a Ph. D. from a small Swedish university). That is why countries have to form bilateral agreement to accept each others degrees, or impose tests to verify them (the case of medical doctors being a case in point, where global mobility is actually supposed to exist, but does so only because of this).

Being part of the same global system also imposes a constraint on the knowledge of the individuals interacting within the corporate systems, however. If you are to be able to say meaningful things to your peers from other corporations, you have to speak the same language (at least, figuratively speaking). This implies that standards and patents also form a meaningful constraint in this regard, as does the research reports etc. that can be consumed as part of the information diet of the innovation system. Interestingly enough, innovations expressed as products (i.e. implemented software) tend to have higher information value than information expressed as conceptual descriptions (i.e. research reports), by virtue of demonstrating the concepts they attempt to communicate in a measurable way.

Another important constraint, which I have only cursory touched upon, is the attempt by the system to minimize the cost of the role the actor plays. Given that a system consists of a set of interacting roles, and the goal of the system is to provide an output which corresponds to a set of requirements with the minimum level of inputs, it becomes important to make sure each role does not consume more resources than necessary to fulfil its function (i.e. minimize the cost of the role). This implies a minimization of the cost of information, as well. As long as their cost is lower or equal (i.e. an engineer in India will be cheaper even if he uses the same patent information at the same cost as an American engineer, since his salary is lower) other factors will determine, such as the salary. An important factor is also the measurement of the productivity of the individual. If you are measured by the number of lines of code you write, you will not be more productive than your peers within the same production system if you look up information sources and learn a lot, unless the peers are given the same opportunity. And since measuring rods for productivity are notoriously hard to define, such simple measurements will constrain the innovation system to the same information sources as the innovation system it is attempting to replace. By the way, this implies that as Indian engineers, you will be locked into a follower role as long as your work is measured using that of those you are replacing. Outsourcing thus becomes a losing proposition for all parties. If all information consumed within an innovation system is directed by the downward cost pressure to be the same as that which it attempts to replace, how can new information sources establish themselves? And what is the role of innovation journalism?

The role of innovation journalism

Innovation journalism, defined as journalism with the intent to be input into the corporate innovation system, must fulfil a set of requirements imposed by its customer. Otherwise, its consumption will not add value for the customer and it will not be used. Sparsely used information sources, however, risk dropping out of the food web of the innovation system within the corporation, since their opportunity cost is higher than those of habitually used information sources. If an information source is to establish itself as a habitually consumed source (at the end of a heavy scent trail), it can conform to either of two roles:

- When interacting with a new or recently formed innovation system, it can establish itself as the primary source for information about primary information (e.g. describe which specifications have been released by standards bodies). This role was taken by magazines and web sites during the Internet boom (examples are Wired and xml.com); it also helps explain why the role does not necessarily have to be taken by the objectively best information source – it is all about the contacts you have, i.e. what scent trail you can entice others to lay down to you.
- The second role is that of a better source of information for an innovation system. If interacting with an established innovation system, providing it with more nutrition for the same amount of effort will lead to a heavier scent trail, and so the establishment of this media product as the leading alternative. Examples include PC World (which established itself as an alternative to industry leader Byte). The process of increasing productivity and so oust a competitor is by the way a regular economic process, and so follows regular economic theory.

In the main, there are two strategies to be considered nutritious by informavores: Small amounts of frequent nutrition, or larger amounts more rarely. If a scent trail is to be laid down to either, it has to be consistent and consistently renewed, so that the scent trail is renewed. These strategies are orthogonal to the establishment of the scent trail, but can be used to fend off competition, if applied correctly. The first role in particular points to the importance of establishing a contact network which can feed the scent trail to the publication. However, both roles have an underlying assumption, the production of which interacts with the production of the role: It has to be trusted.

Innovation journalism can also serve an important role in establishing trust. Secondary information services (such as Light Reading or xml.com) serve as aggregators, but they would not be a viable proposition unless they were able to establish themselves as a consistently trustworthy source. In that case, the scent trail devolves, and goes cold.

Trust can be established in two major ways: By being consistently as good as or better than expectations (earning trust); and by leveraging transmitted trust (being awarded trust). Earning trust takes time and is expensive, but is nevertheless necessary to establish yourself as a trusted actor. Leveraging transmitted trust is easier, and can be done either by leveraging non-monetary rewards (such as reputation), or by buying trust (by using spokespersons which are trusted, by advertising in trusted publications, etc). Both ways are possible, and usually a combination is applied.

Summary

Information access abides by the same economic constraints as any other corporate activity. If it is to fulfil a meaningful function, innovation journalism has to fit into the innovation system of the corporation. It has to do so consistently, to keep the trust earned, and at a lower opportunity cost than competitors. In informavore terms, it has to get a heavy scent trail laid down to it.

Disclaimer:

This paper describes a conceptual model. While my employer, Ericsson, is indeed a large and global corporation with a rich and vibrant innovation system, the model described here does not necessarily reflect Ericsson, neither in generalities or particulars.

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Components of innovation journalism

Magnus Höj – 2004-04-08

Journalism is to a large extent a question of freedom. Freedom to express the material in various ways. Freedom might even be a necessity: if you are trying to build your text using a form, the same certain form every time, you will eventually fail in delivering interesting pieces.

Given that, the concept of innovation journalism invites us all to some amount of investigation. What makes an article about the commercialization of emerging technology interesting? When does that text become just a traditional text about research, marketing or organization?

My aim has been to find the elements, the components that make innovation journalism unique.

I think this kind of text analysis has importance of two reasons.

1. If you are writing about innovations and the market for these, you are facing all the ethical and methodological problems that need to be discussed further.
2. The awareness of the elements will make a future distinction of the concept of innovation journalism easier.

This proposal is based on the study of several magazines, newspapers and books that normally write about both new technology and of the marketing of such technology. It is also based on my own experience, as the editor and journalist on a news paper that is working with both technologies, businesses based on technology and on the use of that technology in traditional industries.

In this work, I have only studied written material. Even if the concept of innovation journalism obviously applies to all kinds of publishing, the material studied has been selected from news papers and magazines. However, I believe that the results would apply also to material from internet, radio or from television.

What is innovation journalism?

During this spring, the fellows in the Innovation Journalism program has been discussing the term of innovation journalism, and a more precise definition of this term is yet to be proposed.

In this context, however, I have used the definition: “commercialization of emerging technology”.

The reader - who is that?

A discussion around the different components of innovation journalism needs to start with a discussion around the reader. Who is the person we are trying to reach with our texts?

Obviously, this differs a lot and is a function of the overall context of the paper or magazine.

However, I think that there are a couple of characteristics of the typical reader or recipients of material based on innovation journalism. One would be that it is people that are interested in understanding the actual innovations, the foundations of these and their environment. Another would be people that are looking for new ways of doing business, either with the help of innovations to improve their regular work, or to build new businesses based on innovations. A third group could be companies that are interested in areas where new products could be threatening their own market space.

More structured described, this would mean that the readers could be found from any of these groups;

Innovators themselves. This would for instance be the people that are working on innovations or new technology and are interested in finding ways to market these. They would be interested in the experience and the knowledge from others. They might also try to find innovations that are close to their own area of interest.

Marketing departments. The people that are working with marketing of new products will obviously be interested in how others have been working, and their experiences. They would also be interested in other companies or organisations with products focusing on the same market niche.

Business development people. Those who are to develop new lines of business or to change the way a company is working are constantly looking for products and tools to drive that change.

Pr agencies. The public relations people are both looking for new companies to have as customers, but also to understand how the market for their current customers is changing.

Headhunters. The people that is constantly trying to find talented people for specific jobs or tasks – like “headhunters” – would be very interested in reading about the people behind the projects and the people with the new and ground breaking ideas. It is very likely that these people would be looking for innovation journalism-based texts. Also human resource departments, HR, would be interested to know who is doing what in their market.

Actors on the financial market. Being ever interested in new stocks to buy or new markets to develop, people working with or close to the financial markets would most probable be very interested in reading about innovations and their way to market.

Three pieces of interest

My aim has been to try to find the elements that build up an “innovation journalism text”. To do that, I have studied a couple of articles from the US based edition of Computerworld, some articles from Fast Company and some text from the Sweden based Computer Sweden.

All the articles were published during the winter or spring of 2004.

Necessary components

I have come to the conclusion that two elements is crucial to a text that is to be called “innovation journalism”. The innovation must be named and described as well as the market or the use for that.

The innovation

Obviously, there are some components that are more obvious than others. The actual technology is one of these.

I think it is important to include a description – in one way or another – of the technology and its potential use. This can obviously be done very short or very extensively.

A short note could introduce the innovation or the technology in just a couple of words, in a feature article; this could be done on several pages.

The level of understanding of the reader must be taken in account. Readers of a magazine that is normally very technical can present the innovation in a totally different way than a magazine with a very broad audience with little or no technical understanding.

I do not think that the technology itself needs to be described deeply, but it is important for the reader to understand the use. At least it must be put into context.

◆ Example:

Some very good example of describing the actual innovation comes from the January 2004 issue of Fast Company, where the magazine is presenting the “top 20 Social Capitalists – Groups that are changing the world”. In some short and others a little bit longer texts, several companies, organizations and groups are presented that in different ways are using new innovations to make a difference.

In the case of the program PATH, Program for Appropriate Technology in Health (www.path.org) one of the innovation is presented like this:

“PATH has created such technologies as the SoloShot, a syringe that automatically disables after a single use, preventing accidental transmissions of disease from needlesharing.”¹

This is enough to present the idea to the reader of Fast Company, a reader that normally has no knowledge in medical equipment or maybe not even in the work of organizations with a focus like PATH.

◆ Example:

If the texts from Fast Company were short in the previous example, this would illustrate a longer text from Computerworld. The text is describing the adaptation of “blogs” in the corporate environment.

The actual innovation, in this case the blog, is described like this as a part of a discussion around its commercialization:

"... weblogs, or blogs, which let anyone with a Web browser and some easy-to-use software publish a personalized diary online..."²

This short description is enough for the average reader of Computerworld to understand what a blog is and is not.

The market

The other fundamental component would be the market for the innovation.

This can be very loosely presented. It could obviously be presented as the total market where the product, technology or innovation could be sold.

But it could also be a very narrow perspective. It could for example be described as an area in corporate use where you can put the innovation to use. A case study, where a company is using the technology or the product and describes its use, would be one alternative to present the market.

◆ **Example:**

To continue the example from above, where one of the PATH innovations was presented, here is the presentation of the market for this syringe, SoloShot:

"Now licensed and manufactured by Becton Dickinson, the SoloShot is packaged with every vaccine that the Global Alliance for Vaccines and Immunizations delivers to the 74 poorest countries in the world".³

The market potential is here obviously not the most lucrative – that is not the mission for PATH –, but it clearly shows where the innovation is going and its use.

◆ **Example:**

In the previous example of blogs from Computerworld, the definition was presented in a part of the discussion on the market for such blogs:

"Recently, weblogs, or blogs, which let anyone with a Web browser and some easy-to-use software publish a personalized diary online, have started to emerge as valuable knowledge management and communication tools in companies.

"But blogs aren't entering through the CIO's office. They often first appear in companies as the convenient records of engineering or design projects."⁴

Here, the market is described both in its potential use in a corporate environment, but also the way to the company, i.e. not the way via the Chief Information Officer, CIO.

In this case, the main focus however is on several customer cases. One of these is presented like this:

"Michael Masnic, president of Techdirt Inc. in Foster City, Calif., says that while most corporations have knowledge management tools and corporate portals to organize internal data, they don't have an effective way to deal with external

information. A blog allows users to integrate internal and external information".⁵

This information is enough to show the use of the innovation from the customer's point of view. Since the innovation of blogs is very broad in its use, this context is very important, to understand the users side of this technology.

Two elements

I think that a text that presents both the innovation and the market for this innovation could be described as something within innovation journalism.

Without the innovation itself, the text would be on just marketing in general. Without the market potential or market description, the text would be focused on the innovation or the technology itself.

Whether it *should* be viewed as such is another matter. It is very likely that most articles that includes both innovations and their market potential is mainly focused on something else, and therefore mainly viewed as for example technology reporting, science reporting or business reporting.

Valuable components

If the innovation itself and the market for the innovation are necessary components, there are some areas that would help to build the story. I have in my study found six that I find worth noting here.

I'm sure that there are several more ingredients that could be valuable to get a better understanding of the innovation and its commercial potential, given the context where the text is published.

I've tried to add some notes on the problems and the journalistic issues related to these components. These notes are mainly based on my own experience, having working with technology and its commercialization.

The industry

The industry behind the product is obviously interested in being presented in texts around their innovation.

This presents one of the biggest problems with writing about innovation journalism, as the companies and their marketing and pr departments is very eager to have publicity for their new technology.

At the same time, if you think about the readers of the text, it is probably of interest to know what company is developing the innovation. It is also of interest to know the overall situation on the market for innovations in this field, especially if you are interested in going to market yourself with an innovation in the same area. It is also of interest to know who to contact if you would like more information from the source.

Therefore, I think that information in the text about the company behind the products is of great importance and should not be neglected.

The users

The user's story is always interesting. It can validate the market acceptance of the innovation; it could present new ideas for how to continue the development of the technology behind.

After years, when a lot of new technology has been introduced on the market, with small or infinite success, it is more crucial than ever to show that there is a solid market and happy users that are willing to pay for the innovation.

The main problem with case studies, based on the user's experience, is that they far too often fail to present a totally objective view.

The other problem with case studies is that they will not support any general conclusions on how the innovation will be received.

The people

The people behind the project are always of interest. The ideas of the people that have created the innovation or the going to market initiatives can often be inspiring for others.

Also the background, the visions and the circumstances that surrounded the work with the innovation, can be of great help to others.

The interest in people is natural and I believe that every text that could include the people behind or the people that uses the innovation should include these.

The organization

What is the organization behind the commercialization? How is the company or the group of people organized?

Apart from being vital to the process of taking a concept or an innovation through all the steps to something that can be sold on the market, the responsibilities of different parties and the structure of the company can be useful for others to help themselves organize their own companies or organizations.

◆ **Example:**

Describing the strategies behind the ideas put to work, Fast Company presents a couple of cases and the thoughts of the company.

One case is from Sony. It describes the commercialization of the PlayStation gaming platform, which was a huge success. We all know that it is not the best technology that wins the race, but as always a combination of quality, marketing and smartness. The problem for Sony were that it's two competitors, Nintendo and Sega, were both very established at the market. But, they depended heavily on the staff they had internally. Sony wanted to run the business differently.

"From the beginning, Sony wanted to be open to the best ideas, wherever they came from. So it used outside developers to produce most of its games, and even reached out to gamers themselves".⁶

The marketing

For obvious reasons, the marketing of the product is important. It describes how the innovation itself is delivered and presented to the potential users. If this fails, there is very likely that the project itself will fail, regardless of the quality of the actual idea behind the innovation. Therefore, the branding, and the advertising to just name some, is very important for the success of the product.

And it is important also to the readers. The people that are interested in deploying new technology in their own organizations would be interested in the presentation of them.

But even more important, the people that are interested in investing in companies with new technology will be very interested in the way the innovation is presented.

Among the most complex questions in the field of innovation journalism, is the question of marketing. If you as a journalist want to write about the marketing of a product and also want to address the buyers of that actual product, you will come close to writing marketing material for the company itself. This is more of an ethical question that is of utmost importance for all journalists writing about innovations and their commercialization.

The legal aspect

The matter of intellectual properties is currently debated, and has been so for quite some time. This is not only a question for the music and movie industry, but a question that most companies are facing right now.

Describing the work with legal questions around the innovation would help the reader understand how the company or the persons behind the innovation is trying to protect or in other ways strengthen the juridical part of their ideas.

Future studies

Having proposed some necessary and some supportive components of texts based on innovation journalism, there are a lot of areas that could be discussed going forward. One of the potential areas that would be very interesting to study more is the **marketing department dilemma**. How do you as a journalist deal with the pr departments and the marketing departments that is trying to get the text to describe not only what the journalist wants but also what the company behind the innovation wants.

¹ Fast Company, January 2004, page 52

² Computerworld, January 26, 2004, page 23-24

³ Fast Company, January 2004, page 52

⁴ Computerworld, January 26, 2004, page 23-24

⁵ Computerworld, January 26, 2004, page 23-24

⁶ Fast Company, April 2004, pages 63 ff

How to Write About Innovative Business Models

Johan Jørgensen, Affärsvärlden

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Introduction

During the last decade, a new breed of companies have emerged. They work according to new business models that have been facilitated by the rise of the Internet. Enormous amounts of money have been poured into these companies, both by venture capitalists, and by the public in some subsequent initial public offerings (IPO). Huge amounts have been lost, but in many ways, the world has become richer due to increased efficiencies introduced by these new models.

This is the way it has always been. A business model is basically the method of which a company can generate revenue. It also says where in the value chain the company is positioned. This position isn't always easy to identify, especially not when the company exists in a complex network of producers, distributors, agents and customers. Further, it isn't easy to measure a business model. They don't come with specs, to borrow a term from the it-industry

Both the business model and the place in the value chain are constantly challenged. One part of the competitive environment of business is the constant rise of new business models. During more intense times of shifts; be they technology shifts, legal shifts, demographic shifts or any other shift that for the moment prevails, new business models arrive at a higher or lower pace.

To Schumpeterians (like myself), those are interesting times since they are full of what Joseph Schumpeter, the Austria born economist, named "creative destruction"¹.

To businesses those are challenging times because organizations are built in accordance with the business model it is set to implement. A new business model can mean a radically different organization. Sometimes so radical that the best way of handling the situation is to scrap the old organization and build a new one from scratch.

This, of course, means that the field of business models and value chain deconstruction is littered with innovation. This is an important notion, since innovation, by most, are seen to take place in the labs. However, if you look at the companies that went public in the last few years of the nineties, you will discover that many, not to say most, had their *raison d'être* in a business model innovation rather than in something patented. Anybody

¹ Joseph A. Schumpeter, "*Capitalism, Socialism, and Democracy*",

looking at innovation therefore must be careful not to end up in the “engineering trap”. It also means that innovation has become a field where managers and business school graduates can be partakers to the same extent as the engineers in the Research and Development (RnD) department.

The pure nature of being strategic to businesses, and at the same time promising to destroy old ways of doing things, puts new business models at an inflexion point where some people work for it, and others against. Complicating matters further are of course the fact that any business model operates in a context that gets increasingly more complicated due to facts like globalization and the tearing down of the corporate borders risen by the transaction cost theory.

Lets be clear about one thing. New business models appear whenever they are deemed fit to replace an older one, or to cater to completely new needs. This need can be real or perceived, and how the new business model succeeds depends on how well it can match what the customers want with delivering that in a timely and profitable way.

Even though technical innovations go hand in hand with innovations in business practice, this paper will be about the latter.

The last few years we have seen the rise of the Internet, or rather the Internet Protocol (IP), as a fundamental infrastructural change. The Internet has suddenly provided us with new means of reaching and serving customers. This has also led to the rapid rise of new business models. There is probably no other single factor that has affected business in our time as much as the Internet.

In this rapid development, media has a central role in disseminating new information. The spreading of new and more efficient methods of doing things can be beneficial both to the individual consumer, but also to the economy as a whole. And no one spreads information as well as the media. For journalists, identifying the winners and losers in this turbulent environment is therefore not only a critical ability in their profession, but also a critical factor for society.

This paper is a humble attempt to try to identify some tools – or rather bullet points – for journalists wanting to increase their chances of correctly assess the success – or failure – potential of a new business model. It focuses, naturally, on the last few and mad years of the Internet boom and bust. Some of the thoughts and ideas can be clearly generalized to also involve the upcoming boom for mobile data, but most of the time a new situation demands a new tool.

And still, many good angles are of course missing. It should be stressed that this paper is based on my own experiences from writing about and developing new business models over the last decade. I probably also have forgotten to mention a few lessons that I by now have internalized to the degree where they have become invisible to me.

But then again, that probably is the road you need to go down in order to be able to write about innovative business models.

That future lies in between technology and business and demands that the one trying to understand them are well versed in both. It also affects most aspects of the world as we know it. Please also forgive me for pointing out the obvious. To many of you reading this it won't make you any wiser than you already are, but, then again, for some it might provide some new information.

