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Innovation Journalism, Attention Work and the Innovation Economy.

A Review of the Innovation Journalism
Initiative 2003-2009

David Nordfors

Executive Director, VINNOVA Stanford Research Center of Innovation Journalism
Senior Research Scholar
H-STAR Institute, Stanford University

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Innovation Journalism, Attention Work and the Innovation Economy.

A Review of the Innovation Journalism Initiative 2003-2009

This article presents a review of the innovation journalism initiative so far. The novel concepts of innovation journalism, attention work and innovation communication systems are presented and put into context, explaining why journalism and communication may be considered important components of the innovation economy, as well as how this may benefit society. The need for a new definition of 'journalism' is discussed, suggesting a definition based on the relation between journalism and its audience, rather than on its relation to the medium it uses for communicating with the audience. The role of journalism in the innovation economy is a novel academic research field. The rationale for this research is presented together with examples of plausible research topics. Innovation journalism initiatives are emerging in several places around the world. The seminal VINNOVA Stanford initiative at Stanford University is presented together with the national initiatives in Sweden, Finland, Slovenia, Pakistan, Mexico, and the EU.

The practice of Innovation Journalism, journalism covering innovation processes and ecosystems, is a crucial pivot between innovation economy and the public sphere, especially when decision makers are dependent on being backed by their constituencies, such as in a representative democratic system or in publicly traded companies. To the degree that Innovation Journalism can build an infrastructure for public debate on how we innovate, it will enable open discussion on how we transform ideas into new value. Such an infrastructure for debate connects decision makers with their constituencies across the full spectrum of innovation processes. This in turn provides reasons and means for decision makers to engage in public discussion on what counts in enabling societal innovation and on how to improve the systems that enable innovation.

In an innovation ecosystem, journalism can be seen as a fourth strand of the 'triple helix' of industry, universities and government, just as it has been considered 'the fourth estate' in democracy. Journalism is an independent actor that, with industry, government and academia, is a part of the infrastructure of competitiveness. The Innovation Journalism sets a focus on reporting on the bigger picture of innovation, and enabling journalism to do it.

This means writing stories that combine elements of technology, business and politics, as well as any other elements that influence innovation, and covering the interaction between them. This is difficult to do in some traditional newsroom cultures, in which newsbeats are kept apart. In order to tell the story of how innovation happens, journalism cannot be inhibited by 'silos' of storytelling in its newsrooms.

Journalism is in the process of being recognized as crucial in innovation ecosystems. Public innovation policy can look at how journalism manages its relation to innovation, just as innovation policy looks at how industries,

universities, cities and regions manage their relation to innovation, especially since the emergence of the concept of innovation systems¹.

The media industry is after the proliferation of the Internet itself presently focusing on innovation. The Internet is challenging the business models of traditional mass media, such as newspapers and television. Journalism in Western economies is in a severe crisis, with shrinking newsrooms and uncertain futures.

As a comparison, in the 1990s, the Internet entered the telecom sector. Many companies, mired in old technologies and business models, struggled. Their organizations were re-designed accordingly. Public innovation policy provided incentives and support for helping this essential industry manage the paradigm shift. Similar measures may be needed to resolve how journalism can remain strong in the innovation economy, and to support reorganization of the news sector.

In a functional innovation system, journalism will interact with other industries, universities and the public sector to expand journalism's ability to explain how innovation happens, while maintaining journalistic principles. According to these principles, journalism is loyal to the citizens. By empowering citizens in matters of innovation, journalism enables societies to develop innovation economies. Accordingly, this chapter offers:

- An overview of Innovation Journalism and its importance for journalism and modern society;
- A summary of important concepts created as the initiative has developed: 'attention work,' and the 'innovation communication system'
- A discussion on how innovation is dependent on the introduction of new shared language.
- Journalism and the innovation economy: Competitiveness and clusters, journalistic principles and appropriate business models for journalism
- Toward an agenda for academic research on Innovation Journalism;
- The status of innovation journalism as a global initiative, with descriptions of Innovation Journalism initiatives in Stanford, Sweden, Finland, Slovenia, the EU, Pakistan and Mexico;
- A view of the potential future of Innovation Journalism.

1 Connecting Public Attention and Innovation: Basic Concepts

For analytic purposes, Innovation Journalism comprises a group of new concepts that are useful in understanding and modeling the interaction between innovation and public attention: 'innovation journalism' (Nordfors 2003), 'innovation

¹ Examples of national innovation agencies are VINNOVA, the Swedish Governmental Agency for Innovation Systems and Tekes, the Finnish National Agency for Technology and Innovation.

communication’ - the communication of innovation stakeholders (Mast 2005), the ‘innovation communication system’—the system of stakeholders influencing flows of attention in innovation systems—and ‘attention workers’ (Nordfors 2006) who generate and broker attention professionally. I discuss here the basic concepts for how public attention and innovation interact in market economies.

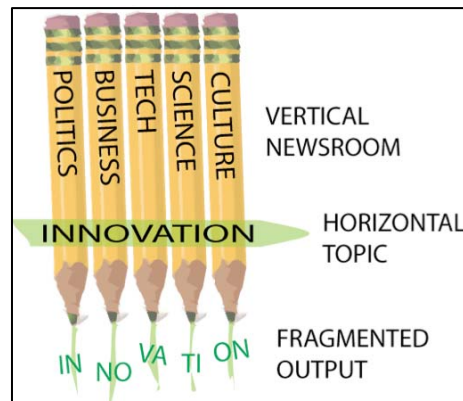
1.1 Innovation Journalism (Injo)

Innovation Journalism is journalism covering innovation. It covers innovation processes and ecosystems

Innovation is more than invention. Invention—something new—can be done by individuals. Innovation is *introducing* something new. Innovation involves interaction between several people and groups. It requires creating and delivering new value in markets or communities. Innovation journalism (Injo) covers *how innovation happens* and *what it means*. The expression ‘Innovation Journalism’ was coined in 2003.

Traditional newsbeats (business, technology, science, culture, politics) focus on certain aspects of innovation processes and ecosystems. A traditional newsroom covers innovation as a topic within each beat. The bigger picture is chopped into pieces to fit specific news slots, typically technology or business journalism.

The traditional newsroom is organized in separate production lines for stories on technology, business, politics or other topics. Usually, each story lives under only one production line. Each production line is overseen by a different editor. Individual editors may avoid invading each others’ territories, so as to minimize conflict and maximize efficiency. Then the production lines will be well separated, they become ‘silos’. This is a challenge for implementing Injo in traditional newsrooms.



Innovation is a horizontal topic in traditional vertical newsrooms. The bigger picture tends to get chopped up to fit into the slots

For InJo, innovation is the core. The elements of business, technology, politics etc., are a story’s nested components, covering innovation processes and innovation ecosystems. Compared with traditional newsbeats, InJo is multi-disciplinary, it crosses the traditional production lines.

Innovation journalism identifies and reports on issues in innovation ecosystems such as emerging concepts, interaction between the principal actors, or what is happening in innovation value chains. It can combine angles and indicators on innovation that usually sort under different beats: Science and technology trends, intellectual property, finance, standardization, industrial production processes, the marketing of new products or services, business models, politics, cultural trends,

social impacts and more. Innovation Journalism can be a horizontal newsbeat, but may also be a mindset in traditional newsbeats.

Here is an illustration of the difference between covering innovation in a strictly ‘vertical’ newsroom – where beats are kept separate – using InJo as a mindset for broadening traditional beats or applying InJo as a horizontal beat.

- **Traditional:** A story should stick to the aspect of the beat, i.e., a technology story on innovation should focus on the technology and leave the other aspects to the other newsbeats.
- **Injo applied as mindset** within other beats: A story can include any aspect of innovation, as long as it contains the aspect of the beat in question. For example, a business story on innovation must contain a business aspect, but may additionally contain any other aspect, such as technology or politics, even if this means overlapping with other newsbeats in the newsroom.
- **Injo applied as horizontal beat:** A story should aim to include science, technology, business and politics – as well as any other story component which is relevant for the innovation process and ecosystem being covered. It aims to integrate these aspects on equal footing, and look at how they influence each other and co-develop.

1.2 Innovation

An ‘invention’ is something new. An ‘innovation’ involves the *introduction* of something new. Most people will agree that it is easier to hatch an excellent idea than it is to make it happen, for example introducing a novel procedure in the work place.

Electric lightbulb technology existed 40 years before Thomas Edison reduced it to commercial practice but Edison first described a business model that attracted investors. Edison created not just a conceptual but also a physical metaphor for his lightbulb. True success in innovation—e.g., Edison’s bulb—results from naturalizing an innovation’s novelty. Creating an analogy/metaphor/analog, manages consumer expectation (Hargadon 2001). This requires broad understanding that leads to wide acceptance.

‘Introducing something new,’ innovation’s simplest definition, is found in dictionaries. Now ‘innovation’ has grown from a word to a paradigm as innovation accelerates worldwide. Many definitions reflect the paradigm. They boil down to the dictionary version, with varied focus and application. This definition of market-driven innovation, by Curtis Carlson and William Wilmot at SRI, puts it in one sentence (Carlson and Wilmot 2006):

Innovation is the process of creating and delivering new customer value in the marketplace

This sentence captures the paradigm’s key components: Innovation is a Process—Innovation is about Creating—Innovation is about Delivering—Innovation offers New Value.

Schumpeter² pioneered the concept of innovation in economy, which he defined as following (Schumpeter 1934):

1. Bringing new products to market;
2. Introducing new production methods;
3. Initiating new markets;
4. Opening new sources for raw materials or partially-manufactured goods;
5. Creating new industry organizations.

Much of this, especially the first two examples, is today technology driven. The introduction of information technology has been especially important. The OECD Oslo Manual (OECD 1995) discusses how to measure technology innovation, sorted into products and processes, the first and second of Schumpeter's innovation cases. The OECD definition:

“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, organizational, 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.”

Innovation is not only about products and processes. The service sector is much more involved than standard accounts recognized, due partly to the difficulty in measuring innovation. For example, according to the OECD, “even in manufacturing, R&D generally amounts to only about half of the total investment in innovation; in services, the share is even smaller. Other innovation components appear more important for services, where most innovation is linked to changes in processes, organizational arrangements and markets. There is evidence that innovative activity in services is organizational and disembodied in nature, so that it escapes standard measures of innovation” (OECD 2005).

Not all innovation is commercially driven. ‘Social innovation’ is often integral:

Social innovation refers to new strategies, concepts, ideas and organizations that meet social needs of all kinds— from working conditions and education to community development and health—and that extend and strengthen civil society.

Over the years, the term has developed overlapping meanings. It can refer to social processes of innovation, such as open-source methods and techniques. Alternatively it can refer to innovations with a social purpose, like microcredit or

² Schumpeter's definition of Innovation in economy is (like in this text) usually presented in a simplified form. Schumpeter's exact definition is the following: 1) Introducing a new good—one with which consumers are not yet familiar—or of a new quality of a good. 2) Introducing a new method of production, which need not be based on a new scientific discovery, and can also exist in a new way to handle a commodity commercially. 3) Opening a new market, i.e. a market into which the particular branch of manufacture of the country in question has not previously entered, whether or not this market existed before. 4) Controlling a new source of raw materials or partially-manufactured goods, whether or not the source already exists or has to be created. 5) Creating a new organization in any industry, i.e. creating a monopoly position (e.g. via a trust) or breaking up a monopoly.

distance learning. The concept can also be related to social entrepreneurship (entrepreneurship isn't always or even usually innovative, but it can be a means of innovation) and it also overlaps with innovation in public policy and governance. Social innovation can occur within government, companies, or the nonprofit sector (the 'third' sector), but is seen increasingly to happen most effectively in the space between the three sectors.

(From Wikipedia³)

Social innovation and business innovation often go hand in hand. Entrepreneurship and innovation can be driven by non-commercial or ideological motives but will often sooner or later become part of a market, involving transactions in money, products and services. Microcredit and distance learning can just as well satisfy Carlson/Wilmot's 'creating and delivering new customer value in the marketplace,' as it satisfies the requirement of social innovation.