Context

The new and digital economy has given us a number of new “principles of nature”, just to mention a few relevant to us:

- Everything that can be digital will be digital
- Everything digital will be transported and delivered digitally
- The marginal cost for production and fulfillment in a digital world goes towards zero
- This leads to increasing returns
- This upsets the relation between demand and supply, and alters relative pricing between complementary goods
- The value of the network rises exponentially with the number of nodes

There is no longer any doubt that the Internet has become a major factor in our daily lives. Broadband connections are proliferating, as are standards for interconnection between software and hardware. The nature of an international distribution network that is available at a neglectable cost, has led to an explosion in creativity concerning new businesses. People suddenly have a tool to experiment with, which has led to many new businesses or business models being tested than before.

And the audience is there. Some people even spend more time online than in front of the TV. In addition to this, new research from Pew Internet points to the fact that, at least in the U.S., the online inhabitants doesn't differ from their off-line colleagues.

This means that traditional business probably will move online more and more, thereby making the online business models and ways of doing things a more important and inherent part of the overall strategies of the company. This, plus the fact that we are only in the beginning of the digital revolution, will mean a challenge to everyone covering the latest developments. The list of the world's largest corporations 1950 looks very much different from today's list. In a couple of decades we will marvel at the changes that have taken place since Fortune presented its 500 list in 2004.

New Business Models

Luckily there aren't too many generic business models out there to choose from. Michael Rappa, professor of Technology Management at North Carolina State University have identified nine basic categories of business models² that can be observed on the Web.

- Brokerage
- Advertising
- Infomediary
- Merchant
- Manufacturer (direct)
- Affiliate
- Community
- Subscription
- Utility

As professor Rappa points out, the list is neither exhaustive nor definitive, since Internet business models continue to evolve.

But there are components of each model that can become more or less important due to new developments, and which can affect the validity of the model in it self. To take an example from the old economy, the existence of a vast distribution network, that only recently was seen as a major asset, has now dropped in value dramatically. Huge marketing budgets have also faded in comparative value due to new methods of viral marketing. The rise of the Internet companies Kazaa and Skype have both occurred without a cent being spent on marketing. Thus, various functions of a company can gain respectively loose in relative strength when transferring to a new business model, or when being exposed to new developments, for instance technological ones, within the business model itself.

Consider for instance the classic AIDA model for marketing:

A = Attention

I = Interest

D = Desire

A = Action

First you create attention. Once you have that, you try to get the customers interested in your product, in fact, so interested that a desire to buy whatever you are peddling starts to grow. And finally that transfers into an action on behalf of the buyer.

Internet transforms each of these steps and can indeed compress the whole process to a couple of seconds. Where once the "attention" creation took a lot of resources, not the least monetary ones for putting up billboards and advertising in the press, the "Action" might have happened in an agents network, i.e. in a shop, at a low cost for the manufacturer or brand owner. Today, attention might be created through viral marketing,

² For a closer definition please see <http://www.digitalenterprise.org/models/models.html>

at little or no cost, but a site that can persuade interested and prospective buyers into action can be both costly to build and maintain.

Globalization

New business models also rise with the help of globalization. For instance, the relative price of capital versus labor is being upset when moving production to foreign shores. An illustrative example is how one bank, cited by McKinsey Global Institute in a new report “New Horizons”³, has been able to extend personal banking services to a new range of lower income clients by moving their customer support center to India. Thus, other types of customization suddenly become possible when the global economy is taken into account.

The same goes for legal/contractual differences, like the difference in added wage cost for people working late shifts. This means that factories in some locations can be operated 24 hours, with a more efficient use of capital as a result.

Points To Bear In Mind

So, business models and their effects are inherently hard to understand, not the least in a rapidly changing global environment. But once you’re proficient in Internet business models, it will be highly interesting to start looking at traditional business models and traditional players. Trying to assess how they will be affected by a combination of factors like the Internet, globalization or just such an evident technology shift as the proliferation of broadband access, can be just as interesting as looking at new companies and new business models. The absence of change can be a clear signal of change to come. But then as nasty and unwelcome surprises.

The following are the bullet points I bear in mind whenever I see a new company or business model being introduced or even hailed, and for which there is a need to assess the potential, be it in terms of customers acquisition, revenue streams or profits.

Well Disguised In Novelty

A new business model is attractive. It is associated with positive change, more value for money, better service, etc. Many times it also shines like a new car and sings like a siren. It is thus easy to be lured to write about it. The lingering question if it will be successful or not can be hidden behind the novelty. The shortening of the news cycle in this case can act as a trap with novelty as the lure.

Asymmetric Information

A new business model is well understood by the ones presenting it (we hope at least). For everybody else it, and its effects, is often unknown. This asymmetry in information is a concern you have to deal with and puts a greater strain on finding the right people who can help you analyze it (see peer review below).

³ The full report can be downloaded at <http://mckinsey.com/knowledge/mgi/reports/newhorizons.asp>

Untested

Most of the times a new business model is utterly untested. That means that the outcome is hard to predict. In some cases the development is close to “historically predicted” like in the music industry. But even in a such a wide open case as the delivery of digital music, a prevailing business model has yet to materialize, even though the success for Apple’s iTunes.

Continued Change

That brings us to the notion that business models, and especially digital ones, continue to evolve at a rapid pace. The best model today can be radically different tomorrow, to a great extent depending on the development of technology. For Internet access that was the case when we went from bandwidth being something expensive to being ubiquitous. Another example would be when a service becomes productified, for instance machine reading and analyzing of EEG, and thus possible to deliver much cheaper; at a fraction of the cost of having an experienced physician manually reading and analyzing it.

Can Be Affected By Strategic Decisions By Major Players

Take the music industry as an example; what will happen when Microsoft suddenly decides to offer a subscribed archive of all the music in the world for \$10 per month? That could probably mean negative effects for a huge success like Apple’s iTunes. Businesses can take such strategic decisions not to make money out of it, but also for reasons like increasing the sales for another division, or to just hurt a weaker competitor. Much in the same way as Apple once took the decision not to make money out of selling music, but out of selling music players. Major players can also afford to wait before they adopt a new business model. Sometimes that means they will hurt themselves by allowing a new competitor to enter the market. But it can also mean a lower degree of risk.

Organization

One must bear in mind that a new business model can be stressful to the organization, where people might become worried about their jobs, and thus not perform their best in the company’s daily core activities. This is a common question raised in the board rooms when the transfer to new business models are discussed. In many occasions entrenched players hesitate to adopt new practices, and others, when they do, decide to confine them to a limited part of the business, or even set up a new subsidiary in order not to contaminate a successful and ongoing business. Sometimes a new business model can also be set up as a lip service in order to silence the critics. This can for an example be said about the music industry’s launch of Pressplay and MusicNet, two widely unsuccessful attempts of digital distribution of music.

Is The Business Model Primary Or Secondary?

Sometimes you give something away in order to sell something else. Since you can give away digital material almost for free, provided that you control the copyright, this opens up for severe competition in new fields. If two businesses meet where the business model is primary for one and secondary for the other, the one with the primary model might be struck on price, but probably also will invent ferociously in order to stay in business.

This is the playground of major companies who in the digital world better can afford to take strategic decisions in creating so called loss-leaders⁴. It might not always be a loss leader, but can also be a slim profit leader, or non-profit leader. When the borders between companies and their offerings are torn down, these strategies become increasingly common as well as confused.

The Notion That Selling Online Is The Same As Electronic Catalogues

Nothing can be more wrong, even though early e-commerce attempts on the Net were very similar to the traditional business of the catalogue companies, but without the experience and logistics of the latter. Today we see that online business has other and much more potent tools at hand when it comes to customer service and pushing sales. The former includes being able to identify what's in stock and what's not. The latter includes more-selling at a scale ranging from e-mail specials to Amazon's matching technologies (if you like this, you probably also like...).

Numbers

Almost everyone these days provide figures from various research institutes to support their ideas on how business should be conducted. In fact, a few years ago it seemed more common to start a research business for Internet related issues, than starting an Internet company. Needless to point out to journalists, the reports and numbers provided can be of an utterly poor quality, with the drawing of straight lines pointing to the sky as the main component. But even in the case where the predictions are well founded, the last few years have pointed out that a new business model can be trashed in an instant by new technology. So even if the numbers are correct, they might become wrong.

Market Dynamics

Many Internet companies launched their new business models with expectations based on them gaining and keeping world supremacy in their niche forever. Market dynamics predict something else. Once a niche is considered to support a business, people will start moving there, gradually reducing profits to normal levels, if not less (please see primary-secondary business models above).

First Mover Advantages

First mover advantages – a much touted word – has proven to be true in some cases, but then also very untrue in other. The truth is that the first mover incurs costs for educating the market, and since the broad majority is unlikely to switch over from an old to a new business model over night, you need to have a strong balance sheet in order to survive until business picks up. If you can do that, and if you enjoy lock-in effects and economies of scale (please see below), the first mover advantage can be turned into a cash cow.

Lock-in Effects

Lock-ins occur when someone gains a monopoly, or monopoly-like situation. Microsoft is one, Google is another, Ebay a third. If one is to analyze the potential of a new business or a new business model, lock-ins would be the thing to look for. But lock-ins

⁴ The strategy of offering a product or a service at a considerable discount, thereby losing money, in order to attract future business.

can go away too. Take the search engine market. In this specific segment one dominant has taken over from another at a regular interval. Once upon a time AltaVista was the almighty search king. Today it is Google. Tomorrow there might be another one.

Economies Of Scale

The digital phenomenon is interesting since every new copy comes with a marginal cost of almost zero. And with transportation over the Internet almost as cheap, it has become easier to overthrow an entrenched player. Before the digital era that was practically impossible since then economies of scale came with huge organizations and substantial amounts of capital invested. Today the players race to control the customer (to try to lock-in him/her, if you like) in every conceivable way, rather than controlling the distribution network, as used to be the case.

Content Is King, Distribution Is King Kong

That being said, this doesn't mean that distribution power has become irrelevant. On the other hand, major sites like Yahoo, Ebay, iTunes and Amazon has become increasingly important for companies, since that's where their customers are (people don't roam as widely and freely on the Internet as we are lured to believe). In addition to this we have sites where people with special interests gather, often in the form of virtual communities. If you don't manage to get your products out on such distribution networks, then you have to turn to the search engines. Or maybe utilize word of mouth/viral marketing. Or PR. Best is of course a combination. But if a company can't be specific on how to take care of distribution, it is a clear sign of problems. People won't come running to your door just because you've built a better mousetrap.

Technology

Technology can be a great asset, but you need to keep up with the developments. Once somebody has a success, many will be called to dethrone that company. And since technology is a field where a single individual can make a huge difference, risks are high for any company thriving on technology rather than on a customer base.

User Experience

In a static situation, it can be well enough to observe the current developments in order to be able to analyze it. In a more dynamic and unstable environment, you need to live it in order to understand it. In the case of new business models that involves using the services you are covering. Famed failures are companies like Boo.com, that wanted to sell clothing online in such a high tech fashion that even the most hard-core Internet users with the most bandwidth could barely access the site. Not to mention the ordinary folks making up the bulk of the customer base.

Complementary Products

The rise of computer gaming has all but killed the comic magazine industry. It turns out that these products are complementary – both aims at spare time that needs to be filled by something. With the Internet we suddenly have immediate access to an enormous variety of products and services, of which increasingly many have a competitor in a complementary product. So, what will happen to other businesses? Ebay has introduced

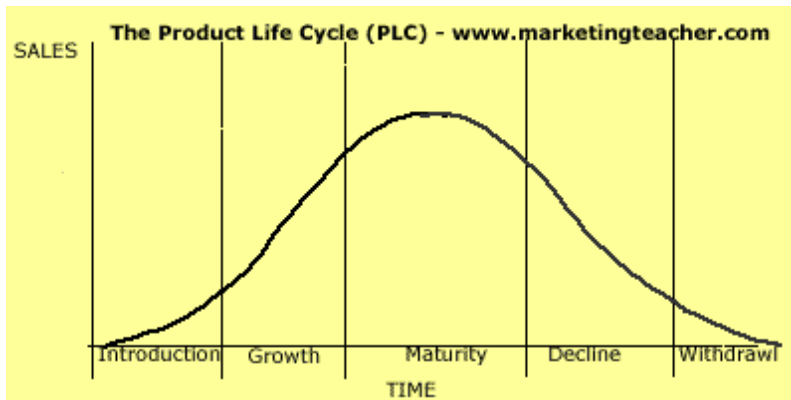
the auction as a way for people to sell stuff over the Internet. But they have also hurt the newspapers in out-competing their classifieds sections. It turns out that to many newspapers, classifieds are what they live from. Thereby Ebay threatens the newspapers industry.

Hidden Agendas

Do the owners and management of a new company try to build a sustainable business model; turnover, profits, cash flow or a brand? Or are they building the company for a trade sale or even an IPO? Are they in it for the long run or the short run? The last few years have proven dramatically that business can be about something completely different than we thought. Whenever huge sums of money are involved, agendas are subject to change.

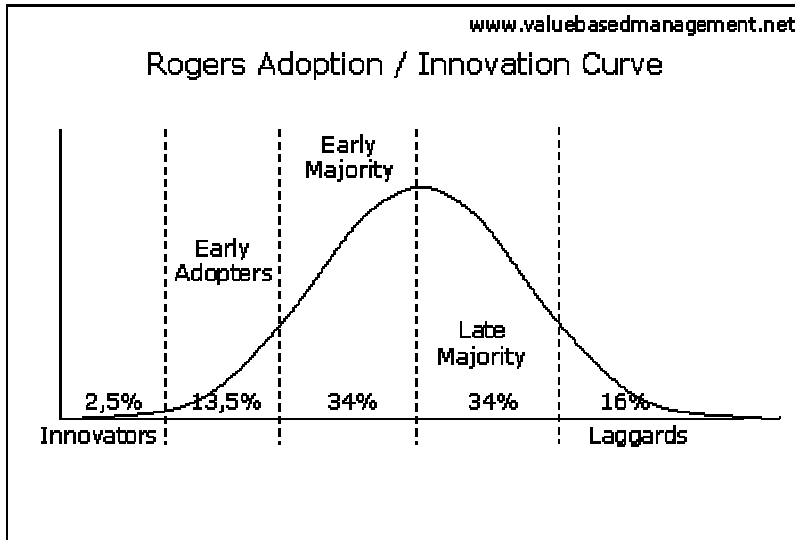
The Product Life Cycle

The nature of the Internet and the digital economy compresses the product life cycle. But to be able to assess the claims of a new company it is important to know when the respective stadium in the product life cycle will be achieved. And if they have the necessary organization in place to take advantage of the predicted developments.



The Innovation Adoption Curve

In order to do that it can be wise to bear in mind how technology is spread. Everett Rogers (1995) classified adopters of innovations into various categories, based on the idea that certain individuals are inevitably more open to adaptation than others.



source: www.valuebasedmanagement.net

- **Innovators:** Innovators jump on new ideas at the earliest possible moment.
- **Early Adopters :** Early adopters are opinion leaders who like to try out new ideas. They are more careful than innovators, though
- **Early Majority:** The early majority is more thoughtful, however they accept change more quickly than the average.
- **Late Majority:** The late majority are sceptics, and will only use new ideas when the majority is using it.
- **Laggards:** The laggards are critical to everything new, and will only accept it if the new idea has become mainstream or even tradition.

The innovation adoption curve is useful to keep in mind whenever you hear of someone trying to quickly and massively convince the mass of a new controversial idea. Usually it is a fruitless endeavor. It makes more sense in these circumstances to start with convincing innovators and early adopters first. Also the categories and percentages (here the ones used by www.valuebasedmanagement.net – but they can of course differ depending on product and situation) can be used as a first draft to estimate target groups for communication purposes.

Patents

Does the company have patents – the tangible asset in an intangible world? Today even business models can be protected. Those things are relatively easy to investigate.

People

Who runs the company? Have they done similar things before? Successfully? A general notion is that people go before business, that is; good management with an inferior product probably will beat inferior management with a good product. When the

entrepreneur Niclas Zennstrom launched his new Internet telephony company Skype, he could draw on the fact that he was the one creating Kazaa – the most downloaded program in the history of the Internet. The media will be very observant of such a fact. But even though being helped by media can take you far, only that can't take you all the way.

Strength Of The Balance Sheet

Predicting a new wave of heavy financing of Internet companies doesn't put you at a great risk of being pictured as a clown. It will happen. It will let some companies leap frog others. Not the least because a relatively limited amount of capital can build a huge corporation in the Internet era. Sometimes you wonder what would have happened if the bubble had leveled off in 2000 instead of bursting? Or if it had burst two years later? Then probably a lot of the companies that went under would have been able to prove their business model. Now, some only got a year or two in order to reach a positive cash flow. That is far too little. Companies that survived, like eBay, Amazon and Yahoo have gone on to become established, major corporations.

Don't Confuse Company With Business Model

Some business models have been ridiculed just because the company implementing it in the first place didn't succeed. That can have been due to many factors, none of which necessarily was the business model. Such factors can be a weak balance sheet, weak performance of operations, overstrained organization due to feverish growth, etc. The business model can be perfectly solid, while the company fails. If that's the case, the business model likely will come back.

Don't Confuse The Great Bubble With The Business Models

The truth is that many, not to say the most, managers were well aware of the bubble they were blowing up. But at the same time those were the rules of the game at that time. It is a fact that a lot of money can let you leap frog the competition. All that money perhaps won't be wisely or optimally used, but on the other hand money *can* save you time. Sometimes that's of essence and clearly an objective. Not the least when you challenge entrenched business models of major competitors with very deep pockets.

Investors

Are there any Investors involved in the project? What's their proven track record? I must stress "proven", since multiplying one and the same business model in different sectors – which was a common play for e-commerce – doesn't necessarily mean anything as long as the success is more on the financial side than actual business.

Peer Review

A good thing is to listen to what smart people have to say. These should not be competitors, traditionalists or analysts possibly gaining from putting out certain types of analyses. Big names aren't always the smartest. And you'll be surprised to know how many people that have vested interests in something being a success. The latter was, if not before, painfully clarified in the investigations of the investment bank industry that recently was done by New York Attorney General Elliot Spitzer.

Look At Other Industries

There are a limited number of business models, and it is easy to borrow from other industries. Based on the success or failure of a specific business model in another industry (with the same customer properties) it is somewhat easier to be reasonably accurate in predicting success or failure.

Does Success Hinge On Other Factors Beyond Control?

If a new business model is based on people having access to a certain infrastructure or anything more complicated or expensive, any observer has to bear in mind that something else first needs to happen before the business model becomes valid. That is a tough proposition unless the proponents of the new business model can push that development. Otherwise they will be subject to matters out of their control, which seldom is good.

Megatrends

Does the business model hook into a mega trend of any kind? If so, chances improve substantially.

And, The OOM-Factor

Is the new product or company OOM, orders of magnitude, better in some or many aspects than what existed before? Then, chances increase substantially that we have a success on our hands. The OOM-factor is necessary to lure customers to rapidly switch to a new business model. Internet banking, digital distribution of music, e-mail, news on the web. Amazon, Yahoo, Ebay, Google. They all have a good portion of the OOM-factor. For a quick OOM analysis, look at an applicable model (like any of the ones listed below) and see if any of the points in the models are affected substantially. From my point of view the rude OOM-factor overrules most strategic positioning, at least if you are looking for evidence to claims of a swift success for a new business model.

Useful models

With the above bullet points in mind it can be valuable to do a little model exercise concerning the phenomena or company your analyzing. For those who are proficient in the language of business, terms like “the 4Ps”, “Porters Five Forces and Generic Strategies”, “SWOT” and “the Ansoff Matrix”, are familiar. To all others, it can be recommended to spend a few minutes learning the models that have shaped the minds you want to tap for information. A quick guide can be found at <http://www.QuickMBA.com/strategy/>.

Good luck

April 7, 2004
Johan Jorgensen

Västerbottens-Kuriren



Decoding DeCODE

Using history and SEC-files
as Journalistic methods to evaluate an
innovation-based company's status.
An award-winning example published in the
Swedish newspaper Västerbottens-Kuriren.