1.3 Innovation Systems

Innovation is not spontaneous and always involves more than one person. An innovation system⁴ is an interaction between people, enterprises and institution. It embodies technology and information flow between the actors needed to turn ideas into processes, products or services. According to innovation system theory, innovation and technology development result from a complex set of relationships among actors in the system, including enterprises, universities and research institutes.

The first sentence in the OECD report 'National Innovation Systems' (OECD 1997) says:

The national innovation systems approach stresses that the flows of technology and information among people, enterprises and institutions are key to the innovative process.

No consensus exists on the exact definition of an innovation system—the concept is still emerging. Freeman first explicitly uses the concept 'National Innovation System' (Freeman 1987). He defined it as

" ... the network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies."

Bengt-Åke Lundvall looked deeper into the theoretical aspects of National Innovation Systems (Lundvall 1992). He suggested the following definition of an innovation system, which covers both organized systems as well as ecosystems::

The innovation system is "...the elements and relationships which interact in the production, diffusion and use of new, and economically useful, knowledge"

³ Wikipedia Jan 1 2008 ' Social Innovation', http://en.wikipedia.org/wiki/Social_innovation

⁴ The concept of a 'system of innovation' was introduced in (Lundvall 1985)

1.4 Attention Economy

Attention economics: an approach to managing information that treats human attention as scarce and applies economic theory to solving information management problems.⁵

Herbert Simon wrote (Simon 1971):

"...in an information-rich world, the wealth of information means a dearth of something else: scarcity of whatever that information consumes. What information consumes is obvious: its recipients' attention. So a wealth of information creates a poverty of attention and a need to allocate that attention efficiently among the overabundance of information sources that might consume it."

If this was not obvious in 1971, it is now. Information access is no longer an issue, thanks to the Internet's rapid proliferation. The issue: which information will get attention. The concept of an 'attention economy' has been used to discuss Internet advertising, email and spam, business strategy (Davenport 2001). Economical transactions of attention have been suggested. The business model of the media industry was analyzed from this perspective (Franck 1999) in a similar way to the reasoning adopted in this essay. But the expression 'attention economy' has not been used much by the OECD⁶, suggesting that the concept has not fully recognized in the context of macroeconomics.

Collective attention may be an interesting concept for 'macro attention economics'. Attention is gravitational. Attention attracts attention, most are interested in knowing what interests most others, generating clusters of collective attention. With global Internet proliferation in mobile phones, humanity may soon be equipped to focus all peoples' attention on the same issue at the same time. It is combined with interactivity, so that collective attention and collective action may be increasingly intertwined. There will be reason to discuss how collective attention generates the best returns for individuals and societies.

The concept of the attention economy has potential value for understanding how the driving forces in society are changed as we move from information scarcity to information ubiquity. For example, when the bottleneck shifts from limited access to information to limited attention span, little competitive advantage remains in the competition for people' minds by way of controlling general infrastructure for delivering information, like printing presses and trucks for delivering paper, television broadcasting equipment or even computer servers.

There may appear future successful business models that build on vertical integration of physical infrastructure and journalistic content, but presently the

⁵ Definition of Attention Economy from Wikipedia, 1 Jan 2008. http://en.wikipedia.org/wiki/Attention_economy

⁶ A search on the OECD website on Jan 2008 produced only one document including the word combination "attention economy". It was not named in the main text of the document, but in the title of a paper in the reference list. The reference was used in a discussion over Internet business models. The word combination "attention economics" was not found in any document accessible by the OECD site search engine.

trend is in the opposite direction. The media industry does not control the content on the Internet.

Therefore, controlling hardware for distributing information is no longer a key issue for doing journalism. Since the word ‘media’ refers to control over physical infrastructure—paper, TV or radio—the media industry is heading for an identity crisis in the attention economy: should it identify with the content or the medium?

A recent OECD report concludes that by 2007 58 percent of OECD-country households had access to the Internet. Korea led with 94 percent. Non-OECD economies are following. Some, like Singapore and Israel, are well ahead of OECD averages. Eighteen percent of all OECD Internet users created Web pages in 2007. (OECD 2008)

The effects on the media industry will grow. In Japan, 35 million people were reading blogs in March, 2007, double the number two years earlier. Internet advertising accounted for 7 percent of global advertising expenditure, growing faster than any other medium. This is an important indicator, since the traditional business model for journalism is to earn money by selling ads.

The Internet’s rapid spread may be separating journalism from the media. Controlling the medium—hardware servers, software-publication platforms like Wordpress or Facebook, or search engines like Google —are businesses in themselves, who don’t produce their own content, in order to maintain neutrality among content producers – their users. This is affecting legislations for freedom of the press, addressed in the constitutions of many countries where it often is connected to the ability to provide information to the citizens. Through the separation between the control over the medium and the publishing of content, there has grown an uncertainty over who is a journalist.

1.5 The Innovation Communication System

Innovation—introducing something new—requires communication. Innovation usually starts with a vision, which may change along the way. The innovation process turns visions into realities. The vision must be communicated for anything to happen. Communication creates the mandate for working to realize the vision, needed, for example, to generate management support or find investors. Communication is needed to align groups of stakeholders in innovation systems for transforming visions into innovations. Innovations must be communicated to customers. Customers’ needs must be communicated to innovators.

Consider this definition of the innovation system: “ ... the elements and relationships that interact in the production, diffusion and use of new, and economically useful, knowledge ...” (Lundvall, 1992).

According to the OECD report on National Innovation Systems (OECD 1997) the innovation-systems approach stresses that technology and information flow among people, enterprises and institutions is crucial to the innovative process. Innovation and technology development evolve from complex relationships. But technology and information can flow among people in many ways. Why do things flow in one way, not in another? There are so many choices and possibilities that *attention* is becoming the crucial factor. This is the argument for the attention economy.

Consider a subset of the innovation system containing the attention flows and the system elements that affect them. Call it the ‘Innovation Communication System’, since communication is essential to directing attention. It can be defined in terms of the Innovation System by switching a few words in the Innovation System definition:

Innovation Communication Systems: innovation system elements and relationships that interact in directing attention.⁷

The innovation communication system approach stresses that technology and information flows within an innovation ecosystem are influenced by the **flows of attention** among the people, enterprises and institutions within that system, vs. each other and the outer world.⁸

Innovation Communication and Innovation Journalism are the ‘yin and yang’ of the Innovation Communication System. They reinforce each other, driving attention in the system.

1.6 Attention Work

The key actors in the knowledge economy are commonly called *knowledge workers*. In Innovation Communication Systems and the Attention Economy, *attention workers* will be key actors.

Attention work: the professional generation and brokering of attention.

The ‘attention work’ concept was suggested in 2006, along with the concept of the ‘innovation communication system’ (Nordfors 2006). Knowledge workers—e.g., scientists, engineers and analysts—generate and broker knowledge professionally. Attention workers—e.g., journalists in advertising-revenue-based news outlets, public relations and communications professionals working for organizations or corporations, advertisers, marketers, distributors and sales organizations—generate and broker attention professionally. In the attention economy, attention is the key scarcity. It expands the market for attention work, generating and brokering attention. Attention workers are crucial in creating and sustaining attention economies.

Innovation as a driver of economic growth is increasingly transforming ideas into new market value. Competition between people pushing novelties is increasing, bringing increased competition for attention. The innovation economy is an attention economy. Attention work focusing on innovation, such as innovation journalism and innovation communication, matters in the innovation economy.

People think intuitively of journalists as knowledge workers, even journalists themselves. When I presented the attention worker concept at the *Deutsche Welle* in 2008, one participant said, ‘It shocks me as a journalist to see myself bunched with those other professions.’

⁷ Based on Lundwall

⁸ Based on OECD

Then he added, ‘But when I think of it, I have had all those jobs!’ Journalists who switch jobs often go into PR, communications or lobbying. Their core competence, after all, is knowing what will get peoples’ attention.

Attention workers will spread knowledge as they generate and broker attention. Knowledge workers will need attention to generate and broker knowledge. Knowledge workers and attention workers need each other but they often misunderstand each other because they have different views on priorities—the knowledge or the attention. Knowledge workers often find attention workers ‘sensationalistic’ or ‘hot air balloons,’ while attention workers find knowledge workers ‘lost in space’ or ‘academic’ (which for them is a polite way of saying ‘lost in space’). The concept of attention work may help create mutual understanding between different types of traditionally polarized workers, e.g., journalists vs. PR or vs. lobbyists. They are different players on the same field: the communication system that influences the flows of attention in the larger ecosystem.

The notion of journalists as actors in an attention economy may support journalism in its role as a societal stakeholder, an actor in innovation ecosystems. It offers a constructive alternative to journalism as an objective observer and non-actor. Objectivity is challenging to defend because it is hard to identify what is ‘objective’ in social interactions. The notion of ‘objective journalism’ makes it difficult to discuss incentives for interaction between journalism and other actors, which makes it hard to integrate discussion of new business models for journalism and journalism mission and ethics.

1.6.1 Journalism is More Than Just Attention Work

Labeling journalism as ‘attention work’ is a novel suggestion. Some people will misunderstand it as a derogatory term, thinking it means to say that journalists do not provide knowledge, only attention. It is therefore important to emphasize that attention workers may generate and spread high-quality knowledge. Many journalists do just that, providing continuous information, a vital part of the lifelong learning of their readerships,.

‘Attention work’ refers to the business model of a profession. It does not describe the ideals of the worker. A job that is paid by brokerage of attention is attention work.

Ad-based journalism is attention work because it sustains itself by brokering attention, i.e., selling ads. Journalists in ad-based businesses are in their full right to see it as their prime mission to generate knowledge. But they are paid by the brokerage of the attention they generate.

There is no contradiction between being an attention worker and putting effort in building credibility and trust. Quite the opposite, credibility and trust are important qualities for attention workers. They are key to maintaining public attention. For example, journalism covering IT products, serving an audience of consumers, will lose its audience if the product reviews it delivers are of low quality. If it loses the trust of the audience, it will not be able to charge high prices for ads.

The challenges for journalism today are the result of a breakdown of the attention business model. With the Internet, ads can reach broad audiences without piggybacking on the publication of news stories. Good journalism, though, is as much appreciated as ever.

1.7 Reputation

Reputation plays a major role in choice making. Attention is required for shaping a reputation, and often public relations - attention work on behalf of stakeholders in the market place - has as an objective to influence reputation. Reputation is a selection criterion for formation of relations and transactions among stakeholders. It influences consumers to choose one product or service before similar products and services offered by competitors. The reputation of an innovation may determine its success. A bad reputation may kill even a very promising innovation.

A strong reputation results from "consistent information signals over time, which constituents believe, share and trust" (Dentchev and Heene, 2004; 57), but innovations by their very nature lack such a record of past deeds. Despite this, some kind of reputation is formed for every innovation. There is a tradition of innovativeness related to each sector. Available cues and weak signals are combined to form an initial level of trust, which in time will turn into a reputation (Luoma-aho, 2005).

Since an innovation per definition is new on the market, the reputation it has before the introduction is based on anticipation. Much depends on the reputation of the innovator, especially the innovator's reputation of innovating, i.e., the ability of successfully introducing the next product or service. It also depends on the reputation of related products, services and stakeholders.

An innovation needs a reputation among the different stakeholders that will support its development, infusion, adoption and break-even time. In fact, having a good reputation among different stakeholders and potential funders, users and sellers can be understood as reputational capital.

The attention economy is a challenge for innovators. The survival and success of their innovations is all the more influenced by what other stakeholders perceive it to be. Stakeholders form their opinions often through various media, and therefore journalists' perceptions are an interesting topic for research.

1.8 Journalism: Who is a Journalist?

The Oxford Dictionary on the Internet - askoxford.com - defines journalism as "the activity or profession of being a journalist", and defines a journalist as "a person who writes for newspapers or magazines or prepares news or features to be broadcast on radio or television." Ironically, the Internet is not present in this Oxford online dictionary definition of journalism.

But just adding "Internet" to the definition will not bring the definition up to date.

There are lots of people broadcasting and re-broadcasting news items on the Internet. This does not make them journalists.

There are individual bloggers who do not work for newspapers or magazines, and are not broadcast on radio or television, but are excellent journalists.

The traditional definition of journalism builds its case on access to technologies for mass communication: newsprint, radio and television. Today, with the Internet, the access to mass communication technology has become trivial. Everybody can have it.