Marcus Lillkvist, reporter Västerbottens-Kuriren
Vinnova fellow at the Wall Street Journal during spring 2004

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1. Meeting a Viking

In May 2002, I had the pleasure of meeting Kári Stefánsson, a man with the characteristics of a true Viking. The tall and gray-bearded Icelander had discovered unique possibilities on the desolate island in the Atlantic Ocean, just like his ancestors had done centuries ago. But Mr. Stefánsson's discovery was of a different kind. He hadn't found a place to harvest wealth from the sea surrounding the island. Instead, he had found a way to harvest wealth from the genetic makeup of 260,000 individuals, the Icelanders.

Kári Stefánsson is the founder and CEO of DeCODE Genetics¹, often called the world's most promising gene hunting company. Prior to my arrival in the capital Reykjavik, Mr. Stefánsson had promised to share the wealth that he would harvest.

If the Icelanders lend him their money, their blood and their medical and genealogical records, they would benefit from the company's success. He had promised wealth to Iceland and free drugs to Icelanders. Mr. Stefánsson had even promised to extinguish some of the devastating genetic diseases.

I was on Iceland to see if the dream was coming true. The aim of the reporting was to compare the large-scale company DeCODE to the small-scale Swedish company UmanGenomics² which had created some debate in the city of Umeå that hosts the headquarters of the regional newspaper Västerbottens-Kuriren³, where the trilogy was published in June 2002.

In February 2003 the trilogy was nominated to the Royal Swedish Academy of Engineering Sciences'⁴ annual Scientific Media Award for the year 2002 and later named the winner.⁵

This paper focuses on the company DeCODE and the journalistic methods that I used to evaluate its progress. Furthermore, it discusses strengths and weaknesses with the methods and presents other possible solutions to reach valuable conclusions on the health of innovation-based companies.

This paper was presented on April 15th 2004 at the first conference on Innovation Journalism⁶ at Stanford University in Palo Alto, CA., USA.

¹ An American subsidiary of the Icelandic enterprise "Islensk Erfdagreining", www.decode.com

² www.umangenomics.com

³ www.vk.se

⁴ <http://www.iva.se/eng/index.asp>

⁵ The trilogy, written in Swedish, is available on request, just e-mail marcus.lillkvist@vk.se

2. Let there be light

In July 2000 DeCODE - shares were introduced on the U.S. secondary market, thus allowing any investor to speculate in the company's future. Icelandic banks issued a huge campaign to turn the stock into "the citizen's stock". However, as months and years passed the share didn't grow as expected, in stead it reached its all times low at the time I visited Iceland.

In article after article, the reader of science and technology stories will face words like "revolutionary" and "breakthrough" in the description of how future technology will transform their everyday life.⁷ That has also been the case with biotech companies, with promoting journalists quoting CEOs promising cures for anything from cancer to diabetes.

So far none of that has happened. Technology has certainly made life easier, but so far the hyped areas of biotech and nanotech haven't come up with any medical breakthroughs that has proven to revolutionize our everyday life in the way that decade-old inventions like antibiotics and X-ray did.

That is however what companies like DeCODE Genetics wants to do. And they claim that they will. But they can't say when. So how should a journalist assess such a problem? DeCODE Genetics is one of those companies that investors keep their eyes on to get a measurement of the biotech temperature, making it even more important that the journalist does a good and honest job.⁸

Any company wants the good news to be published rather than the bad news. This is a problem for the company's stockholders, who need both good and bad news to make informed decisions. Brokers, banks and venture capitalists take their time to find tools to evaluate companies. Lay people, however, seldom do. Instead they rely on information from the company, or even better, from the, hopefully unbiased news media.

Because tens of thousands of Icelanders bought shares in DeCODE, one could believe that the Icelandic media had performed intensive critical coverage of DeCODE. That is however not the case, since the company's close connections to the center-right Icelandic government means that criticism of the company equals to criticism of the government, a phenomenon that is more common in smaller societies like Iceland.⁹

⁶ Nordfors, D., The concept of Innovation Journalism, Vinnova Information, ISSN 1650-3120, <http://www.vinnova.se/main.aspx?ID=73F1947C-8EE2-4CDB-97F7-2F4D0A5846A2>

⁷ Nelkin, D., Selling Science, W.H Freeman and Company 1987, page 33

⁸ Lillkvist, M., Västerbottens-Kuriren, Umeå, Sweden, April 25th 2002

⁹ Erlingsson, S., J.; Our Genes: Biotechnology and Icelandic Society, Reykjavik: Forlagid 2002

So when I arrived to Iceland, my background material was limited to a handful of stories from foreign newspapers. This was of course not enough. Conducting interviews with numerous people expressing different standpoint about the company was necessary. On Iceland I met DeCODE's PR-staff, its scientists and its CEO Kári Stefánsson as well as representatives for the critical association Mannvernd¹⁰, which claims that DeCODE possesses information too sensitive for the company to handle.

I also met with people who weren't medical professionals, nor hired by the company, thus expected to express a less biased view of the company. These were science historians and lay people on the street, as well as blood-donors willing to help DeCODE solve the mysteries of their genetic diseases.

Everybody had an opinion, but the opinions were very personal and not really based on facts about the company. For instance, one of the interviewed built her opinion on a newspaper gossip-story telling how DeCODE's CEO Kári Stefánsson was sued after having built himself a large estate that blocked the neighbor's view.

3. Let history be your judge

In order to assess DeCODE, I had to rely on facts. The only way to do that, I argued, was to use history to extrapolate the company's future. What has the company promised, and what has it really accomplished so far?

I chose the most objective way to reach my conclusions; public filings. All companies that are publicly traded in the U.S., are forced by law to file a huge amount of company information to the Securities and Exchange Commission, SEC, at least on a quarterly bases.¹¹ This can be an invaluable source of information on a company's finance and operation.¹²

First, I scanned the latest annual report.¹³ In the part "Risk related to our business", I found the following statement: "DeCODE expects it will be years, if ever, before it will recognize revenue from the development of therapeutic or diagnostic products".

¹⁰ Mannvernd, Association of Icelanders for Ethics and Science in Medicine, <http://www.mannvernd.is/english/>

¹¹ "Stock market", Britannica Student Encyklopedia, Encyklopedia Britannica Online, 12 Feb 2004, <http://search.eb.com/ebi/article?eu=300098>

¹² Smith, R. and Emshwiller, J.H., 24 DAYS, How two Wall Street Journal reporters uncovered the lies that destroyed faith in corporate Ameriva, HarperCollins Publishers 2003

¹³ Annual report of the fiscal year ended Jan 31th 2001, can be found on [Hwww.decode.com](http://www.decode.com)H

While a traditional company can create profit in a matter of months, innovation-based companies may need years, or even tens of years. So just examining revenue and earnings will not serve the journalist who wants to evaluate an innovation-based company. I had to use other methods.

I soon found out that a deal with the gigantic Swiss pharmaceutical company Roche¹⁴ had been crucial for DeCODE's possibility to grow.

In February 1998, the research collaboration and cross-license agreement was signed. This was a great opportunity for DeCODE, which was in great need for start-up money. The four year deal guaranteed DeCODE \$70 million in research funding and more than \$130 million in "milestone" payments if it reached some scientific and financial goals in the hunt for genetic factors involved in ten common diseases, pre-decided by Roche.

So I dug deeper into the annual reports¹⁵ and found that by December 31st 2000, Roche had paid, or owed, DeCODE, a total of \$52,4 Million. Nearly three years of the four year agreement had passed, and DeCODE could have received $\frac{3}{4}$ of the \$70 Million fund plus $\frac{3}{4}$ of the \$130 Million milestone payment (\$52,5 Million plus \$97,5 Million). However, DeCODE hadn't been that successful. As a matter of fact, it suddenly seemed obvious that DeCODE hadn't received any milestone payments at all.

The modest milestone revenue became the main theme in the revealing part of my story. Of course, other facts about the company were mentioned.

One example is the government bond. As many other gene hunting companies, DeCODE changed focus in the spring of 2002. By acquiring the American company Medichem Life Sciences, DeCODE would be able not only to hunt genes involved in diseases, but also to develop drugs. To help build up this new branch, the Icelandic parliament provided a government guarantee of a convertible bond offering up to \$200 million, helping DeCODE to receive the much needed bank loans. The parliament received intense criticism from other Icelandic companies, questioning why it chooses to support only this one enterprise. By December 2003, the government bond was still not effective, since it must first be approved by ESA, European Free Trade Association Surveillance Authority.

¹⁴ www.roche.com

¹⁵ Can be found at [Hwww.sec.gov](http://www.sec.gov)H, [Hwww.decode.com](http://www.decode.com)H or [Hwww.nasdaq.com](http://www.nasdaq.com)H. The "ticker" code for DeCODE is "DCGN".

Another thing that I mentioned in the article, was the Health Sector Database. In 1998 the Icelandic parliament passed a law that would oblige all medical professionals to send their patient's medical files to DeCODE Genetic's database. The aim of this health database is to support the two other databases; the genealogical bank and the blood bank, to create a powerful tool in assessing the genetics involved in diseases of Icelandic families.

The company promised that the encrypting system, developed by experts at CIA, would be safe and that no individual can be identified, risking genetic discrimination. The health database is based on presumed consent, which means that everybody who doesn't actively choose to opt out is considered willing to participate.

The association Mannvernd criticized the proposed Health Database, claiming that it clashes with the physician's ethics and that the presumed consent clashes with the Helsinki Declaration¹⁶, which states that no research should be done on human beings who haven't actively decided to participate by an "informed consent".

Accordingly, in May 2002, four years after the law was passed, the Health Database hadn't yet been established.

4. Digging deeper

During my Vinnova fellowship at The Wall Street Journal in San Francisco I had the possibility to examine some additional journalistic methods that could have been used.

4.1 Earnings and revenue

Every quarter all publicly traded companies have to file their earnings and revenue. It can be of some interest to compare the quarter with the past quarter, or the fiscal year with the former, but innovation-based companies can be promising even though they haven't earned much money so far. The annual change in the ratio revenue/costs can reveal if the company is heading in the right direction.

Info can be found in annual (form 10-K) or quarterly (form 10-Q) reports, often available at the company's web page, in this case decode.com (go to site-map and scroll down to SEC-filings). In the part "Selected financial data", you'll find

¹⁶ The World Medical Association, <http://www.wma.net/e/policy/b3.htm>

the goodies. Info can also be found at The Securities and Exchange Commission¹⁷ and, for DeCODE's case at Nasdaq¹⁸.

The DeCODE-example:

2000: Revenue \$21,5M, Operating costs \$61.1M, Net loss \$31.1M
 2001: Revenue \$26,1M, Operating costs \$83.4M, Net loss \$52.5M
 2002: Revenue \$41,1M, Operating costs \$173.1M, Net loss \$132M
 2003: Revenue \$46,8M, Operating costs \$81.6M, Net loss \$35.1M

Comment: DeCODE's revenue derives primarily from milestone payment, exclusivity, technology access and development for its collaborators. It hasn't been profitable during any of its first seven years. However, as long as investors maintain their support, this shouldn't be considered a problem, though it could be worrying that the annual net losses aren't shrinking significantly. As of Dec 31st 2003 DeCODE's total deficit was \$330,2 Million.

4.2 Research and development

Innovation based companies build their value on new findings that can be commercialized. That is why such a company must be very aggressive, and sometimes dare to put more money into R&D than it actually can afford.

Info can be found in annual reports (as described in 4.1).

The DeCODE-example:

2000: R&D-expenses, total \$45.7M, 213% of the revenue
 2001: R&D-expenses, total \$71.0M, 272% of the revenue
 2002: R&D-expenses, total \$86.6M, 211% of the revenue
 2003: R&D-expenses, total \$63.5M, 136% of the revenue

Comment: Despite modest revenue, DeCODE has continued its strong investment in R&D, which is crucial and positive as long as it gains investor's support. DeCODE explains the decreased R&D expenditure in 2003 with cost reductions due to automation, reduction of usage of chemicals and other consumables as well as salaries.

4.3 Employees

In general terms, a company that decreases its number of employees, is considered to have financial problems. However,

¹⁷ www.sec.gov

¹⁸ www.nasdaq.com

that does not necessarily have to be the case as a change can be necessary, and even welcome, for a company changing strategy. For instance, the California biotech company Incyte's share price rose by nine percent on the news that it would close its Palo Alto facility and eliminate 257 jobs, more than half of its work force.¹⁹

The distribution of employees also mirrors whether the company has managed to concentrate on its main activity.

Info can be found in annual reports (as described in 4.1).

The DeCODE-example:

Dec 31st 2000: 445 employees, 260 in lab, 120 in informatics.
 Dec 31st 2001: 592 employees, 308 in lab, 149 in informatics.
 Dec 31st 2002: 530 employees, 350 in lab, 95 in informatics.
 Dec 31st 2003: 414 employees, 267 in lab, 71 in informatics.

Comment: Roughly eight out of ten employees are involved in the core activity (laboratory and informatics) which should be considered gratifying. Solely during 2002, expenditures involving employee termination cost DeCODE \$64,8 Million, contributing to half the company's deficit that year.

4.4 Patents

Innovation based companies often create revenue from non-traditional products like methods, ideas, licensing and information. To protect their immaterial rights, they have to apply for patents. The procedure of patenting can be time-consuming and costly, so the journalist may predict that the company wouldn't try to patent unless it believes the idea is valuable.

Info can be found at The United States Patent and Trademark Office, USPTO, which issues U.S. patents. They offer a searchable database on their web page.²⁰

The DeCODE-example:

A total of 16 genes implicated in 13 diseases, identified. They include obesity and myocardial infections.

DeCODE is the assignee name for nine U.S. patents, three on genes, four on informatics and two on genetic methodology. However, according to the latest annual report, DeCODE has issued 24 U.S patents.

Comment: DeCODE hasn't patented all of its discoveries in its own name, but together with its collaborators, which means it

¹⁹ Simmers, T., The Oakland Tribune, Feb 3rd 2004

²⁰ <http://www.uspto.gov/patft/index.html>

hasn't the sole right to the patents. DeCODE hasn't patented all its discovered genes, which exposes that some discoveries aren't considered valuable enough. The figures also confirm that DeCode is much more than a gene hunting company.

4.5 Drugs and diagnostics

The main goal of most biotech companies is to produce drugs. A secondary goal is to produce diagnostic methods. Before any drug can be accepted, it must be proven secure and efficient. Approval by FDA, the Food and Drug Administration²¹, opens the American market, which is the largest one in the world. That is why journalists should examine whether any product of the company is subject for FDA's approval procedure. Before any company applies, it first performs some tests on its drugs. These tests are pre-clinical, involving lab- and animal-tests, and clinical, involving various amounts of people involved (Phase I, II and III).

Info can be found in annual reports (as described in 4.1) and in FDA-files.

The DeCODE-example:

So far, DeCODE's experimental drugs haven't been approved by the FDA, thus none is so far on any market. No diagnostic test has so far been commercially available.

A phase II trial has started on a potential myocardial infection drug candidate licensed from Bayer. Two other phase II trials are planned for 2004, targeting hypertension and asthma. DeCODE expects to file an application to the FDA in early 2005. DeCODE is also developing genetic methods to diagnose increased risk for osteoporosis and heart attacks together with collaborator Roche Diagnostics.

Comment: Since FDA-approvals take years and only three drug-candidates might be in the pipeline, no investor can expect revenue from DeCODE's soon. It is crucial for journalists to consult unbiased medical experts in the specific area of research.

4.6 Future projections

Companies often give forward looking statements in their quarterly and annual reports. A journalist can investigate the company's self esteem by comparing its earlier forecast with its actual result.

However, the SEC doesn't require companies to give future estimation, so in some cases they don't. Then the journalist can rely on future estimations by analysts. The best source is

²¹ <http://www.fda.gov>

Thomson's first call, a company gathering multiple views on Wall Street, creating an average estimate on the future financial results. Analysts also publish research reports on the companies they cover. For instance, three different analysts cover DeCODE: Jeffrey Zekauskas at JP Morgan, Daniel Mahony at Morgan Stanley Dean Witter and Esther Finnbogadottir at Kaupthing Bank.

Info can be found in annual reports (as described in 4.1), in press releases and by contacting Thomson's first call²², or the analysts themselves.

The DeCODE-example:

Estimate for 2001²³: Net loss \$48.4 Million

Result 2001: Net loss \$52,5 Million

Estimate for 2002: Net loss \$39.5 Million

Result 2002: Net loss \$131.9 Million

Estimate for 2003: Net loss \$31.1 Million

Result 2003: Net loss \$35,1 Million

Comment: As this example shows, nobody knows what the future will bring, not even the specialized analysts. Journalists should consult as many analysts as possible. For start-up companies this might however be a problem, because smaller companies tend to be covered by few analysts.

4.7 Share price and Indexes

The share price is often used by journalists as a means of measuring day-to-day temperatures of the company. It is, however not a good journalistic tool for journalists who really want to evaluate a company's status. All that the share price can tell you is whether investors are excited about their stocks or not.²⁴

If a journalist however wants to mention the share prices, it should be done wisely. A journalist writing about a biotech company should for instance compare that company to other biotech companies. For most branches, there are Indexes stating the overall development. In biotech, there are two major Indexes. The Nasdaq Biotech Index, NBI, is an average of the 130 largest companies. The Amex Biotechnology Index, BTK, is an average of the 17 largest companies.

Info can be found at Nasdaq²⁵ and at Amex²⁶.

²² The telephone number to Thomson's First Call: 1-617-856-24 59
(www.thomson.com/financial/financial.jsp)

²³ Zekauskas, J., Company Report deCODE genetics, JP Morgan Securities Inc. Sep 27th 2001

²⁴ Hamilton, David, biotechnology reporter, The Wall Street Journal, orally 3-26-04

²⁵ dynamic.nasdaq.com/dynamic/nasdaqbiotech_activity.stm

²⁶ www.amex.com

The DeCODE-example:

DeCODE shares have lost much of their value since the stock was introduced on the secondary market in July 2000, starting at \$28, reaching its all time weekly low at \$1,66 in September 2002, and slowly recover again to reach \$13 in February 2004.

Comment: This down-surge certainly has created distrust among the tens of thousands of Icelanders who acquired deCODE shares. But for the journalist using using NBI and BTK, it is clear that DeCODE hasn't performed worse than other biotech shares.

4.8 Partners

Start-up companies almost always need a financial partner to get started. Private investors (angels), venture capitalists and other companies can be involved. One way to evaluate such a company is to examine its partners. Since it's a risky move to support new companies, an evaluation is always made before any company decides to offer their support. If a well-known proven company is involved, the chances are larger that the business idea is solid, as stated by JP Morgan²⁷:

"The size and quality of partnerships [...] between the early-stage company and large pharmaceutical partners present the investor with reasonable [...] starting points for the rank ordering of the value of early-stage companies. Moreover, collaborations undertaken with the leaders in various therapeutic categories or fields can lead to a different validation than those undertaken with pharmaceutical partners whose technical or market strength is not the highest."

Info can be found in annual reports (as described in 4.1).

The DeCODE-example:

A substantial portion of DeCODE's revenue has been derived from contracts with a limited number of significant customers. The largest partner is Roche, followed by Merck and Applied Biosystems Group, ABG. Together, these three joint ventures have accounted for about 60% of DeCODE's annual revenue. In March 2004 DeCODE teamed up with computer giant IBM to develop genetic informatics tools.

Comment: Other companies believe in DeCODE, which can be used as a measurement. However, the journalist must watch out for circular logic. Moreover, it can be worth while for the journalist to investigate whether the aims of the partners coincide with the supported company's, since hidden agendas may be present.

²⁷ Zekauskas, J., Company Report deCODE genetics, JP Morgan Securities Inc. Sep 27th 2001

5. Selling dreams

This paper is not a manual for journalists covering innovation-based company. However, it could be used as a primer for a discussion on how these companies can be covered more thoroughly. Since companies may meet competition, legal regulations, ethical hurdles, political resistance and customer's skepticism, journalist will have to use many other methods, all depending on the specifics and the developmental stage of the company.

The key issue, however, is not to just rely on figures presented by the companies' PR-bureaus. In that sense, the methods presented in part 3 and 4 of this paper can be valuable. I haven't found any journalists using the same approach as I did in evaluating DeCODE Genetics. Since start-up agreements with large financial contributors are a common theme in biotech and IT, this approach probably could be used much more by journalists. Though it may lead to circular logic, it is the method that analysts trust the most.²⁸

This paper focuses on a publicly traded company. A private company, like Google, will be much harder to evaluate since the journalist must find people willing to speak. Mylene Mangalindan, a Wall Street Journal reporter in San Francisco, covers two Internet search engine companies; privately held Google and publicly traded Yahoo. When it comes to Google, she is deserted to interviews with investors and employees as well as with Google's partners and customers. But crucial figures like revenue, income, expenses and executive compensation are "extremely hard to find", she states. "Even some investors are not privy to that information because they might be passive."²⁹

Since most methods in this paper rely on SEC-filings, they can't be applied to research on privately owned companies like Google. However, that isn't a large problem for main stream news media since the editorial interest in a company tends to increase significantly as it goes IPO³⁰, thus becoming interesting to the audience who wants to know where to invest their money.

For specialized news media covering start-up innovation-based companies that aren't publicly traded, the only way is to do like Mrs. Mangalindan; conduct lots of reporting and build a trustful relationship with the company.

²⁸ Zekauskas, J., Company Report deCODE genetics, JP Morgan Securities Inc. Sep 27th 2001

²⁹ Mangalindan, M., e-mail conversation April 1st 2004

³⁰ Initial Public Offering of stocks

By using the deal between DeCODE Genetics and Roche, I managed to establish a firm ground to claim that the company hadn't kept its promises to the Icelandic people. Thanks to my efforts to hunt down facts, I managed to guide the audience to a better understanding of its status.

So far, the company was only selling dreams. Just like with most other biotech companies, the primary force behind DeCODE Genetics is the boundless optimism of public stock-market investors, fueled by the expectation of huge rewards from the biotech lottery. In 2003, for instance, the U.S Biotechnology firms raised nearly \$4 Billion through new stock issues³¹. But during the same year biotech managed to post almost exactly the same amount in net losses. In fact, only 13 of the largest biotechs managed to even turn in a profit in 2003.³¹

In a Wall Street Journal leader, the biotech reporter David Hamilton states "Much of the financial uncertainty in the industry reflects the fact that there's no particularly good way to value biotechnology companies." That, if anything, calls for a commitment to develop journalistic methodology.

Though most readers found the DeCODE trilogy informative, some representatives from the biotech industry found it provoking. I still wonder if that was due to their unaccustomedness with revealing stories about companies in Swedish news media. If that was the case, it strengthens the motives to develop innovation journalism as a beat. An issue of warning though; The evangelists will have to be prepared to defend innovation journalism, explain why it is important and motivate the companies to some degree of cooperation.

³¹ Hamilton, D., research, The Wall Street Journal, April 2004

Why We Need Innovation Journalism, and Where It May Have a Market

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Abstract:

“Innovation Journalism” is journalism about innovation (which is not the same as “innovative journalism”, which is about innovations in journalism) and covers technical, business, legal and political aspects of innovations and innovation systems. It enhances the public debate through better common knowledge and understanding of innovation issues. In industrial economies, innovation is key. In democracies journalism is key. So in democratic industrial economies journalism dedicated to covering innovation should be key.

Innovation is today probably the main driving force for economic growth in a majority of the OECD countries, and its importance will grow even more in the near future, when an increasing challenge for many countries will be to maintain wealth with an aging population.

A successful innovation system is fundamentally dependent on the interaction and shared knowledge between different professions, such as engineers, business executives, academics, and politicians. Media is a major source of shared knowledge between these actors in the public, private and academic sectors. Here is both a societal need and a market for Innovation Journalism. National, Regional and Sectoral Innovation Systems offer potential target audiences for Innovation Journalism. Regional Innovation Journalism is potentially the largest market, because of the large volume of readers and multitude of innovative regions.

Journalism is a formidable actor in innovation systems, and it can be rewarding for various actors to recognize this fact and look into its mechanism. Economists can benefit by including news media in their models, and journalists can get new insights in who depends on whom for what in the innovation systems, including their own interdependencies with other actors, helping them to obtain fair and independent reporting.

Recognizing and understanding the role of journalism in innovation systems will be rewarding for public policy makers, since the journalists’ level of understanding about the reported matters sets the baseline for the level of the public debate and quality of knowledge in society.

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The Concept of Innovation Journalism

“Innovation Journalism” is journalism about innovation (which is not the same as “innovative journalism”, which is about innovations in journalism). Innovation Journalism covers technical, business, legal and political aspects of innovations and innovation systems. Good Innovation Journalism enhances the public debate through better common knowledge and understanding of innovation issues, which is important for society. In industrial economies innovation is key. In democracies journalism is key. So in democratic industrial economies journalism dedicated to covering innovation should be key.

Yet there has not until now existed any recognized discipline or community of Innovation Journalism. There are journalists who cover innovation, but they have not had a community, and “Innovation Journalism” has been an unknown expressionⁱ. Their coverage of innovation has been attributed to various different disciplines, like business journalism, technology journalism, popular science, political journalism or something else. Innovation journalism is an aggregate of many traditional disciplines, and the cultural rifts between the various disciplines, for example business and technology journalism, have limited the development of best practice in covering innovation journalistically. Business and technology journalists just don’t talk enough or work enough with each other for the aggregation of innovation journalism to take place spontaneously. A community might be necessary in order to bring people together and bridge the gaps.

Our ongoing fellowship programⁱⁱ is testing the possibilities for Innovation Journalism as a practice and a professional community with a name of its own, involving journalists from many different traditional disciplines who are exchanging ideas with each other and comparing professional practices on how to cover innovation. Presently, six Swedish Innovation Journalism fellows are stationed with US hosts, developing their personal skills and networks, while actively interacting through a discussion group. The First Conference on Innovation Journalism at Stanford University Apr 14-16 2004 is a part of the fellowship program.

This paper will present the case for why society needs Innovation Journalism, and where such journalism might find a commercial market. Innovation is already today a main driving force for economic growth in a majority of the OECD countries, and its importance will grow even more in the future. Innovation systems need to be improved, and introducing Innovation Journalism can do this. At the same the innovation systems offer commercial markets for Innovation Journalism. The market opportunity depends on the type of innovation system.

Economic growth and the need for innovation in an aging western world.

Today, all developed industrial economies stand and fall with the capabilities of their industries to commercialize emerging technologies. Success in innovation brings growth and development while failure brings stagnation and economical decay. Leading industries and industrial economies that can’t innovate will not survive. It can even be argued that innovation is the largest contributor to economic growth in many leading economies today.

Economic growth can come from increased input of labor or capital. If more people work more hours or if more capital is invested, then the economy grows.

Economic growth can also come from increased productivity. If people don't work more hours, but work in more efficient ways or for more valuable purposes, then the economy grows, even if no more capital is invested. This is innovation.

Data suggests that innovation is the most important driving force for economic growth in some countries. MFP/TFPⁱⁱⁱ – Multifactor Productivity or Total Factor Productivity – is a metric that indicates innovation. MFP is designed to measure the joint influences on economic growth of technological change, efficiency improvements, returns to scale, reallocation of resources, and other factors^{iv}. Innovation is reasonably a major part of the MFP^v, which has constantly grown during the second half of the 20th century. In the United States the MFP has doubled^{vi} since 1948. And in many OECD-countries the MFP has now become a more important driver of labor productivity than greater availability of capital per worker^{vii}. So it is not the capital or the labor input that is driving growth nowadays, it is the increase in productivity. If the MFP represents innovation, then the majority of the OECD-countries have upgraded their economies from being investment-driven to being innovation-driven.

This is good news. We need innovation, because if labor and capital would be the only sources for growth, then there would not be much light in the end of the tunnel for the European or US economies, where the populations are not growing, but are aging.

Thomas Lindh at the Institute for Future Studies in Sweden has conducted research in demography and growth. His findings should make us concerned: Without structural changes on the labor market (with unchanged productivity per worker, given no change in Swedish immigration or pension policies, and if the quota between working and non-working people should be kept the same as today) Sweden will be lacking prohibitive amounts of working people as from in a few years time and for several decades to come. And Sweden is not worse off than others, perhaps better. Many other countries in Europe and other parts of the world are in a similar situation, and they have considerably lower nativity than Sweden.

There is no way of solving this problem without innovation.

In the majority of OECD countries during 1995-98 the productivity of each worker grew more than the number of workers. In other words, the growth of the economy was driven mainly by optimizing the ways and purposes of peoples' work, not by increasing the headcount of workers. Furthermore, each worker worked fewer hours, and still they were more productive than before^{viii}. So it is going the right way, but we will need much more of the good stuff, and in parallel to that we will need to attract more good people.

The low-nativity post-baby boom industrial economies can in principle put their efforts on a massive and systematic import of talented people from other parts of the world, before the baby-boomer pension-age peak. But this will probably not happen, since the labor markets will not offer much opening before that peak. It is difficult to renew the labor market by a one-in one-out procedure in this case, because it is a ketchup bottle situation. Politicians who want to stay in office do well in being more concerned about the lack of work today than the lack of workers tomorrow.

When the lack of workers comes it might be late for an organized recruitment of skilled labor. The need for more skilled labor might well be overshadowed by the need for a massive import of cheap and unskilled labor in order to match the rapidly increasing need for old-age healthcare and home-services with shrinking budgets. This scenario is especially valid for

countries like Sweden, where taxes and employment fees pay a major part of the old-age/healthcare system. The active workforce – the bulk of the tax-payers - will be a shrinking part of the population while the proportion of elderly increases. Who will pay for their healthcare? Cheaper labor is the simplest answer.

The alternative to this bleak scenario is to spend the coming years preparing for maintaining wealth at a lower ratio of working population. This means investing in innovation for increasing labor productivity, and in parallel creating new markets that will create more job opportunities for skilled people, which will enable immigration of new high-income taxpayers before the baby-boom generation reaches the pension-peak.

So during the coming years, the importance of innovation for generating economic growth will grow, and it needs to be integrated into the public discussion.

Business journalism has taught people to discuss the relations between interest rates, currencies and stock prices. Innovation journalism is needed in order to enhance the public debate through better common knowledge and understanding of productivity and innovation issues, including how innovation affects the national economy. We need to discuss how to become more productive.

Innovation does not happen by itself, and it needs more than one person to do it. Innovation is performed by systems of different people and organizations.

Definitions of Innovation and Innovation Systems

In 1934 Joseph Shumpeter^{ix} defined economical innovation:

1. Introducing a new product on the market.
2. Introducing a new method of production.
3. Opening a new market
4. Opening a new source of supply of raw materials or half-manufactured goods
5. Creating a new organization of industry

The OECD Oslo Manual from 1995^x is the generally recognized standard guideline on how to measure innovation. The Oslo Manual focuses on technology driven innovation – by then technology was considered the main source of innovation - which it sorts into products and processes. It says that innovations involve a series of scientific, technological, organizational, financial and commercial activities. And the manual points out that nothing is an innovation before it has been introduced on the market.

In 1997 the OECD followed up the Oslo Manual with “National Innovation Systems”^{xi}, which gives an overview of the interactions underlying technological innovation on the national scale. In 1987, Freeman was the first to explicitly use the concept ‘National Innovation System’ which he defined as “ ... *the network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies.*”^{xii}.

But it is not enough to look at National Innovation Systems. Michael Porter’s work on regional clusters has raised global attention on the importance of regional innovative clusters as driving force for the national innovation systems^{xiii}. According to Michael Porter^{xiv}, the national business environment in an innovation-driven economy (which is the most advanced and prosperous form of economy) is characterized by a large degree of interaction in clusters.

Sophisticated company strategies in innovation-driven economies require, among other things, a highly skilled workforce, improved infrastructure, and more advanced research institutions. And sophisticated company strategies require increased access to better information, says Porter.

William Miller, founder of the Stanford Office of Technology Licensing, describes how innovative regions have a favorable environment, or “habitat”, for innovation and entrepreneurship^{xv}. “Habitat” is an interesting allusion in this case, suggesting that innovation and entrepreneurship comes out of the complexity and quasi-randomness of an ecological system, rather than being a product of well-oiled factory machine.

In Miller’s terms, a habitat is the combination of physical, legal, and social mechanisms that promotes speed in product development and in cross-firm learning about both technical and business issues. Silicon Valley is a habitat for innovation and entrepreneurship, a gathering place for researchers, entrepreneurs, venture capitalists, and skilled workers who turn new ideas into innovative products and services. This special habitat allows the region to adapt to waves of innovation and adjust to economic cycles. It is characterized by

- Knowledge Intensity as the Only Path to Create New High Quality Jobs
- A Work Force with High Quality and Mobility
- A Business Climate that Rewards Risk Taking and Does Not Punish Failure
- An Open Business Environment (not a zero-sum game)
- Collaboration Between Business, Governments, and the Independent Sectors (Labor councils, universities, foundations, etc.)
- Ready Acceptance of Diversity and Youth in Institutions and Networks
- A Venture Capital Industry that Understands High Tech
- Research Institutions and Universities that Interact Effectively With Industry (co-evolution of ideas)
- Presence of modern communications infrastructure
- High Quality of Life in the Community (schools, recreation, health, etc.)

Apart from National Innovation Systems and Regional Innovation Systems, there are also Sectoral Innovation Systems, defined in 1997 by Malerba and Breschi^{xvi} as “*the set of heterogeneous agents carrying out market and non-market interactions for the generation, adoption and use of (new and established) technologies and for the creation, production and use of (new and established) products that pertain to a sector (“sectoral products”).*” This stands in contrast to the traditional “industrial sector” that draws a map of industry with sharp boundaries, and groups firms with similar technologies and markets in its categories. A sectoral innovation system involves all kinds of people and companies, matching the concepts of national and regional innovation systems.

Like any other people, people who work in innovation systems need to know what is going on around them. This is why people follow the news. Innovation Journalism offers this news.

The need and opportunity for Innovation Journalism

The Information Economy is an established concept and several economists have stressed the importance of access to better flow of information in economical systems. Nobel prizes in economics have been given to people who have modeled effects of sharing information, or the market forces that depend on that people don’t share information, as in the case of Akerlof,

Spence and Stiglitz who received the Nobel prize in 2001^{xvii} for their theories on asymmetric information.

A successful innovation system is fundamentally dependent on the interaction and shared knowledge between different professions, such as engineers, business executives, academics, and politicians. Media is a major source of shared knowledge between these actors in the public, private and academic sectors.

Most people repeat and discuss what is said in the news, so the media is powerful in directing the attention and sometimes the actions of communities. Also, many people who read a news piece feel that the new knowledge is confirmed when someone else talks about it, or when they see it repeated in a different news outlet. What is said in the news has a greater chance of being accepted as a fact. News media sets a baseline for the knowledge level in society.

What's more, the news tells each consumer something more than "This has happened!". It says "This has happened. Now you know that everyone else knows it!". This public announcement of what is shared knowledge has a clear impact on the market, for example on the forces that depend on asymmetric information.

Most people follow news in broadcasts or in print every day, in the United States^{xviii} and in Sweden^{xix}. The major part of macro and micro-economists probably follow the news, as well as most skilled workers, researchers and those company decision makers who Porter refers to when he outlines the innovation economy. Everyone knows that enormous resources in time, money and human efforts are spent on influencing the content of news media. It is obvious that the news media can set the discussion agenda for the day like no other actor, and sometimes also profoundly affect the stock prices. And still it is not much said about the role of journalism in innovation systems.

Journalism is a formidable actor in innovation systems, and it can be rewarding for various actors to recognize this fact and look into its mechanism. Economists can benefit by including news media in their models, and journalists can get new insights in the structure of "objectivity". The word "objectivity" is used in journalism as a synonym for independence, fairness and other integrity issues that are important for good practice. True objectivity is utopian, and journalists need to know who depends on whom for what in the innovation systems, starting with their own positions, in their quest for fair and independent reporting.

Recognizing and understanding the role of journalism in innovation systems will also be rewarding for public policy makers, since the journalists' level of understanding about the reported matters is of fundamental importance for the level of the public debate and the quality of the shared common knowledge. There are many policy initiatives today for increasing the quality of teaching, but few policy initiatives for increasing the quality of journalism. Considering that each teacher communicates his/her knowledge to hundreds or thousands of people, while each journalist communicates his/her knowledge to hundreds of thousands or millions of people (who furthermore repeat this knowledge to each other in their daily communication), it seems that something is missing in public policy.

The OECD manual on National Innovation Systems stresses that flows of information among people, enterprises and institutions are key to the innovative process, in tandem with the flows of technology. This implicitly states the societal need for Innovation Journalism.

Innovation Systems create value, and people in them can get rich by knowing who needs what, who said what about who, what is cooking, and what to avoid. So the innovation systems should be potential media consumer groups for new producers.

The analysis offered by the OECD manual on the composition of innovation systems can be used for identifying groups of news consumers that Innovation Journalism news producers may target, for suggesting types of interactions to cover in stories and for suggesting strategies to identify experts to interview that the news consumers will appreciate.

Innovation journalism can be a component in existing news media, aimed at increasing the value for existing consumers, for example for today's consumers of business news, technology news, popular science or general daily news.

But innovation journalism can also be the main theme for new news sources that specifically target innovation systems, offering their actors valuable information about each other and other important issues that might affect their system.

National, Regional and Sectoral Innovation Systems offer a variety of potential target audiences for Innovation Journalism.

National Innovation Journalism

National Innovation Journalism needs to focus on issues of national concern, targeting those who are involved in the national innovation system. Presumably, there are potential groups of news consumers working with finance, law, national economy, academy, public policy and multi-national companies.

The attention of the market forces in innovation-driven economies will have to follow the ongoing shift in the economy from finance to innovation as the dominant driving force for economic growth. In investment-driven economies investments drive innovation. In innovation-driven economies, innovation drives investment.

The actors who lead the markets will move their center-of-attention from finance to innovation, or, in due time, hand over the market leadership to other actors who do so. This process started some decades ago and will continue to develop.

There are business and financial news media with high analytical capacity, like the Swedish *Affärsvärlden*, that have these news consumers as their customers today. This gives them the market opportunity to be the major players of National Innovation Journalism, given that they can integrate business and technology journalism and are interested in broadening their readerships to R&D decision makers. They are moreover usually the best-equipped publications for looking at the feasibility of new business models, which often is in the heart of groundbreaking innovation.

Another flavor of National Innovation Journalism may be offered the popular science media of today, such as the broadly appreciated Swedish publication *Forskning och Framsteg*. Popular Science explains to people how things are, rather than reporting about who said what about who. This approach can be instrumental in offering innovation professionals important background knowledge on how economy, technology, science and politics hang together in innovation systems and processes. Innovation is complex, and today the supply is short of in-

depth knowledge that can be shared by the various actors in innovation systems alike. The concept of Innovation Systems is still pretty unknown, even among the people who are in them, and there is a substantial amount of good research on them that can be popularized.

Regional Innovation Journalism

Regional Innovation Journalism serves regional innovation systems.

Since regional innovative clusters drive the national innovation system, as shown by Porter and others, there is a societal need and a market for Innovation Journalism not only in national and international news media, but also in local news serving an innovative region.

Miller's habitat for innovation and entrepreneurship will offer yet greener pastures with one additional bullet in its list of characteristics:

- Trusted Local News Media that Understands Innovation and Presence of Other News Media that Reach Beyond the Habitat

For example, the Silicon Valley has the San Jose Mercury News – a local newspaper with a high-quality coverage of the innovation system, and the San Francisco Chronicle – one of the largest regional newspapers in the US with a large business and technology newsrooms, which serve the high-tech community in the Valley. By reading the local newspaper every day, the community members know who said what about whom and what goes in their habitat. The news broadcasts opportunities, strengthening collective trends.

Furthermore, Silicon Valley hosts local news offices of nationally important news media, like the Wall Street Journal, or the headquarters of several influential magazines, as Business 2.0 or Wired, ready to put national or global attention on interesting things that happen.

The Silicon Valley would not be nearly as influential and its citizens would be much less conscious about their surroundings without these high-quality news media covering the innovations and the activity in the innovation systems.