Therefore it makes sense to discuss alternative definitions of journalism, taking foothold in interpersonal relations rather than in the mass communication technologies. For example, as in the following suggestion:

Journalism is the production of news stories, bringing public attention to issues of public interest. Journalism gets its mandate from the audience. It is required to act in the interest of its audience.

It is not performed on behalf of its sources or its advertisers. When attention work is done in the interest of the sources, it is PR, not journalism.

2 Moving Into the Innovation Economy

Today, industrial economies stand or fall with their industries' abilities to innovate. Leading industries and industrial economies that cannot innovate die. Innovation is the key to 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, an economy's GDP grows. Growth can also come from increased productivity, though. If people work fewer hours, but more efficiently or for more valuable purposes, the economy grows even if no more capital is invested. This is innovation.

Data suggest that innovation is the most important driving force for economic growth in many countries. MFP/TFP⁹—Multifactor Productivity or Total Factor Productivity—is a metric that indicates innovation. MFP measures the joint influences on economic growth of technological change, efficiency improvements, returns to scale, resource reallocation, and other factors¹⁰. Innovation is a

⁹ MFP/TFP—Multi-factoral Productivity/Total Factor Productivity—explains the part of 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

¹⁰ Multifactor Productivity Home Page. US Department of Labor <http://www.bls.gov/mfp/home.htm>

reasonably major part of MFP¹¹, which has grown constantly during the second half of the 20th and into the 21st century. In the U.S., MFP doubled¹² in the last half of the 20th century. In many OECD countries MFP grew to be a bigger driver of labor productivity than greater availability of capital per worker (OECD 2000). Increased productivity, not capital or labor input, drives growth. If the MFP represents innovation, the majority of the OECD countries have upgraded their economies from investment-driven to innovation-driven.

This is good news in terms of raising national GDPs and improving standards of living. We need innovation: if labor and capital were the only sources for growth, there would be no light at the end of the economic tunnel for many EU, U.S. and Asian economies where populations are not only stagnant but aging. We are moving from the 'more of the same' economy toward the innovation economy. In 'more of the same' economies, products, services and processes change little. Economic growth is about doing more of the same. Organizations deliver the same products, processes and services for years. They are optimized for more of the same. In bad times, in 'more of the same' economies, organizations reduce innovation and focus on their core business: the production line. They ask: "Can we afford to innovate?" The answer is often 'no.' Better sit and ride out the storm.

In innovation economies, innovation *is* the core business. In bad times the question is: "Can we afford *not* to innovate?" Cutting innovation and trying to ride out the storm may not work. Innovation economies are about change and novelty, succeeding by going forward. Economic growth is less about doing more of the same, more about creating and distributing new value: new products, new services, new processes.

With the increasing speed of innovation, lifetimes of products and processes are shrinking. For example, cameras used to have long product lifetimes. A top-level camera from the 1950s would still be desired by professionals in the '80s. For camera manufacturers, innovation was about finding products that could expand business in the future. Then, around 2000, digital cameras became good enough and cheap enough to out compete traditional cameras in the main part of the market. Nowadays a camera will rarely stay on the market for much longer than two years before it is replaced by something new. For a product on the market for a shorter time than it takes for it to break and need replacement, most users will be a one-time customer. Next time they buy something else. A company will continuously innovate in order to not lose customers to competitors. When innovation companies launch a product, they are already working on its sequel.

Therefore, the innovation activities in many companies and organizations are no longer isolated R&D units looking into the future. They are integrated with market activities and considered core activities in the present.

¹¹ 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 2001)

¹² US Bureau of Labor Statistics. MFP data 1948-2001.

Rapid advances are made in how existing or new technologies are used, and improved technologies and business ideas push products off the shelves quickly. When existing products, processes or services no longer perform, it may be too late to consider what to do next. Every launch presages the next launch.

A recent analysis by Scheck and Glader in the Wall Street Journal has looked at the 28 largest US R&D spender companies during 2008, a year of economic recession. (Scheck and Glader 2009) While their revenues went down by 7.7% in one year, the cuts in R&D were only 0.7%. Scheck and Glader conclude: “Big R&D spenders say they've learned from past downturns that they must invest through tough times if they hope to compete when the economy improves. Many innovative products, from the iPod to fuel-efficient aircraft engines, were hatched during downturns. If past patterns hold, today's spending may plant the seeds of innovations that triumph in the recovery.”.

In the ongoing financial crisis that started in 2008, many companies - e.g., in computing and mobile phones - stay in the race for the next big thing, even though times are bad. Many looming problems, such as global warming, pandemics or starvation, can be fought only by a flow of innovative solutions.

Finally, it is important to recognize that innovation can also be dangerous. The economic crisis beginning in 2008 was rooted in financial innovations that failed, such as sub-prime mortgages and derivatives or ‘structured products.’ Many environmental problems have been caused by innovations that spread quickly and had unforeseen effects over a longer time period. Society needs to continuously find and improve ways of detecting negative effects of innovation, and find ways of counteracting them.

This may be easier said than done in many cases. Pharmaceuticals may be tested in labs and clinical tests. If a pharmaceutical does little harm to a test group of thousands, the risk is small that it will show any different qualities when used by millions. Social innovations and market innovations, however, may not be as independent of scale. A financial instrument that works well over time in one environment may become destructive if the environment grows or other circumstances change.

3 Innovation Means New Shared Language

With all innovations come new words and stories. It can be a product name, a story about what the innovation does, experiences of using it, and so on. Many may see this as an effect of the innovation.

But let’s think of the new words and stories as a part of the innovation instead of merely an effect of it. There will be no innovation if there are no words or stories. Indeed, the words and stories about the innovation may have to precede it, not follow it. Words and stories are required for formulating the vision of an innovation and making it happen.

Our ability to shape new, shared language is an aspect of our ability to innovate. If spreading new words and stories are a part of the innovation process, then our

limitations of spreading new words and stories are limitations to innovation. Perhaps we can not innovate faster than we are able to generate new shared language. When discussing what limits rates of innovation in a society, the speed by which that society is able to generate new, shared language may be considered a factor.