Regional innovation journalism is a potential major market for innovation journalism, due to the potentially large number of market opportunities and many work opportunities for innovation journalists. Just looking at printed news media, in 2002 there were no less than 777 morning newspapers in the US^{xx}. It is obvious that the number of local newspapers is magnitudes larger than the number of national newspapers. According to the Readership Institute Readership Behavior Scores for 2003, local newspapers penetrate a much higher percentage of the target audience than the national newspapers. Roughly half of the US adult population read a news paper every day, and less than 30% don't read at least one newspaper in a week. What's more, local newspapers readers are better readers^{xxi}. There are scores of local newspapers that already are reaching the majority of people working in a regional innovation system, and it seems reasonable that some of them may have good chances to become the innovation news hubs for the regional innovation systems that they are parts of.

The Swedish local newspaper Västerbottens-Kuriren has tested covering innovation industry with good success, pleasing their readership and winning a national prize for their investigative coverage of emerging biotech-industry.

Sectoral Innovation Journalism

Sectoral Innovation Journalism serves sectoral innovation systems.

There are today technology news media that are broadening their technology coverage with news about business, legal and policy issues that are relevant for engineers in the technology industry. If these publications broaden their readership with the professional groups they are expanding their coverage to (in other words, if the people they start writing about start reading their magazine) they will gradually evolve into Sectoral Innovation Journalism publications.

The Swedish publication *Elektroniktidningen* is in this process, having its roots in covering electronic technology for electronic engineers. For some years it has continually expanded its coverage to include related venture capital, legal issues and government R&D policies that affect electronic engineers. Through the new coverage the magazine is also increasingly addressing investors, attorneys and policy makers that are interested in electronics. If and when *Elektroniktidningen's* marketing successfully penetrates these groups it will not only offer excellent innovation journalism, it will also become a Sectoral Innovation Journalistic publication.

Computer Sweden is the largest Swedish computer magazine, a position it earned by consciously targeting a readership of decision makers in the IT industry, introducing IT related business news in an early stage.

Biotech Sweden is probably the first publication that was started with the clear aim of being a Sectoral Innovation Journalism Publication, although the expression "Innovation Journalism" was unknown at the time. According to the founding editor Jan Sandred they mapped and targeted the Swedish biotech sectoral innovation system as its readership from the start, offering them technical, business, legal and political aspects of biotech innovations and the biotech innovation system^{xxii}. Biotech Sweden debuted in April 9th 2002. The first issue set an IDG Sweden record for having the highest ad/editorial ratio - more than 40 % - of any of the company's launches^{xxiii}. Biotech Sweden was also the fastest growing magazine 2003 in IDG Sweden. The revenue growth was accomplished in a otherwise slow ad market. The November 2003 issue was the largest biotechnology magazine ever produced in Sweden, with 96 pages in total. And the first quarter of fiscal year of 2004 Biotech Sweden increased it's revenues with a record-breaking 125,6 %.^{xxiv} This is a powerful demonstration of the commercial potential of Sectoral Innovation Journalism.

By showing that Sectoral Innovation Journalism works commercially, Biotech Sweden also proved a point of interest for the knowledge of Innovation Systems as such. Each publication needs to write for a standard reader who is the personification of the readership. Publications that don't succeed in personifying their readership will not get any readers and they will fail. By succeeding, Biotech Sweden showed that the sectoral innovation system readership can be personified, i.e. that people working in sectoral innovation systems have common interests and want shared knowledge, which is an indication of that the sectoral innovation system can have a common identity, which is the requirement for a self-conscious community.

Will the Old Dragons or the New Comets capture the markets?

Today the national business press probably has the largest penetration into the major part of the national innovation systems, the local media have the major penetration into the regional innovation systems and the technology and trade press have the major penetration into the sectoral innovation systems. But this does not mean that they must be the ones who will capture the innovation journalism markets. There are also challenges to overcome.

Publishers are often conservative, and – anyhow in Sweden – the resources for R&D are very small, as are the resources for training employees in new skills and expertise. News media that have both technology and business coverage today might seem to be in a good position to develop innovation journalism. But on the other hand it can be difficult to merge two existing news sections with different cultures into one. Those who don't do it, and who lack sufficient leadership, might get stuck in a situation where the technology and business news desks maintain a strict separation between the topics they cover, in order not to interfere with each other. In such cases, existing news sections for both business and technology might actually make it more difficult to develop innovation journalism.

Judging from the Swedish market, it might be easier for technology news to integrate business in their reporting than it is for business news to include technology, so probably the development of Sectoral Innovation Journalism will come sooner than the other markets.

Table 1. The Innovation Journalism Fellows and their hosts who have sent them personal invitations to work with innovation journalism

Innovation Journalism Fellow - Sweden	Host - USA
Adam Edström, Editor-in-Chief, Elektroniktidningen Largest electronics magazine	Robert Friedman, International Editor, Fortune Magazine
Jan Sandred, Founder & Editor, Biotech Sweden Largest biotech magazine	Ken Howe, Business Editor, San Francisco Chronicle
Patric Hadenius, Journalist, Forskning och Framsteg Second largest popular science magazine	Herb Brody, Deputy Editor, MIT Technological Review
Johan Jörgensen, Editor, Affärsvärlden Second largest business weekly	Josh Quittner, Editor, Business 2.0
Magnus Höj, Feature Editor, Computer Sweden Largest Computer Publication (Daily)	Keith Hammonds, Deputy Editor, Fast Company
Marcus Lillkvist, Journalist, Västerbottenskuriren Regional daily newspaper	Steve Yoder, San Francisco Editor, Wall Street Journal

ⁱ A Google search made on ["innovation journalism"] 21 September 2003 generated zero relevant hits apart from the present fellowship program. In comparison, "business journalism" generated 18400 google-hits and "technology journalism" 5120 hits. (From *The Concept of Innovation Journalism and a Programme for Developing it*. D. Nordfors, VINNOVA Information VI 2003:5, ISSN 1650-3120 (Oct. 2003))

ⁱⁱ The blueprint of the "Innovation Journalism" fellowship program is presented in "The Concept of Innovation Journalism and a Programme for Developing it." D. Nordfors, VINNOVA Information VI 2003:5, ISSN 1650-3120 (Oct. 2003). The model for conducting a fellowship program was developed and successfully tested in an earlier project, presented in "Introducing Internet-Enabled Expert Networks in a Country" by D. Nordfors, M. Bajuk, L. Norberg, J. Brinkmann and D. Forbush, *Communications of the ACM*, Nov 2003/Vol. 43, No 11, p. 127-132.

ⁱⁱⁱ MFP/TFP – Multi-factoral Productivity/Total Factor Productivity – explains the part of the economic growth that cannot be explained by changes in labor input and investments. If the same amount of work is put in, and no extra investments are added, the increase in productivity must be explained by changes that have made the produce more valuable or have increased the efficiency of producing and selling the produce. In growth theory, TFP is the scaling factor that is multiplied with the total input in the economic system in order to get the output of the system. Growth can be explained by an increase in inputs or an increase in the TFP scaling factor. Multi-Factor Productivity can be seen as a more humble name for Total Factor Productivity, implying that all the factors of productivity might be difficult to obtain.

^{iv} Multifactor Productivity Home Page. US Department of Labor <http://www.bls.gov/mfp/home.htm>

^v Multi-factor productivity measurement helps disentangle the direct growth contributions of labour, capital, intermediate inputs and technology. Caution is however advised in squarely equating MFP with Innovation. Not all technical change translates into MFP growth. Further, in empirical studies, measured MFP growth is not necessarily caused by technological change: other non-technology factors will also be picked up by the residual. (OECD Productivity Manual: A Guide to the Measurement of Industry-Level and Aggregate Productivity Growth. Jul 2001 (ISBN 9264194517))

^{vi} US Bureau of Labor Statistics. MFP data 1948-2001.

^{vii} OECD "A New Economy? The Changing Role of Innovation and Information Technology in Growth.", OECD Jul 2000. (ISBN 9264182128).

^{viii} Table 1: “Growth and productivity in the Business Sector” from OECD “A New Economy? The Changing Role of Innovation and Information Technology in Growth.”, OECD Jul 2000. (ISBN 9264182128). Data from OECD Economic Outlook No 66. Scarpetta et.al. (2000)

^{ix} Schumpeter, J., *The Theory of Economic Development*, Harvard University Press, Cambridge, Mass., 1934. Schumpeter’s definition of Innovation in economy is (like in this paper) usually presented in a simplified form. Schumpeter’s exact definition is the following:

1. The introduction of a new good—that is one with which consumers are not yet familiar—or of a new quality of a good.
2. The introduction of a new method of production, which need by no means be founded upon a discovery scientifically new, and can also exist in a new way of handling a commodity commercially.
3. The opening of a new market, that is a market into which the particular branch of manufacture of the country in question has not previously entered, whether or not this market has existed before.
4. The conquest of a new source of supply of raw materials or half-manufactured goods, again irrespective of whether this source already exists or whether it has first to be created.
5. The carrying out of the new organization of any industry, like the creation of a monopoly position (for example through trustification) or the breaking up of a monopoly position

^x OECD, “The Measurement of Scientific and Technological Activities. Proposed Guidelines for Collecting and Interpreting Technological Innovation Data. Oslo Manual”, 2nd edition, DSTI, OECD / European Commission Eurostat, Paris 31 Dec 1995. Innovation is defined in the following way:

“Technological product and process (TPP) innovations comprise implemented technologically new products and processes and significant technological improvements in products and processes. A TPP innovation has been implemented if it has been introduced on the market (product innovation) or used within a production process (process innovation). TPP innovations involve a series of scientific, technological, organisational, financial and commercial activities. The TPP innovating firm is one that has implemented technologically new or significantly technologically improved products or processes during the period under review.”

^{xi} OECD, “National Innovation Systems”, OECD, 1997

^{xii} *Technology and Economic Performance: Lessons from Japan*, C. Freeman, Pinter, London. (1987)

^{xiii} *Innovative Clusters: Drivers of National Innovation Systems*, OECD, Jun 2001 (ISBN 9264187065)

^{xiv} Michael Porter: “Building the Microeconomic Foundations of Prosperity” from the *Global Competitiveness Report 2002-2003*

^{xv} Lee, Chong-Moon and William F. Miller, Marguerite Gong Hancock, Henry S. Rowan—Editors. 2000. “The Silicon Valley Edge—A Habitat for Innovation and Entrepreneurship.” Stanford University Press

^{xvi} Breschi S. Malerba F. (1997), *Sectoral systems of innovation: technological regimes, Schumpeterian dynamics and spatial boundaries* in Edquist C. (ed), *Systems of innovation*, F Pinter, London. Another useful paper available on the web is Franco Malerba: “SECTORAL SYSTEMS OF INNOVATION AND PRODUCTION”, DRUID Conference on: National Innovation Systems, Industrial Dynamics and Innovation Policy. (1999).
H<http://www.druid.dk/conf-papers/conf-papers-attach/malerba.pdf>H

^{xvii} The Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel 2001 went to George A. Akerlof, A. Michael Spence, and Joseph E. Stiglitz "for their analyses of markets with asymmetric information" where actors on one side of the market have much better information than those on the other. Borrowers know more than lenders about their repayment prospects, managers and boards know more than shareholders about the firm's profitability, and prospective clients know more than insurance companies about their accident risk. During the 1970s, Akerlof, Spence and Stiglitz laid the foundation for a general theory of markets with asymmetric information. Applications have been abundant, ranging from traditional agricultural markets to modern financial markets. The Laureates' contributions form the core of modern information economics. H<http://www.nobel.se>H

^{xviii} USA: In the adult population, 47 percent read on any given weekday and more than 60 percent read on a typical Sunday. Less than a third (28 percent) say they do not read the local daily

newspaper in a typical week. Readership Institute (Northwestern University, Evanston, IL, US), National RBS Scores 2003. [Hhttp://readership.org/consumers/rbs/data/rbs_2003.pdf](http://readership.org/consumers/rbs/data/rbs_2003.pdf)H

^{xix} Four out of five Swedes read a morning newspaper. The average Swede devotes about six hours a day to media consumption including newspapers, magazines, books, radio, TV, CDs, video, and various Internet-distributed content, according to 2002 statistics Nordicom-Sveriges Mediebarometer 2002, Nordicom, Gothenburgs University, Sweden, ISSN1101-4539; [Hhttp://www.nordicom.gu.se](http://www.nordicom.gu.se)H

^{xx} Number of newspapers and circulations based on data from E & P; NAA Market and Business Analysis Department, published by Media InfoCenter.
[Hhttp://www.mediainfocenter.org/newspaper/data/top_news_volume.asp](http://www.mediainfocenter.org/newspaper/data/top_news_volume.asp)H

^{xxi} Readership Institute (Northwestern University, Evanston, IL, US), National RBS Scores 2003.
[Hhttp://readership.org/consumers/rbs/data/rbs_2003.pdf](http://readership.org/consumers/rbs/data/rbs_2003.pdf)H

According to this survey, 68% of the US population reads a local newspaper. For 45% of the Americans, this is the only newspaper they read. Furthermore, the readership (the quality of reading) is several times higher among those who read the local newspaper than among those who only read a national newspaper.

^{xxii} The creation of Biotech Sweden is reported “The Business Model of Innovation Journalism” by Jan Sandred (To be presented at the First Conference of Innovation Journalism. Apr 14-16 2004.)

^{xxiii} Biotech Sweden first issue record in highest ad/editorial ratio reported in IDG WorldUpdate Volume 32, no 14, 22 april, 2002

^{xxiv} Biotech Sweden reported as fastest growing magazine in IDG Sweden by IDG WorldUpdate Volume 33, no 42, 8 december, 2003

Biotech Sweden – A Business Model Case Study in Innovation Journalism

Jan Sandred¹

“Journalism will kill you, but it keeps you alive while you’re at it.”

Horace Greely, 1811 – 1872, American newspaper editor, founder of the New York Tribune.

Abstract

Innovation journalism is journalism covering innovation systems. Innovations are today not only the main driving force in most markets, but also fundamental to increased economic performance. If companies like Sony Ericsson or GE Health Care stop innovating new product and service ideas, or if they don’t improve their production techniques, they will be out of business in a few years.

The innovation system is the interaction between those who are needed to turn these ideas into a product or service on the market – the commercialization of these emerging technologies. It seems natural that journalistic coverage of the different innovation systems is a very important task and a big publishing business opportunity. Yet, surprisingly few journalists and publishing houses understand what it means or realize the commercial impact.

Innovation journalism has not previously existed as a concept, although it exists in practice. Editor Jan Sandred identified in 2001 a business opportunity for a magazine covering the Swedish biotechnology innovation system. The Swedish business-to-business magazine *Biotech Sweden* was created for the biotech market in cooperation with IDG Sweden, a subsidiary of International Data Group. Although the concept of innovation journalism did not exist at that time, the magazine was modeled very much according to this concept. It became a commercial and editorial success and thus it proves the commercial validity of the concept innovation journalism.

Introduction

Definitions

A “business model” is a strategy that describes how a business will make money and from whom. It is used to help decide the best way how to sell and market the products or services. Once implemented, the strategy can be adjusted as the market and its actors (in this case readers and advertisers) develop, experiences from the operations develop, and the goals become more refined.

Innovation is more than just new technology. Peter Drucker defines innovation as “the act that endows resources with a new capacity to create wealth”. That could be a new, or significantly improved, service, product, production technique, or management method.

Innovation journalism

Innovation Journalism is journalism covering the innovation system, in the same way political journalism that covers the political system, or business journalism that covers the stock market and its actors.

¹ Editor *Biotech Sweden*, Fellow at San Francisco Chronicle 2004.

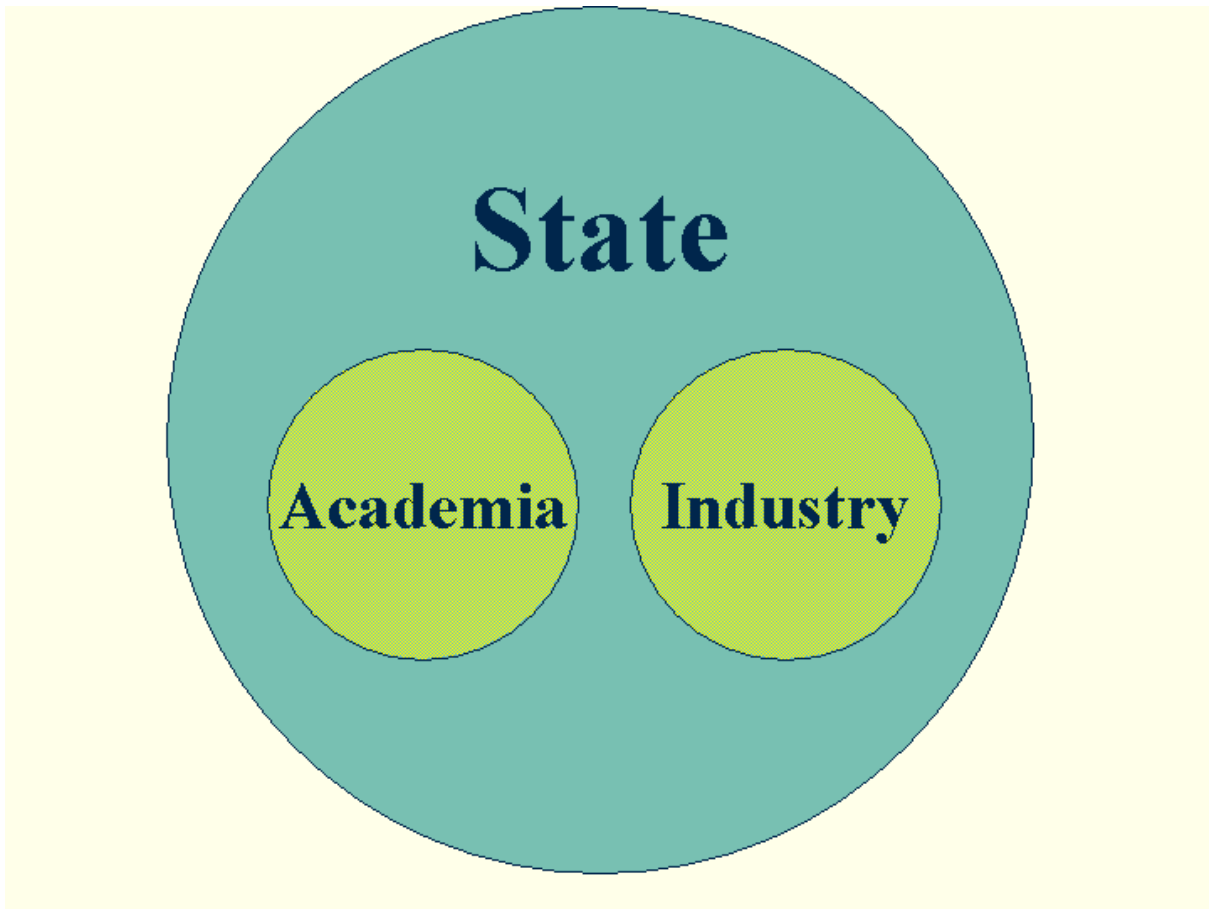
A successful innovation system depends on the interaction and shared knowledge between different professions, such as engineers, business executives, academics, and politicians.

Innovation journalism examine and scrutinize the interactions, synergies, companies, political actions and the emerging technologies within this system, which would not be visible in an analysis of individual companies, only probing the stock market, or just reviewing the technology.

The aim of this paper is to present a successful case study and to give a better understanding of the readers' information needs and how to develop a valid business model.

Innovation systems

Technological knowledge drives modern economies.² The transformation of science and technology into economic goods is nothing new. What is new is the how this process has intensified in the last half-century and the increased reliance of industry on knowledge originated in academic institutions.

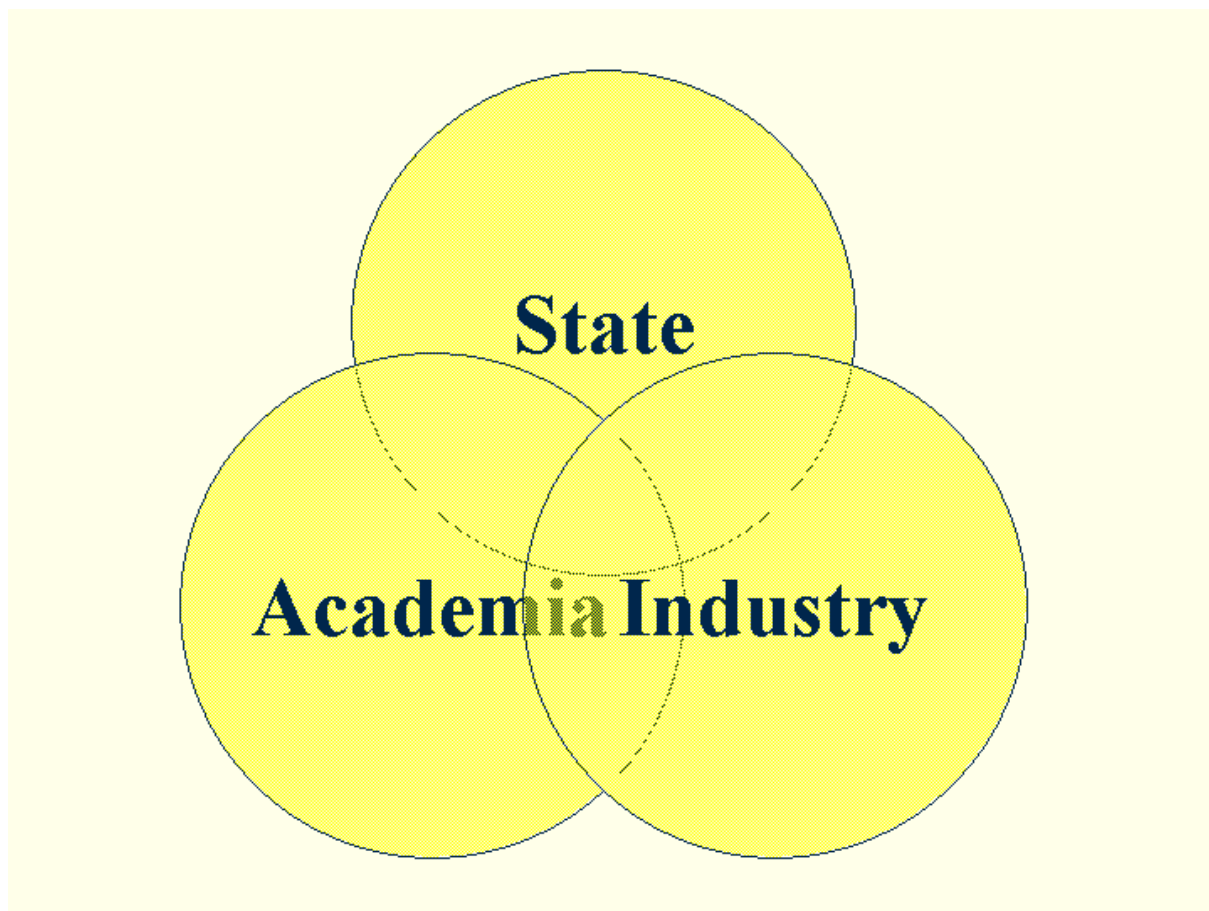


A traditional model of the innovation system

² "Exploring the Black Box: Technology, economics and history", Nathan Rosenberg, Cambridge University Press, 1994.

Traditionally the state has been seen as the driving force for national economic growth. The state funds research in academia to serve the industry with highly skilled personnel. The industry receives startup funding through government programs like interest-free loans. Big governmental investments like the U.S. Apollo project created the modern IT and material industry. In Sweden the development of the fighter aircraft Jas 39 Gripen also was a political investment in growth.

But today industrial innovation is not done isolated by entrepreneurs in companies or universities. Not only scientists, technicians and business executives are needed to commercialize an innovation, but also lawyers, capitalists and marketing people. And in addition the political system is deeply involved, especially in regulated high-tech areas such as telecom, health care, biotechnology and environmental technology. Consequently the innovative process depends on economic, political, social and cultural factors, and these factors in turn depend on each other.



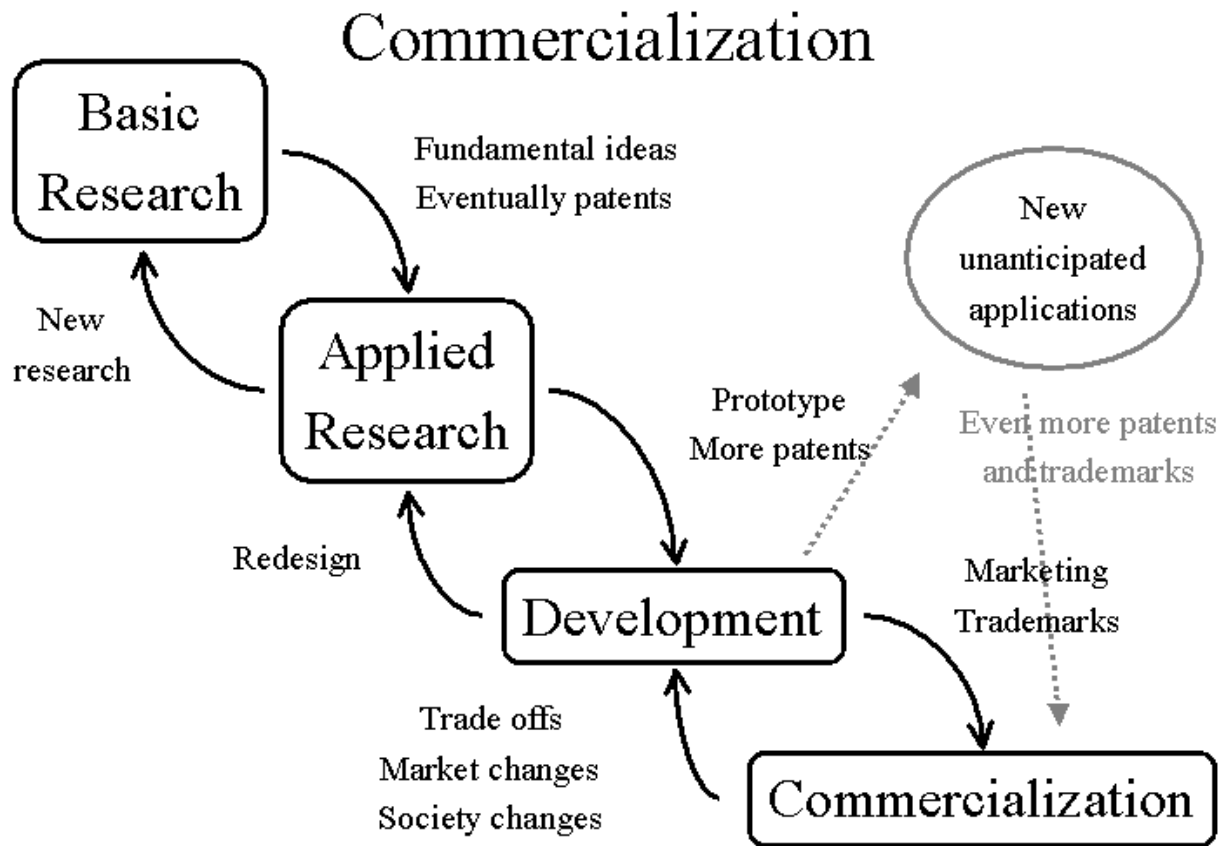
A modern model of the innovation system

The myth of the linear innovation process

Innovation is not a linear process.³ The innovation process is a nested system of feedback-loops between basic research, applied research, development and commercialization. And at the end of the day, after a long tedious innovation process, the development phase often leads to the

³ “Major Trends and Mechanisms to Commercialize Research Results in the U.S.” Chuck Wessner. (from “Commercialization of Academic Research Results”, Nordfors ed. Vinnova 2003.)

conclusions that the inventions actually don't work at a reasonable cost, or there is no market for them, but someone has another idea.



This commercialization process takes time, for pharmaceutical companies up to 10, 15 years. Meanwhile the market changes, economy changes, politics changes, values changes, society changes, and strategies changes. As a result, the process often ends up with new unanticipated applications, because when the planned application does not work on the market, the innovators will try to save their project by changing the application of their technology.

After that, new businesses must deal with threats like management failure, technology obsolescence, alternative business models, debilitating legal proceedings and hostile acquisitions. And if they succeed they must deal with fierce competition on the market.

The myth of the US innovation machine

There is a myth in Europe that the United States have is this highly well oiled innovation machine – The government put money in the universities and out pop biotech start-ups, which instantly became Amgen. It just isn't so.

Innovative regions need a favorable environment, a “habitat”, of the physical, legal, and social mechanisms that is needed for fast product development and commercialization.⁴ Silicon

⁴ “The Silicon Valley Edge – A Habitat for Innovation and Entrepreneurship”, Chong-Moon Lee, William F. Miller, Marguerite Gong Hancock, Henry S. Rowan, Stanford University Press, 2000.

Valley is the foremost example of a beneficial environment for innovation and entrepreneurship. It is a gathering place for researchers, entrepreneurs, venture capitalists, and skilled workers who turn new ideas into innovative products and services.⁵

Many places around the world try to copy the success of Silicon Valley by building science parks, facilitate access to capital and start technology transfer programs.

But a science park is not enough. Academia and politicians must together set the right conditions and recruit innovative companies into the park; otherwise they become only real estate developments.

Access to venture capital is not enough. Politicians and industry must together set the right regulatory regime; otherwise the venture capital companies just become banks.

A university technology transfer program is not enough. Industry and academia must together develop favorable conditions and mechanisms for co-evolution of ideas between industry and the university; otherwise the program starves to death.

The key issue is the interaction, the sharing of knowledge and experience in this environment. Given the right environment people form networks. They make business with each other; they share their experiences; they learn from each other and have constructive discussions on various research and business topics.

The success of an innovation system depends on the interaction and shared knowledge between these different players.

Media as an actor in the innovation system

Today it is widely known that media is the primary source of information within politics, academics and industry. How the journalist tells the story impacts society. Thus media becomes an active component – an actor and not an observer – of the system.^{6, 7, 8, 9, 10}

The media cannot tell you what to think, but they can affect what you think. This is known as the media's "public agenda setting role", or the media's power to define the significant issues of the day.¹¹ Media plays a crucial role in enabling different issues to become acknowledged as public issues. Media directly influences the public agenda, and that in turn affects the policy agenda.¹²

People follow the news, discuss the news and often act on it. And, believe it or not, they trust media.¹³ Therefore media creates the common shared knowledge between the actors in the innovation system.

But in reality the shared knowledge is rather superficial and people have a different impression and different understanding of the same information. The reason is that different

⁵ Joint Venture's 2004 Index of Silicon Valley.

⁶ "News: A Reader", Howard Tumber ed., Oxford University Press, 1999.

⁷ "Mass Media and Society", James Curran, Michael Gourevitch eds, Oxford University Press, 2000.

⁸ "Television and the Public Sphere, Citizenship, Democracy and the Media", Peter Dahlgren, Sage, 1995.

⁹ "Political Communication Ethics An Oxymoron?" Robert E Denton ed. Praeger, 2000.

¹⁰ "Communication for and Against Democracy", Mark Raboy, Peter A Bruck Bruck, eds. Black Rose Books, 1989.

¹¹ "Do the Media Govern? Politicians, Voters and Reporters in America", Shanto Iyengar, Richard Reeves eds. Sage 1997.

¹² "Agenda-Setting", James W Dearing, Everett M Rogers, Thousand Oaks, 1996.

¹³ "Just the Facts: How "Objectivity" Came to Define American Journalism", David Mindich, 1998.

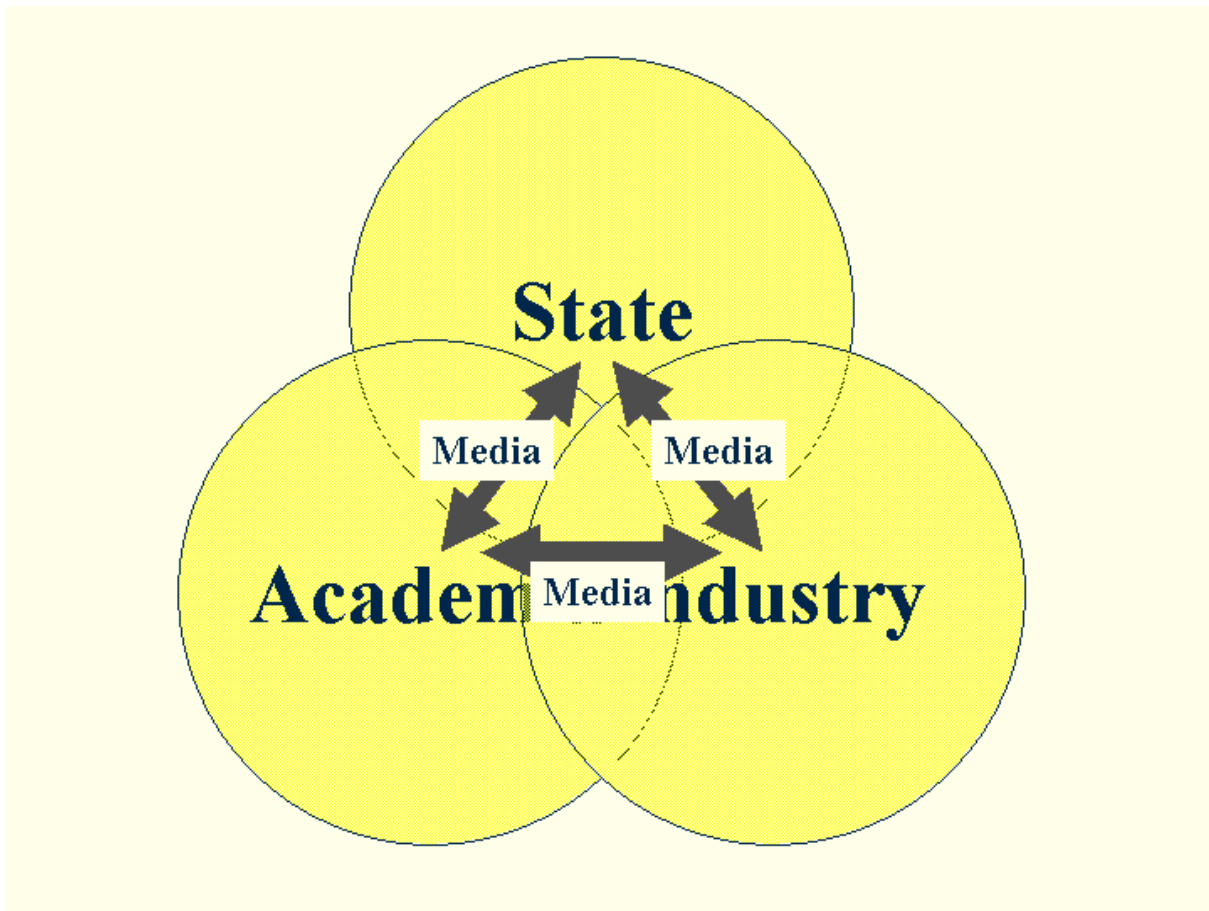
actors mostly read different media. The academics have their magazines, the politicians their, and the industry their trade publication and financial magazines.

The same news is treated differently in different media. The trade publications do their story, the business press focus on the stock market, the science magazines concentrates on the scientific issues, and so forth.

So, within a specific innovation system like biotechnology there is a lack of knowledge about what's really going on. There is a lack of good common information sources.

The largest cost for the information departments within corporations is the collection and distribution of information from different sources to inform the right persons within a company.¹⁴ That is to inform the professionals within a corporation about important issues happening within different areas that affect the innovation process, for instance new policy issues that concerns the product developers or new technologies that concerns the marketing department, and so forth.

Here is a business opportunity for new media based on innovation journalism that creates a quality common knowledge within an innovation system.



The role of media in the innovation system

¹⁴ Mark Vadasz, Executive Information Manager GE Health Care (formerly Amersham Biosciences), Gunilla Wredenber, Information Consultant CGI Rinfo, Swedish Association of Information Managers.

A business opportunity for innovation journalism

The innovation system consists of many professions. It is key to write for all actors. There is no problem writing for a wide audience.

Within explanatory journalism there exists well-developed methods and tools to write for an uninformed reader how complicated things work, for example to produce “popular science”.

The key issue is to never underestimate the reader’s intelligence. But also never overrate the reader’s knowledge.

Prerequisites

Find a target group

There must be a well-defined target group. Magazines are read by people and not by companies. Even the most expensive multimillion dollar equipment or long-term outsourcing service, are bought by persons that makes non-rational and emotional decisions.

Given that the magazine is filled with brilliant editorial content, there are also a few market prerequisites:

Find an uninformed target-group

There must be a need for a specific sort of information from the target group. It is easy to talk oneself into the idea that an audience needs the information they want to provide. This is not true. For example wedding magazines, magazines for people that have recently become parents or product review magazines, are by definition not interesting after the wedding is over, the baby is born, or once you have bought the product. In these cases a business model that builds on single copies or short-term subscription is preferred.

Find a uninformed target-group that wants to read

In Sweden there’s a rule of thumb in making magazines that says “Half of the target group don’t read. And the other half must be convinced.” People can have a lot of excuses for not reading magazines: lack of time, unaccustomedness, or just reluctance.

It is necessary to market the magazine to the target group. Usually it takes three to five years to get a magazine profitable. It takes deep pockets and a lot of effort.

Find a non price sensitive uninformed target-group that wants to read

But a potential need is not enough. The subscribers must have the money to pay for the magazine. New entrepreneurs are information-hungry, but short on cash. With the increasing number of free publications and the popularity of Internet, it is almost impossible to charge for general news or general information.

As private persons we are usually stingy when it comes to paying for information. Innovative businesses on the other hand, is very much dependant on what they learn. If they can save money or earn money based on useful information, they will pay well for compelling editorial content. A real edge is the key.

Find the opportunity

Magazines are expensive and adverts are the main financial source. The market must have powerful potential advertisers interested in reaching the magazines target group. And the target

group must not easily be reachable with other market channels like direct mail; otherwise market channels most certainly have exploited the market.

Don't waste the opportunity

Lap the competition. Don't let competitors exploit or take the niche. Publishing is intensely competitive.

Finding a new market is a catch 22. Once a profitable appears on market others will quickly follow.

Create the market – thus you own it

New markets do not appear or lies hidden – they are created. For example Apple defined the term “user friendly interface”. At the time when the Macintosh was introduced in 1984 it was not given that “user friendly interface” meant mouse, point-and-click, windows and icons.

“Biotechnology” is a very loosely defined term. You get as many answers as people you ask. It was essential to define the term according to a suitable market.

The biotechnology market did not exist as such a few years ago. The first aim was to define “biotechnology” to suite the criteria above.

It turned out that the most important part was to define what biotechnology is not. The magazine was deliberately named “Biotech” and not “Life Science”, as the term “life science” was cumbersome and used to broadly, which made it difficult to find a well-defined and appropriate target group.

Biotechnology was also defined not to be “health care” or “medical technology”. In that case things like syringes and wheel chairs had to be included, which intuitively is not biotech. Also the health care industry already had several publications. The most important Swedish being Dagens Medicin, Läkartidningen, Incitament, Medicament, Landstingsvärlden and Pharma Industry.

Finally biotechnology was defined as “the art of biological engineering on a molecular level”, or more precise “to develop, produce, analyze, or use biological systems on a cellular or molecular level.”

The actors

Traditionally a trade publication is formed by the industry, usually a trade organization, written by people who have insights in the trade and/or about the technology.

The scope of Biotech Sweden was wider. When designing the magazine all of the actors that influences and/or is entirely dependent on the biotech market, were identified.

The role of Biotech Sweden is being as a hub in the biotechnology market. The magazine should provide the market with information and news, and act as an arena for debate and opinion making.

Biotech Sweden should independently monitor and inform of what is happening in the biotech industry. The magazine should cover new findings, technology, products, finances and regulatory.

The other actors in the biotechnology innovation system was defined as

- The producers
 - The biotech companies themselves
- The researchers and developers

- Those who create the innovations
- The financers
 - VC, funds, financial institutions, analysts
- The watchdogs
 - The law firms and patent bureaus
- The creators of public opinion
 - Politicians, organizations and prominent individuals who form and influences public opinion, and laws that follows the technology and basic research development.
- The service providers
 - Provide the companies with infrastructure, tools, equipment, and so forth.