A society forms a shared language as shared language forms a society. Society is an ecosystem that develops language. The language is an ecosystem that develops society. The co-evolution of language and society is about shared culture, negotiations and norms. This makes sociolinguistics an important discipline for understanding innovation.

Societies that develop new shared language effectively can be masters of change. Those that can't will be its victims.

A concept requires a name, to be called by, a definition of what it is, and stories, so that people can relate to it.

These things are found in dictionaries or encyclopedia for any concept that has entered the vocabulary of a community. With this, people have a shared language and can communicate.

The question is how novelties get established so that they will get into the dictionaries. Innovation may seem to be a hen and egg problem in this sense.

To introduce something new, it must be communicated. But it is difficult to communicate something new because people don't know have a shared language for it. They are not familiar with its name. It is uncertain they know what it is, and they may not know how to relate to it or put it in context.

Mass communication, particularly journalism, offers a part of the solution. It makes/spreads new words so that the new things can be included in our language, can be discussed and introduced. It speeds up the introduction of new things, enabling people to discuss them before they are widely spread. This facilitates introduction.

Familiar examples of journalism accelerating innovation is product review publications such as PC World or CNET News.com. Such publications increase the rate of innovation by accelerating the introduction of new, shared language for innovations, such as a new gadget or a new service.

But to improve how we innovate, we must generate new, shared language not only about the innovations. We must also be able to generate new shared language about the innovation processes and ecosystems that produced them. This is addressed by innovation journalism. It enables the formation of language around issues like how innovation happens; who does what, and why, in the innovation ecosystem; our ability to innovate and our competitiveness; what stops us or enables us from innovating; what we can do about it; who wants to do what about it (politics of innovation); or innovation trends and happenings.

Obtaining a shared language for discussing issues of shared interest is far from trivial. Innovation is not about science *or* technology *or* business *or* politics, etc. It is about their connection. But people in different professions will often discuss the same things without understanding each other, because they use different language. Specialists in one field do not have words for what other specialists are doing: few politicians understand radio engineering and most radio engineers do not understand political science. Everybody cannot know everything. Building an efficient, shared language between the people who deal with one another in innovation ecosystems is a challenge. It is highly uncertain whether it will happen by itself.

The concepts of 'attention workers' and the Innovation Communication System introduce incentives and mechanisms for creating shared language for innovation between different sectors and professions. Journalists are good at telling stories about how people relate to each other. They have incentives to go for large readerships. So journalism should have incentives to tell the horizontal stories that cross the vertical sectors, since this is a way of expanding a readership. The experts will often have good knowledge of what goes on in their own disciplines. They have a natural focus on the peer community. They often don't have the time or resources to know how they hang together with the rest of the ecosystem. This is a good job for journalists, who can give the bigger picture in a popular language that all stakeholders will understand equally well. Furthermore, it is beneficial for journalists to fill a different space of storytelling than the 'vertical' experts do.

Journalism is well positioned to be the key player. It specializes in generating public attention around issues of public interest. It represents the audience rather than the stakeholders in the system. Experts will often represent stakeholders, and PR will almost always do it. This puts journalism in a better position than others to acquire loyal attention and good reputation with its audience, provided it can live up to the principles of journalism and the demands of the audience on providing high quality coverage.

Innovation communication systems, with innovation journalism at the center, may add to the competitiveness of innovation economies, with the right balance and incentives, catalyzing the formation of new shared language that optimizes the creation of new value.

We need to understand much more about how innovation and attention work integrates if we are to understand the most important mechanisms of value creation in the innovation economy.

Developing broad understanding is related to how processes of cognitive sense-making and sharing of naturalized forms of understanding occur in innovation systems. A key question: how do journalists write about things that do not exist? In many new technologies, the *thing* does not exist at the invention stage, early in the eventual innovation process. How do innovators and inventors naturalize a thing that does not yet exist? One way is to use metaphors, in accessible language. Both entrepreneurs and journalists use metaphors to make intangible technology or ideas tangible to public audiences.

What cues or facts create these metaphors? Some approaches may take specific ways of thinking about a new technology. Others offer access via metaphor or

analogy without locking recipients to rigid behaviors based on knowledge or expectations. What choices capture or exploit existing understandings and extend them to a novelty without binding the 'audience' to them or blocking audiences' acceptance of the new? These are not just academic questions. They strike at the heart of what innovation journalism can do and how it can work. This is where research comes in, covering not just technique but the underlying business models that finance all public communication.

4 Journalism and the Innovation Economy

Journalism influences discussions in society in general, innovation being no exception. Journalism plays a role in innovation systems and in innovation driven economic growth (Nordfors 2004). Yet journalism's role in innovation has been examined little by academic research and public innovation policy.

Most people repeat and discuss the news, so journalism directs communities' attention and actions powerfully. Many who read a news item feel that the new knowledge is confirmed when others discuss it or when they see it again in a different news outlet. Such news is more likely to be accepted as fact. Enormous resources in time, money and human effort are spent to influence the news. The news industry can set discussion agendas as no other actors can, affecting stock prices, voting and mass behavior of markets large and small. People follow the news not only because they find the information interesting, but because they are interested in what news others are following, to know what other people know. The news represents public knowledge. Publication in the news affirms the removal of asymmetrical knowledge, and will affect markets. Competitors react more strongly to news that appears in a newspaper or other medium—TV, the Internet, a magazine—than in a press release (Kennedy 2005). This may be because competitors react not only to information provided by a participant but also to the knowledge that this information has entered the public domain. Asymmetrical knowledge is important in the development and dynamics of markets (Stiglitz 2001). It would be interesting to examine how journalism, with the incentive of removing asymmetric knowledge, enters the equation.

Recognizing and understanding journalism's role in innovation systems has much to offer for public policy makers, since journalists' levels of understanding is essential for public debate and the quality of shared knowledge. Many policy initiatives today increase teaching quality. Few increase journalism quality. Considering that each teacher communicates his/her knowledge to hundreds or thousands, while each journalist communicates to hundreds of thousands or millions (who repeat this knowledge to each other), something is missing in public policy.

Furthermore, innovation ecosystems can be a profitable base for innovation journalism, as has been showed in the case of Biotech Sweden (Sandred 2005).