Goals

The target group was estimated to 75,000 individuals. The penetration goal was set to 25 percent within a year and the magazine should be profitable within 1 year. It is important to point out that these were not formal goals.

Find the finance

A new magazine is costly and there is a need for a financially strong supporter. After several Swedish publishing houses turned down the author's prospect, Fredrik Bernsel, Editor-in-chief of Nätverk & Kommunikation at IDG Sweden, in November 2001 got interested in the idea of a Swedish magazine for the biotech industry, based on the innovation system.

IDG Sweden AB is a wholly owned subsidiary to International Data Group Inc. IDG is the world's largest publisher of IT-related information. The company was founded in Boston in 1964 and had 2003 a revenue of \$2.58 billion and more than 12,000 employees in 85 different countries. The IDG magazines have 100 million readers worldwide, every month. In total IDG publishes more than 300 IT and business magazines, has 300 web sites, produces and sells 4,000 book titles in 38 languages and more than 168 globally branded conferences and events.

IDG Sweden was founded in 1983. Today, the company has more than 200 employees; among those around 80 is editorial staff at the company's different magazines and web sites. IDG Sweden publishes 15 IT and business magazines, web sites, recruitment services for IT professionals, events, conferences and seminars, and reprints.

The obstacles

Lack of experience

IDG had no knowledge in biotechnology or the biotech market. The company's expertise was solely in IT and telecom. Consequently all personnel must be educated. This was done informally by the author at the office and at "publisher meetings" together with the sales people and potential advertisers.

Biotechnology market unfamiliar to media

To discuss and get information on the readers' needs, and also to get credibility on the market, an editorial advisory board was formed with representatives from the industry, academia, venture capital and science parks. The board helped to create the basic content requirements for the magazine and also gave important input on the actors in the biotechnology market.

The advisory board of 2001-2003:

- Academia
 - Mathias Uhlén, PhD. Professor of Microbiology, Royal Institute of Technology KTH, Stockholm
 - Lena Kjellén, PhD. Professor in Medical Biochemistry and Microbiology, Uppsala University
- VC
 - Folke Meijer, CEO Karolinska Institutet Holding AB
 - Ingvar Wiberger, PhD. CEO SLU Holding AB, Swedish University of Agricultural Sciences
- Science Parks
 - Per Lindström, Project Manager Uppsala Science Park, Uppsala University
 - Bent Christensen, CEO Medicon Valley Academy A/S, København
- Industry
 - Lars-Eric Utterman, Executive VP Proteomics, Amersham Biosciences
 - Hans Hultberg, Director Global Discovery Alliances, Astra Zeneca
 - Håkan Englund, VP Business Development & Licensing, Pharmacia Diagnostics
 - Marianne Bäärnhielm, Communications Manager, Pharmacia Corp
 - Tomas Moks, PhD. VP Commercial Development, Biopharm, Biovitrum
 - Maris Hartmanis, PhD. CEO Gyros Microsystems
 - Björn O. Nilsson, PhD. President, KaroBio
 - Sven Andréasson, CEO Active Biotech
 - Erik Walldén, CEO Pyrosequencing

In the months before launch, however, we found that Swedish biotechnology companies were not as ad-savvy as the IT companies. We discovered that we have to educate them in the business model of a trade publication and what market opportunities it can give advertisers.

As a result, IDG Sweden hosted the first "Founders Club" dinner on April 16 as a way to attract new advertisers to new publications. Marketing staff from biotechnology or related companies met more experienced peers from other businesses to exchange ideas and ask questions. The staff presented the Biotech Sweden concept and how it serves the biotechnology market.

No directories or databases

As the biotechnology market was brand new there were no mailing list or address register to buy. The commercial address registers like Micromedia and Postens Adressregister PAR, only register job titles and is crude in differencing high-tech companies.

The final register was a combination of a huge number of sources.

The strengths

There was no international competition. A pilot study showed that the target group read various magazines like Nature, Science, Cell, The Scientist, various patent magazines or general daily papers.

Still there is no other magazine with the same concept as Biotech Sweden.

Establish quickly

Timeline of Biotech Sweden:

- 1st December 2001, idea formalized
- 16th January 2002, officially announced
- 20th March 2002, First issue BiotechVärlden, published by E+T Förlag AB
- 21st March 2002 Kemivärlden Biotech (supplement), published by Mentorgruppen AB
- 9th April 2002, first issue of Biotech Sweden

A magazine must be established quickly. It took approximately four months from the first idea to the first issue of Biotech Sweden was on the market.

During that time two other Swedish publishing houses, E+T Förlag AB, and Mentorgruppen AB, announced competing magazines. One, BiotechVärlden from E+T Förlag AB, was already on the market as a newsletter in October 2001. Biotech Sweden was officially announced 16th January 2002. Quickly BiotechVärlden was refocused to a general business magazine in tabloid format for the biotech market and the first tabloid version was published 20th March. The day after Kemivärlden Biotech from Mentorgruppen AB was published a supplement to Kemivärlden, the major Swedish trade publication for the chemistry industry market. We new both E+T Förlag AB and Mentorgruppen AB were working on competing magazines and expected this to happen. The advantage was that more magazines gave more credibility to the biotechnology market as such. And the biotechnology market becomes aware of that there exist Swedish magazines. We tried to learn from the market's reaction to magazines and made some last minute adjustments. However we were convinced that we had the winning concept.

In August 2001 Biotech Sweden bought BiotechVärlden and formed Biotech Sweden AB, a wholly owned subsidiary to IDG Sweden AB.

The market

The Swedish biotechnology market in 2002 consisted of slightly more than 300 companies, but the majority was very small, mostly one-man firms with a PhD and a patent. To be a part of the "market" a company must have products or services to sell, and also be interested in buying products and services.

The various niches in the Swedish biotechnology market was identified to be

- Agrobiotechnology
- BioIT
- Biomaterial
- Bioproduction
- Biotech Suppliers/Distributors
- Biotech Suppliers/Manufacturers

- CRO (Contract Research Organization)
- Diagnostics
- Functional Food/Health Products
- Pharmaceutical
- Veterinary Medicine
- Intellectual property
- Drug Design
- Service

Market activities

Biotech Sweden is the official membership magazine for Swedish biotech organization SwedenBio.

Biotech Sweden also partners with Naturvetareförbundet, the Swedish Association of Scientists, where the members can get a 30 percent discount on the one-year subscription.

Biotech Sweden is the official magazine for the Scandinavian trade show trade Biotech Forum.

Biotech Sweden is also an active member in TNC Biotermgruppen.

Measurements

A breakdown of the readers

The subscribers of 11th November 2003 according to The Swedish Bureau of Circulation, Tidningsstatistik was:

- 14,900 audited subscribers
 - 12,900 controlled circulation
 - 2,000 paying subscribers

which gives a penetration of the target group of 19.87 percent.

Key persons in the Swedish biotech industry	45 %
Academia, universities, research institutes	20 %
Research and laboratory personnel	15 %
Key persons in industries directly associated to or dependant on the biotechnology industry	7 %
Research physicians	5 %
Finance sector, VC, Investors	3 %
Patent agencies, lawyers	2 %
Politicians, members of parliament, political ombudsmen	2 %

Reader survey

One readers survey has been performed since the start of the magazine. Originally the reader survey (May 2003) was intended to check the “market value” of the readers like place of work, budget responsibility, and level of decision-making. The aim also was to check if the editorial content in the magazine corresponded to the readers’ need and special requirements.

The survey was not performed with a scientific publication in mind. The results is not claimed to be absolutely statistically accurate, but it gives a hint of how the magazine was received by the target group. And the data can be used to indicate whether the readers match the innovation system.

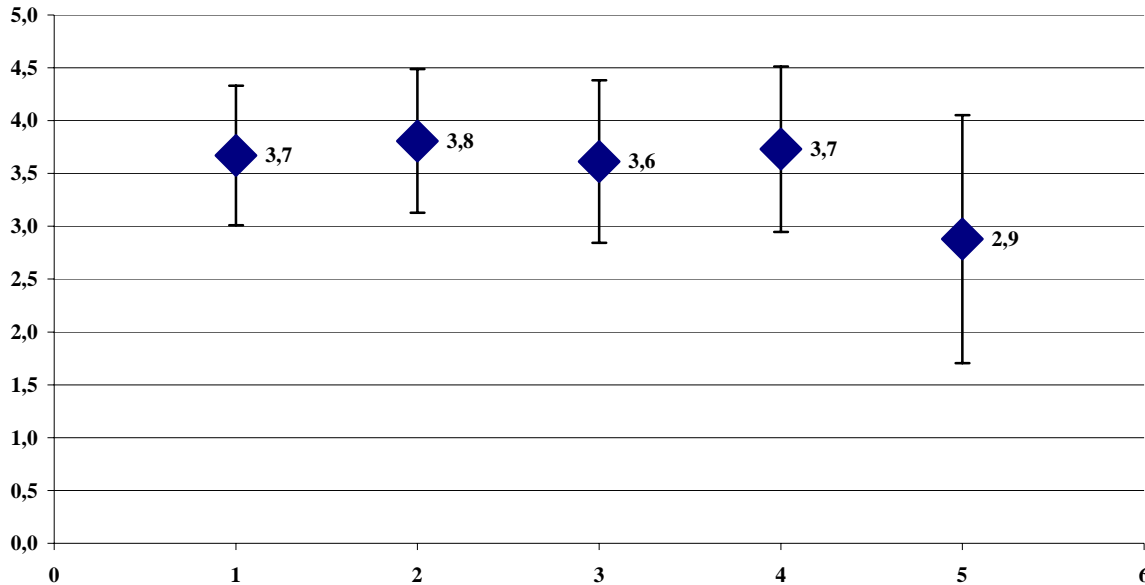
As the result of the full survey (16 questions) is a property of the Biotech Sweden all data cannot be disclosed. Here three questions are chosen: The quality of the magazine, what areas in the magazine the readers would like the see increase coverage on, and what general areas the readers are interested in. These questions indicate how well the magazine corresponds to the readers information need.

The survey was carried out as a questionnaire mailed to a number of randomly chosen readers. The survey was voluntary. No compensation was given. Number of respondents was 80

Science and research news is not surprisingly the by far the most popular section in the magazine. Science usually gets very high marks in magazines. Second most popular sections are

the general news and feature articles. But then the opinion is spreading, some rather a substantially. This is probably due to the breadth of the magazine's readership. The English news summary is the least popular section, also not a very big surprise.

Quality of the magazine

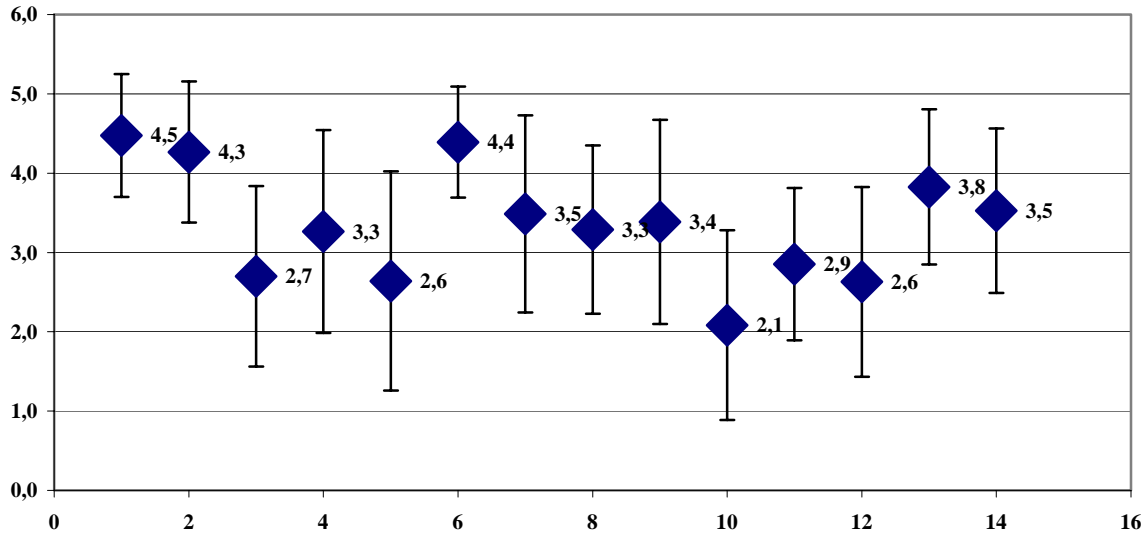


Grade the magazine from 1 (worst) to 5 (best).

1. Quality of the magazine	Average	Standard deviation	Number of respondents	No answer
1. Overall quality	3.7	0.66	77	3
2. Quality of facts and data	3.8	0.68	74	6
3. Well-written	3.6	0.77	76	4
4. Trust in writers and editors	3.7	0.78	75	5
5. Use in work	2.9	1.17	76	4

The last question "use of the magazine in my work" shows a slight greater spread than the other answers.

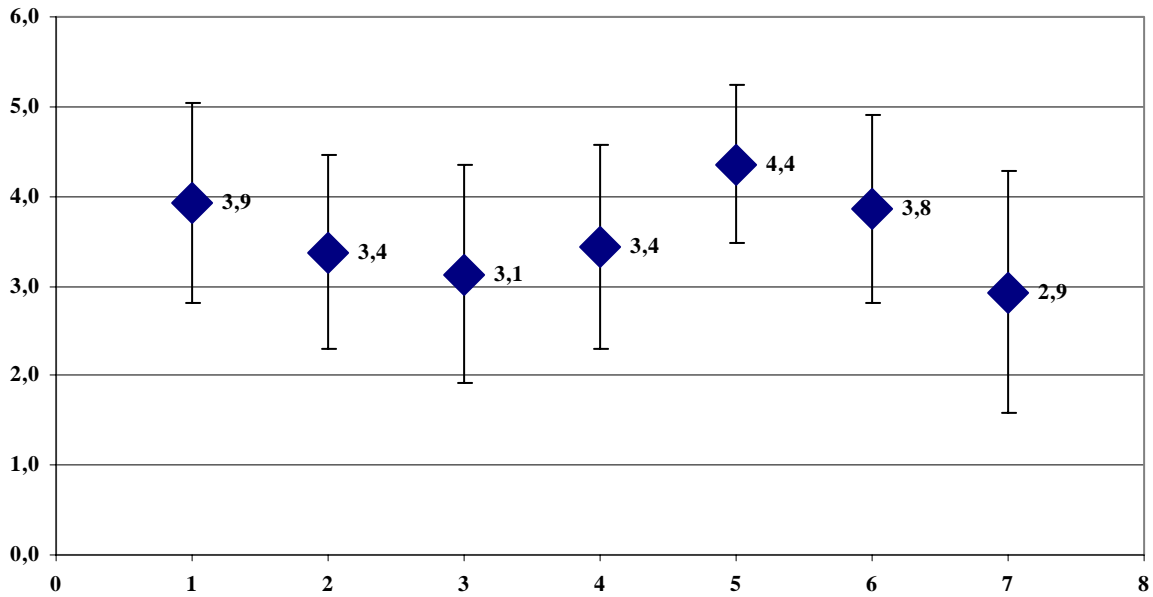
Sections in the magazine I would like to read more about



Grade the importance of the sections in the magazine from 1 (less important) to 5 (very important).

2. I would like to read more about	Average	Standard deviation	Number of respondents	No answer
1. News – Swedish biotechnology	4.5	0.77	76	4
2. News – International biotechnology	4.3	0.89	75	5
3. Laboratory equipment	2.7	1.14	73	7
4. Economy news	3.3	1.28	76	4
5. Stock exchange list + recommendations	2.6	1.38	75	5
6. Science news	4.4	0.70	74	6
7. BioIT (bio informatics)	3.5	1.24	72	8
8. Ethics and patent	3.3	1.06	73	7
9. Trade, job and career	3.4	1.29	73	7
10. English news summary	2.1	1.20	72	8
11. Editorial, opinion and columns	2.9	0.96	74	6
12. Book reviews	2.6	1.20	73	7
13. Feature stories	3.8	0.98	75	5
14. Profiles	3.5	1.04	74	6

Areas I would like to read more about



Grade the areas you would like to read more about from 1 (read less) to 5 (read more).

3. Areas I would like to read more about	Average	Standard deviation	Number of respondents	No answer
1. Pharmaceuticals	3.9	1.11	71	9
2. Material development	3.4	1.09	69	11
3. Forestry, food, crops	3.1	1.22	71	9
4. Environment	3.4	1.14	72	8
5. Research	4.4	0.88	74	6
6. Bio production	3.8	1.05	73	7
7. Management	2.9	1.35	73	7

The last question “management” shows greater spread than the other questions.

Survey results and action plan

In summary the readers gave the magazine good marks, above average. The reader survey also showed that the readers disliked the economy section. Therefore the economy section was redesigned in 2003 to include stock-exchange quotations with annotations and grades from analysts.

The economy section was also enlarged with more indicators. The section now includes monthly table of important large deals like takeovers, joint ventures, patent agreement, milestones payments and so forth. It also has monthly tables of important clinical trials with result: new, ongoing, failed, success, FDA approved. In addition it has biotechnology stock indexes from the Stockholm Stock Exchange, Nasdaq and NYSE and general indexes.

More products

Swedish Biotech Industry Guide

Biotech Sweden enlarged its product family in 2003 with the Swedish Biotech Industry Guide. It is a yearly directory and reference guide on the Swedish biotechnology market. It is targeted towards venture capitalists and investors primarily outside Sweden, but also serves as a guide for the industry. It is only available to full-year subscribers, but is outside Sweden available free from the above partners at Swedish embassies and consulate-general. The Swedish Biotech Industry Guide comes with an accompanying on-line database, available free for subscribers. It is published in cooperation with Vinnova, the Swedish Trade Council, Invest in Sweden Agency, and Connect Sweden.

Scandinavian Biobusiness Report

The newsletter Scandinavian Biobusiness Report will be officially launched at the Bio 2004 conference in San Francisco, in June 2004. It is a pdf-based monthly newsletter covering the Scandinavian biotechnology industry. The primary target group is venture capitalists and investors, but also the decision-makers in the industry. Scandinavian Biobusiness Report will be launched in cooperation with Swedish Trade Council in Los Angeles.

Economic accomplishments

Biotech Sweden debuted in April 9, 2002, with an initial print run of 27,000 and a subsequent controlled circulation of 20,000. The first issue set an IDG Sweden record for the highest ad/edit ratio (more than 40 percent ads) of any of the company's launches.¹⁵

Biotech Sweden also increased the revenues of the first quarter of fiscal year 2004 (October – December) with 125,6 percent. The revenue growth was achieved in an otherwise slow advertisement market, driven by a strong increase in attention of new advertisers as a result of a deep penetration of the market, combined with focused editorial and insights.¹⁶

The November 2003 issue of Biotech Sweden, published in cooperation with the trade show Biotech Forum 2003 was the largest biotechnology magazine ever produced in Sweden. The November issue was divided in two parts: the main magazine of 48 pages and a separate editorial trade show supplement of an additional 48 pages. Biotech Forum is Scandinavia's

¹⁵ "First Biotech Sweden receives high praise from biotech industry; staff educates new advertisers", Patricia Smith, IDG WorldUpdate, volume 32, no 14, 22 April 2002

¹⁶ "Biotech Sweden sets revenue record", Patricia Smith, IDG WorldUpdate, volume 33, no 42, 22 April 2002

largest biggest event. It covers the biotech, medical, and health care sectors. It 2003 it took place at Stockholm International Fairsⁱⁿ November 26th to 28th.

The ad rebate is not public. The ad/editorial ratio is usually around 35 to 43 percent.

Conclusions

The success of Biotech Sweden shows that Innovation Journalism is a valid and successful business concept. It is a better approach to news coverage in a modern high-tech market. It also in a better way supply the actors with more suitable information in an innovation system.

Innovation Journalism is a compelling and profitable way to serve the actors in the innovation system.

REPRINT

The Concept of Innovation Journalism and a Programme for Developing it

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1 Innovation Journalism

“Innovation Journalism” is the intuitive name for journalism covering innovation. It is valid as a concept, but there is no such journalistic discipline or community today. Therefore, a programme has been designed to develop the concept and test the possibilities for Innovation Journalism as a journalistic discipline, a new reporting “beat”.

A Google-search on “innovation journalism” generates zero relevant hits apart from the present program.ⁱ In comparison, “business journalism” generates 18400 google-hits and “technology journalism” 5120 hits. However, when suggested in discussions, some editors are willing to refer to their publications as “innovation journalism”, and I have found prominent journalists who are enthusiastic about calling themselves “innovation journalists”. The purpose of the international program is to give some of these editors and journalists an opportunity to develop their innovation journalism skills, and to form a community. In a year we might know if “Innovation Journalism” may be a journalistic discipline – a new reporting beat.

VINNOVA is managing the program in co-operation with the Swedish Foundation for Strategic Researchⁱⁱ, the US Council on Competitivenessⁱⁱⁱ, and Profnet^{iv}.

1.1 The concept of Innovation Journalism

Many important companies develop and sell innovation-based products today. In order to discuss the future of such a company, it is very important to assess their innovation. How strong is their R&D? How strong is their innovation management? Will they be able to earn money on their innovations? These questions calls for investigation and analysis of the links between technology trends, R&D policies, immaterial property rights, investments, technical standards, industrial production processes, marketing of new technologies, business models, politics, and more

If reporters are to offer a well-founded opinion about whether or not a society or company is heading towards growth, they need a thorough understanding of both technology and business matters. A piece of good technology with bad business management is a guaranteed failure. A piece of bad technology with talented business management may create false expectations, where many investors inevitably will lose their money. Decisions by lawmakers can strengthen or weaken various crucial parts of the innovation system that transforms an idea into a revenue-generating

product. Thus, innovation journalists need to understand the markets and become well informed about the leading interests, their relations to each other, and their agendas.

This is the basis of the argument that innovation journalists may have a niche and an arena for a new professional community that could also become a new school of journalism. If the concept is viable, it might better equip reporters to contribute with dialogue and criticism that inspires companies and lawmakers towards sustainable growth, and scrutiny that inspires the public and investors to raise well founded questions.

1.2 The need for Journalism

Communities consist of people who interact around something they have in common. Community members share concepts that are parts of their identities, such as ideas, various aspects of professional and family life, forming a culture. A large part of the community awareness is the sharing of knowledge about the protagonists – who is who, who said what about who, and who is doing what.

In general, for most communities, if a statement is considered true or not by the community is not determined by how well the statement is formulated or by whom. It is determined by how often it is repeated and by how many sources. If many sources say the same thing often, people feel that it has to be true.

If a statement is well formulated, or stated by an authoritative protagonist, there can be an increased probability that it will be repeated by others, but usually active marketing is needed for a concept to reach “critical mass”, when community members will start repeating the statement because everybody else is repeating it.

The free press is one of the dominant direct sources of shared knowledge in large populations today. While a teacher reaches hundreds of students, a journalist reaches at least thousands or millions of readers.

This is why it is essential for journalists to analyze trends and relations, call attention to key developments, kill rumours, blow the whistle on foul play, and call for the attention of the community. Furthermore, it is just as important that different journalists cover different viewpoints and perspectives, since objective truth does not exist and pluralism is the only constructive alternative. Most people repeat what is said in the news, so the journalists’ level of understanding about the reported matters may often be

of fundamental importance for the level of insight in the public debate and the quality of the shared common knowledge.

Most people don't have the time to carry out research on their own about issues they feel are of importance or are interested in. They rely largely on information produced by journalists. Four out of five Swedes read a daily newspaper about half an hour per day. The average Swede devotes six hours a day to media consumption including newspapers, magazines, books, radio, TV, CD, video, and various Internet distributed content, according to statistics for 2002^v.

This makes the relation between the press and the community symbiotic, in some cases to the extent that they can define each other. The one helps the other to grow, and an open pluralistic community without its own press will be limited in important aspects that depend on the sharing of larger amounts of knowledge, such as economic growth.

Commercial publications depend on their ability to target communities successfully. Advertising brings in the money, and in order to sell ads, the publication needs to offer qualified target groups for sales ads or job ads. The price of ads depends on the access to readers and the amount and quality of the readers who are attractive for the purchasers of the ads.

Hypertext, multimedia and interactivity via the Internet offer publishers possibilities for deeper coverage than paper print can offer. Hopefully, once the Internet has become the leading distribution channel for news, we can expect intensified knowledge competition between news publishers. A high-quality news site with an archive and a search engine eventually becomes a great research library. Today it is more important than ever to invest in the development of journalistic education, research, and tools that promotes knowledge competition in the news media.

A few Swedish programs have already been created for promoting knowledge competition in the media, such as: basic training in Internet- and computer assisted research for professional journalists^{vi}, media training of academics heading collaboration projects between industry and academia^{vii}, and the development of advanced news delivery services and expert networks that enable reporters on deadline to find experts quickly^{viii}.

1.3 The need for Innovation Journalism

Innovation has a lot more to it than just technology. Innovation is also about management systems that drive growth. Peter Drucker^{ix} defines innovation as "the act that endows resources with a new capacity to create wealth". For

example, in the beginning of the nineteenth century there were dozens of harvesting machines on the market, but the farmers could not afford them. Eventually one of the many harvesting-machine inventors, Cyrus McCormick, invented instalment buying. This enabled the farmer to pay for a harvesting machine with future earnings rather than out of past savings. Suddenly the farmer could buy farm equipment.

Innovation is also about government management. An innovation-driven economy requires a country to improve its ability to compete and create a high living standard. According to Michael Porter^x, economic development is a process of successive upgrading, in which a nation's business environment evolves to support and encourage increasingly sophisticated and productive ways of competing for companies based there. A nation may upgrade itself from a factor-driven economy to an investment-driven economy to an innovation-driven economy, which is the most advanced stage of economical development. The national business environment in the highest stage is characterized by strengths in all relevant areas with a large degree of interaction in clusters. More sophisticated company strategies require, among other things, a highly skilled workforce, improved infrastructure, and more advanced research institutions. Sophisticated company strategies also require increased access to better information for the company's decision-making process.

Innovation is not only about technology and management; it is also about social systems and cultural trends. In 2002, in the sobering wake of the financial bubble often referred to as "the new economy", IBM chairman Lou Gerstner^{xi} wrote that "technology itself isn't some force of nature that we simply direct or use. It, too, is the product of human intentionality and choice. So yes, we apply technology to solve customer problems. And we also apply marketplace knowledge to help shape our research agenda — whether it's the direction of the economy, or growth opportunities, or emerging forms of governance and education, or demographic and social trends, or discoveries in other fields such as life sciences."

Accordingly, in advanced economies today, public policy, higher education, R&D, manufacturing, marketing, and financing are being intertwined in innovation systems^{xii}. The innovation-aimed interaction across industries, universities, and the rest of society is increasing together with the economic impact of innovation and the growing consciousness of innovation systems. "Innovation" is an increasingly popular expression, used in power contexts such as "innovation policy", which generates 33900 Google-hits. "Innovation policy" is thus gaining significance in comparison to the more established term "technology policy", which generates 399000 Google-hits^{xiii}. This indicates a potential to establish innovation journalism.

Shared knowledge and increased interaction between different professions, such as engineers, business executives, academics, and politicians, strengthens the innovation systems. Many technologies are important for innovation, such as information technology, electronics, life sciences, materials, transportation technologies, etc. This is why we sense a growing need of news publications that can be shared across innovation systems, publications that offer a combination of what is offered today separately by trade journals, technology journals, business magazines, and newspapers. The potential readers are innovation professionals of various sorts, such as researchers, engineers, business executives, lawyers, public administrators, and politicians.

During the bubble of the new economy, those who handled the money took the technology for granted, and those who handled the technology took the money for granted. Everybody wanted to believe that the other actors were doing their jobs based on educated decisions and sound judgement. If the IT innovation systems had been investigated by qualified innovation journalists with a systematic approach, the chances would have been greater that the players within the new economy would have been forced to moderate their behaviour, perhaps decreasing the serious consequences.

Another significant factor that inflated the bubble of the new economy was the generally overenthusiastic estimation of the time needed for innovations to be accepted. Everett Rogers'^{xiv} classical book "The Diffusion of Innovations" demonstrates that many innovations, even when they have obvious advantages, require lengthy periods – often many years – from when they become available to when they become widely adopted. Again, we would have gained from innovation journalism that could have blown the whistle. Ironically, skilled and consistent innovation journalism coverage might also have increased the speed of diffusion of innovations.

Innovators are exposed to social dangers because they create changes. The problem is not new, and Machiavelli'^{xv} explains it well: "the innovator has for enemies all those who have done well under the old conditions, and lukewarm defenders in those who may do well under the new. This coolness arises partly from fear of the opponents, who have the laws on their side, and partly from the disbelief of men, who do not readily believe in new things until they have had a long experience of them. Thus it happens that whenever those who are hostile have the opportunity to attack they do it like partisans, whilst the others defend lukewarmly". Innovation journalism can increase the chances for innovators to survive and succeed.

For innovation journalism to succeed, it is not enough that society needs it . Neither is it enough that many individual readers need it. Revenue streams are needed for innovation journalism to succeed. There has to be purchasers

of ads, and innovation journalism offers a potential ad market, for example high quality job ads, ads for patenting services, ads for R&D tools, and services or ads for market research tools and services.

According to Porter, innovation is the top level of national competitiveness, so it seems reasonable that players on the innovation arena should be exposed to sufficient competition that can drive them to buy ads. It also seems reasonable that they should have sufficient financial resources to buy ads. Thus, one of the most important tasks ahead is to identify customers that are willing buy ads, and find the consumer statistics that will help the advertising departments to make a strong argument to sell ads.

As crass as it may sound to a journalist with a solid integrity, these are, nevertheless, the fundamental market mechanisms and rules by which their publications live and exist. However, it is not the journalists' task to make these considerations. Naturally, this task is to be independently performed by the commercial executives of the news operations as the reporting beat unfolds and develops.

The Internet increases the possibilities for niche marketing that ought to be particularly interesting for innovators. Consequently, there are enormously interesting possibilities for new services and drastically lowered marginal costs for production and distribution of news. However, the Internet also offers great challenges.

1.4 Testing if Innovation Journalism can become a discipline - a new reporting beat.

Sweden is the most knowledge-based economy in the world today, according to OECD^{xvi}. Sweden spends 6.1% of its GDP on R&D, software, and higher education. Sweden is the cradle of well-known innovative technology companies such as Ericsson, ABB, Volvo, Saab, AstraZeneca, Pharmacia, and many others. It is also the cradle of other innovative companies such as IKEA and H&M. Through VINNOVA, the concept of innovation systems has penetrated society. The potential market for innovation journalism should be promising. There are some well-known trade magazines performing coverage that can be referred to as innovation journalism already. These publications are, consequently, positive to the concept. Furthermore, there are other business magazines and daily newspapers that have shown interest in the concept, thus willing to look closer into it.

But even though conditions look promising for the development of innovation journalism, initial government support is needed to get the

development started. The Swedish media market has small resources for R&D and competence development, and very few philanthropic funding sources to confer with. The market is characterized by small margins, strong competition, and a high sensitivity to economic fluctuations. Media therefore focuses its coverage on the immediate future with small possibilities to invest in pre-competitive research.

It is important to stress that Innovation journalism, if it should be developed at all, must be developed by journalists. Journalists who may be called “innovation journalists” exist already today, but the question is if and when they will actually choose to call themselves "innovation journalists" instead of “business journalists”, “technology journalists” or something else. And – if they do – who will dedicate himself to develop a professional community with his peers? What the nation can do is to give interested journalists and editors a chance to develop themselves together, maintaining respect for journalistic integrity at all times.

This is the challenge of the program “Innovation Journalism”^{xvii}. The program aims at developing Innovation Journalism by sponsoring the personal competence development of some selected innovation journalists, encouraging team-building within the selected group, and supporting networking activities around the selected innovation journalists and the group.

VINNOVA is funding a fellowship of at least five innovation journalists. Two of the most important criteria for qualification is that applying selected reporters and editors self-identify as potential “innovation journalists” with full support from their highest newsroom executives. The selected fellows will be given an opportunity to work for at least four months at leading news, business, or technology publications outside Sweden^{xviii}. The fellows will be given the opportunity to develop their skills within the beat of innovation journalism, and to extend their professional networks. The fellows will be encouraged to interact with each other during this time, perhaps forming the core of an innovation journalism community. A number of activities will be arranged to support the fellows, such as discussion groups, and visiting delegations with interested decision makers that may contribute in the creation of support networks around such a core community. This program model has been used earlier with great success.^{xix}

The duration of the whole program is eighteen months. The program and is divided into three phases:

1. Preparations and selection processes (8 months)
2. International exchange for build-up of fellows' knowledge, skills, and international networks (4–6 months)

3. Workshops, possible pilot tests, and national networking (4 months).

One particularly important cornerstone of the program is journalistic integrity. The contacts between the selected fellows and the hosts are to be handled directly by each fellow. The program management will not determine how fellows and hosts pair up with each other. Neither will program management under any circumstance influence the choices of topics or the articles that are written by the fellows. A VINNOVA program committee, chaired by a former editor-in-chief of a major Swedish newspaper, who will also be advising the program director throughout the process, performs the selection of fellows.

The preparations for the program started in January 2003. Expressions of interest from potential hosts were collected until June, and a call for applications from applicants, co-signed by their editorial chiefs, was launched in July. The program committee screened the applications in September, and the process of matching fellows and hosts is currently ongoing. The fellows will be abroad during Q1 and Q2 2004. Workshops and possible pilot test will be carried out in Q3 2004.

We will follow the project actively with the aim to evaluate the results with a scientific approach.

David Nordfors is Special Advisor to the Director General at VINNOVA. He is the founder and program director of the VINNOVA-program "Innovation Journalism". Nordfors was the director of research funding of the Knowledge Foundation, KK-stiftelsen, one of the largest Swedish research foundations, where he also designed the public relations and information dissemination strategies. He wrote several reports on technological incubators for the Swedish government, which were followed up by several bills to the parliament. Nordfors has a background as a journalist and a scientist. He served as Science Editor of *Datateknik*, the largest Swedish magazine for IT professionals, and Editor for the Internet Societal Task Force, affiliated with the Internet Society. He initiated and headed the first hearing about the Internet ever held by the Swedish Parliament. Nordfors was also the founder and editor of the bi-weekly newsletter "IT and Learning" (IT och Lärande), read by 75% of Swedish school professionals, and headed the initial stages of setting up "Sajber", the first public service television news series about IT, viewed by over 10% of the Swedish population.

David Nordfors has a Ph.D. in molecular quantum physics from the Uppsala University, where he was a part of the research group of Prof. Kai Siegbahn (Nobel Prize in Physics 1982). After completing his dissertation he committed himself to research in theoretical chemistry at the University of Heidelberg. Nordfors has published scientific papers in physics, chemistry, and knowledge communication.

ⁱ Google search made on ["innovation journalism"] 21 September 2003. Besides the VINNOVA Innovation Journalism programme, one single hit was made for the expression. This hit did, however, not refer to journalism nor to industrial innovation: Bilalova A.N: *"The Novitas" as a New Form of Innovation Journalism.* (The Novitas 2002, N8).
"The Novitas" is a scientific journal published once a year by the Kazan University in Tatarstan. [Hhttp://www.kcn.ru/tat_en/science/novitas/nv8.htm](http://www.kcn.ru/tat_en/science/novitas/nv8.htm)H

ⁱⁱ The VINNOVA program "Innovation Journalism" is supported by The Swedish Foundation for Strategic Research (SSF), represented by Henryk Wos and Staffan Normark. SSF supports research within natural sciences, engineering, and medicine, granting funds from the yields of their \$1 billion USD (2002):
[Hhttp://www.stratresearch.se/](http://www.stratresearch.se/)H

ⁱⁱⁱ The Council on Competitiveness (CoC), represented by Chad Evans and Jennifer Sue Bond, is a U.S. partner of VINNOVA in the program "Innovation Journalism". The CoC is a forum for elevating national competitiveness to the forefront of national consciousness. The membership is comprised exclusively of CEOs, university presidents, and labor leaders: [Hhttp://www.compete.org/](http://www.compete.org/)H

^{iv} The Profnet, represented by its founder and CEO Dan Forbush, is a U.S. partner of VINNOVA in the program "Innovation Journalism". ProfNet (Professors Network) is dedicated to linking reporters quickly and conveniently with expert sources. ProfNet today links reporters to more than 1,000 colleges and universities in North America and Europe.:
[Hhttp://www.profnet.com](http://www.profnet.com)H

^v Nordicom-Sveriges Mediebarometer 2002, Nordicom, Gothenburg University, Sweden, ISSN1101-4539. [Hhttp://www.nordicom.gu.se](http://www.nordicom.gu.se)H

^{vi} In 1996 David Nordfors initiated the project "Internetpiloten" together with Michel Bajuk, Bo G Andersson and Mark Comerford, and the Swedish Association of Investigative Journalists (Föreningen Grävande Journalister). Nordfors was then a director at the KK Foundation ([Hhttp://www.kks.se](http://www.kks.se)H), which had been created by the Swedish parliament with the initial task to spread the use of information technology in Sweden. In this pilot project a crew of highly skilled reporters brought a mobile Internet connected network of laptop computers to a number of newsrooms, training the journalists in using the Internet for journalistic research. Most of the participating journalists embraced the new tools immediately with great enthusiasm. The results were documented by A. Sahlstrand in "Internetpiloten – En utvärdering av en introduktionskurs i Internet för journalister", a report to the KK Foundation and Föreningen Grävande Journalister. Stockholm 1997. (Research performed at The Department of Media, Journalism and Communication at the Stockholm University). The experiences from the pilot training program influenced the evolvement of teaching methods of Internet training within the journalism program at the department. The pilot training program evolved into a permanent course that for several years was the most popular training offered by Föreningen Grävande Journalister. The training program has reached a significant portion of large and small Swedish newsrooms alike, and, consequently, a large number of journalists.

^{vii} T.Tydén, D.Nordfors. "Infopac – Researchers learn Research Dissemination by Doing". Science Communication, Vol21 No.23, March 2000,296-308 .

^{viii} D. Nordfors, M. Bajuk, L. Norberg, J. Brinkmann and D. Forbush. "Introducing Internet-Enabled Expert Networks in a Country", to be published in the Nov 2003 issue of Communications of the ACM.

^{ix} Peter F. Drucker: "Innovation and Entrepreneurship: Practice and Principles", Harper & Row, New York, 1985.

^x Michael Porter: "Building the Microeconomic Foundations of Prosperity" from the Global Competitiveness Report 2002-2003

^{xi} Louis V Gerstner. Chairman's letter. IBM Annual Report 2001.

^{xii} A deeper analysis of the interactions between public policy, academia, industrial R&D, marketing, and financing is available in the book "Commercialization of Academic Research Results" D. Nordfors (ed.), J. Sandred (co-ed.), C. Wessner (co-ed). Publication series "Innovation policy in focus", VINNOVA Forum VFI 2003:1 (Stockholm 2003)

^{xiii} Google, Sep 23 2003 [Hhttp://www.google.comH](http://www.google.com)

^{xiv} Everett Rogers, "The Diffusion of Innovation" Free Press; 4th edition, February 1, 1995

^{xv} Niccolo Machiavelli, "The Prince". Chapter VI: Concerning New Principalities Which Are Acquired By One's Own Arms And Ability.

^{xvi} OECD, Science Technology & Industry Scoreboard 2001

^{xvii} "Innovation Journalism" VINNOVA program Dnr. 2003-01451, 1 Jul 2003. [Hhttp://www.vinnova.se/innovjourn/innovjourn_en.htmH](http://www.vinnova.se/innovjourn/innovjourn_en.htm)

^{xviii} We have invitations thus far from The Wall Street Journal, Fortune, Nature, San Francisco Chronicle, Business 2.0 and Wired.

^{xix} An earlier Expert Network project used the same model of fellowships, international hosts, networking and concept building: D. Nordfors, M. Bajuk, L. Norberg, J. Brinkmann and D. Forbush. "Introducing Internet-Enabled Expert Networks in a Country", to be published in the Nov 2003 issue of Communications of the ACM.