4.1 Competitiveness; Cluster and Innovation System Initiatives

According to Michael Porter (Porter 2002), the national business environment in an innovation-driven economy is characterized by high levels 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, says Porter, sophisticated company strategies require increased access to better information.

Porter's explanation of competitiveness focuses on regional clusters of co-locating businesses that benefit from each other's differences and similarities, offering both partnership and competition. In such clusters, actors constantly rub shoulders, thus enabling co-ordination, sharing of resources, visible performance comparisons, rapid diffusion of best practices, enhanced ability to perceive innovation opportunities, and more. To facilitate these competitive traits, various 'Institutions for Collaboration' emerge. The core is usually an association for cluster protagonists (e.g., a trade association) that conducts or facilitates common actions—procurements, information gathering, marketing. Theories for competitiveness and clusters have spread worldwide and are widely implemented.

Behind the 'competitive cluster' concept is the idea that when people are close and interact a lot, they share each other's concerns, shape a common picture of the world and increase the competitiveness of the cluster via internal competition. So in clusters that work effectively, members want to know what is happening inside the cluster. So far, cluster and competitiveness theory has said little about the role of journalism, though it is influential.

A cluster initiative or innovation system initiative may benefit from an improved ability of journalism to understand and cover the cluster. This is not the same as doing public relations for the initiative, selling ideas for stories about it to journalists. It is about fitting journalism into the cluster map and enabling it to develop, as is done for any other stakeholder of the cluster.

The presence of independent journalism may spur the development of clusters and innovation ecosystems by focusing collective attention on issues of collective importance for both. It may be a powerful actor in shifting leaders' mindsets and increasing the competitiveness of the entire cluster. To achieve this, journalists must identify clusters as readerships, identify the principal actors and key issues, learn how to catch their attention and find business models for brokering the information. These skills do not come by themselves. A cluster initiative may address this issue. In parallel with facilitating the development of the cluster it may support the development of the journalistic skills in covering it. Thus, innovation journalism plays a key role in national competitiveness initiatives.

Innovation journalism initiatives can be seen as a part of the clustering toolbox. They are a starting point for developing an innovation communication system within a cluster. Different stakeholders and attention workers create a marketplace around public attention in and around the cluster. In an innovation ecosystem, journalism can be seen as a fourth strand of the 'triple helix' of industry, universities and government, just as it has been considered 'the fourth estate' in

democracy. Journalism is an independent actor that, with industry, government and academia, forms the infrastructure of competitiveness.

4.2 Economic Development

Innovation journalism can play a role in strengthening competitiveness of developing economies.

Competitiveness is a key factor for sustainable economic growth not only in highly developed economies, but also for reducing poverty in emerging economies. USAID launched its first Competitiveness Initiative addressing economic development in 1998.

Michael Porter has shown that innovation is the key driver of competitiveness in developing economies (Porter 2002). Innovation is not always based on advanced technologies or complicated business models. The ideas can be simple. But innovation always depends on acceptance of the new concept.

Competitiveness projects will not yield results without mindset change among the leaders making the decisions and the people who must support them. Mindset change is key to achieving lasting change. Journalism can influence the mindsets of leaders.

Economic-development professionals in the World Bank, regional multilateral banks, bilateral assistance agencies, contractors and nonprofits that care about building prosperity in 'tough neighborhoods' need to focus on mindset change. They need to recognize the key role of journalists and other thought leaders and address them, to put countries on the path to prosperity. Competent innovation journalists must therefore be present in the system. In context, journalism is not a channel for press releases but is *a key group of independent actors* who enhance the dynamics leading to strategic changes and policy reforms that effect economic development and that are a part of the competitiveness. (Murphy and Nordfors 2006)

Economic development professionals must develop innovation journalism competence without compromising journalistic integrity. Preservation of integrity must be absolute; the development of competent innovation journalism must be separated from communication and public relations. This will require rethinking requests for proposals and budgets well before the implementing parties begin work.

4.3 Democracy

As the economy shifts from 'more-of-the-same' to 'new-replaces-old', power is shifting, too. In the 'more-of-the-same' economy, power is with regulation. In the 'new-replaces-old' economy, power is with innovation. It can be argued that power is shifting from lawmakers to entrepreneurs and innovators. One example is music and copyright. This used to be the domain of parliaments and legal systems. Today, the future of copyright can be said to be in the hands of non-elected innovators. As we continue moving into the innovation economy, innovation journalism is needed in order to inform the citizens about the structure of the forces

that are determining their futures, enabling people to engage in shaping the world around them. It is needed for connecting the innovation economy and democracy.

For governments and parliaments to make good decisions at the right time, informed public debate is vital. Journalism sets the baseline of public debate and provides a platform on which politicians can appeal to their constituencies.

If journalism covers how we innovate, politicians can interact with voters via public debate. If journalism cannot cover how innovation happens, it will be harder to address the popular vote. Journalism can connect the innovation economy with democratic society. The connection between them is a requirement for democracy to be competitive in the global innovation economy.

Democratic systems and innovation systems have similarities. Consider the two systems:

- **Democratic System:** ideas compete for societal introduction and implementation; decisions are ultimately based on how people use their votes.
- **Innovation System:** ideas compete for market introduction and implementation; decisions are ultimately based on how people use their money.

In both cases the people pushing ideas create alliances, make compromises, strike deals and struggle to shape the dialog to introduce and implement their ideas. Both cases include strong incentives for winning, for making and breaking rules. Journalism has an important role in covering the competition between ideas and interplay between actors in innovation systems, as much as in democracies.

Elected politicians are responsible for setting regulations as well as educational standards to maintain industrial development and prosperity, while industries reliant on innovation have strong interests in lobbying politicians. If there is not an informed public discussion on how the innovation economy hangs together or the opportunities for and threats to businesses, people make less informed decisions when they elect the politicians who will regulate these issues. It is also bad for shareholders and employees in innovation economies who might be interested in voting based on personal interests.

Journalism is often called ‘the fourth estate’ in democracies. Innovation journalism may be seen as the fourth strand of the triple helix of politics, business and academia in innovation systems.

The view of innovation journalism as an important component of innovation systems has been promoted by, among others, the EU Commissioner for Science and Research, Janez Potocnik (Potocnik 2007). Commissioner Potocnik’s reason for supporting innovation journalism is based partly on concern. The Lisbon Agenda, March 2000, aimed at making the European Union (EU) the most competitive economy in the world and achieving full employment by 2010. Innovation is the key component of it. But in January 2006, former Finnish PM Esko Aho presented the EU “Aho Group Report,” sounding the alarm, saying that Europe was not on track. In unusually direct language, the report identified a large gap between political rhetoric about the knowledge society and the reality of

budgetary and other priorities. It urged Europe's leaders to take radical action on research and innovation "before it is too late."

Here is where Injo comes in: since journalism is usually not organized to cover innovation processes and ecosystems before they are evident in specific offerings or events, the stumbling progress of the Lisbon Agenda did not reach broader public discussion in the EU. The EU innovation communication system was not developed enough to facilitate public debate.

5 Business Models for the Principles of Journalism

With the media industry today in turmoil and newsrooms suffering, many are asking themselves what will happen to journalism. The important question is: what are the business models for the principles of journalism?

Most journalism codes stress the importance of truthfulness, accuracy, objectivity, impartiality, fairness and public accountability, loyalty to society and independence from sources.

The U.S. Society of Journalists summarizes the codes in the preamble to their code of ethics:

...public enlightenment is the forerunner of justice and the foundation of democracy. The duty of the journalist is to further those ends by seeking truth and providing a fair and comprehensive account of events and issues. Conscientious journalists from all media and specialties strive to serve the public with thoroughness and honesty. Professional integrity is the cornerstone of a journalist's credibility.

The principles of journalism are imperative. People have the right to expect journalism to act along these principles. The principles may evolve, but the basics must remain: journalism must report stories that satisfy the interest of its audience, rather than reporting stories satisfying the interests of those it covers or its owners. It can try to do it all as long as there is no conflict of interest, but the interest of its audience must come first, or else it will have crossed the line, no longer being journalism, but being PR or propaganda.

But every profession needs a source of income, also journalism. In order to stay alive as a profession, journalism needs money. The payment should not hamper the principles of journalism. On the contrary - it should reinforce the principles of journalism.

A good business model for journalism should make good journalism pay off better than bad journalism does. If so, good journalism will have an advantage over bad journalism in a competitive market. If not, the principles of journalism may be sidelined or compromised in a competitive market. Therefore few things are more important in democratic market economies than good business models for good journalism.

Until today, the main news-publishing revenues have not usually come from selling news to the audience. Selling the attention of the audience to advertisers is

the dominant business model that has enabled continued profitable publication. That said, selling news to readers is sometimes a working business model. Newsletters, analyst reports or other niche media that deliver unique information to exclusive readerships base revenues on the readers buying information hard to get via other channels. This business model will be challenged if the readership grows, as this will dilute the exclusivity and increase information diffusion to non-paying readers.

The traditional business model for journalism is that of ad-based mass media. It goes as follows: 1. Control a medium, an information carrier with the capacity to reach the masses; 2. Gather the attention of an audience around the carrier by transmitting interesting content on it, for example journalism or entertainment. The attention of the audience is now contained by the carrier; 3. Sell the attention by charging advertisers for access to the carrier. Their ads are embedded in the journalism/entertainment that are transmitted through the carrier. In this way they get to share the attention with the interesting content.

The carrier can be a printing press and an infrastructure for delivering freshly printed paper. It can be a radio or broadcasting system with the concession to broadcast.

This business model should reasonably benefit from good journalism or good entertainment. A reputation of reporting in the readership's interest will maintain the attention of the audience. The business model and journalistic principles reinforce each other. The news organizations will enforce the principles by, for example, separating the newsroom from the marketing departments that are selling ads to ensure that advertisers will not influence the news stories.

Examining how journalism looks today, it is not always obvious that the mass media business model for journalism promotes quality. In some cases it does, in other cases it does not. This can be partly due to that journalism and entertainment have shared the same business model, often blurring the lines between them.

The 'attention' business model provides incentives to generate public attention on matters of public interest, may they be matters of importance for the audience or entertainment. It applies both to reports on global warming and gossip about the private lives of entertainers.

From a business point of view, mass media has developed a very successful business model, one which has completely dominated journalism, but now is having trouble surviving the introduction of the Internet.

5.1 The Reinforcement Feedback Loop of Journalism

Publishers want to attract readerships to sell to advertisers; journalists want to advance their careers by breaking news, establishing credibility and becoming respected 'authorities' on important innovations across critical audiences.

Entrepreneurs, investors and public policymakers want attention from journalists to help sell their ideas or products. Symbiotic relationships develop between stakeholders in innovation ecosystems, offering opportunities for scholarly research of strong cultural significance in various changing circumstances.

Journalism produces many stories seeking readership attention. When an issue attracts readership, journalists mine it until it no longer attracts readers. Thus journalism acts as positive-reinforcement feedback, gravitating public attention around issues of public interest, often pushing public agendas, further feeding public attention across the spectrum of life and society. Such a 'bandwagon' effect may change or set public opinion and awareness of a certain technology, product or field of study. In this way, journalism may further ideas or product penetration into the popular culture.

The 'attention' business model fits the concept of empowering the readership. By having a business incentive to generate public attention around issues of public interest, journalism provides an infrastructure for focused public discussions where broader audiences and decision makers can interact, generating and trading reputation, which the various structures for delegation of power convert into stakeholder mandates.

Many journalists focus on re-telling stories. It is easier to write about popular issues than to find new issues that will gain attention, not in news but in news *angles*. Journalistic storytelling often prefers only one scenario per story; many journalists choose the same angles as their peers, to be 'safe'. When writing about the future reiterating the same angle may help to inflate economic bubbles. This happened, e.g. in the global 'dot.com' bubble (Uskali 2005). From this perspective, journalism is often revolutionary in ambition but conservative in practice (McCombs 1972). This presents another important issue for researchers: How does journalism affect acceptance and diffusion of innovations? Journalism—often seen by readers as fact or public opinion—can affect acceptance and rate of diffusion of innovations.

Objectivity in journalism is hard to fit into this analysis. Better to ask how journalism builds and keeps readership attention and credibility by gaining access to needed sources vs. interesting and valuable news. Readerships expect journalism to represent their interests; sources prefer to give access to journalists who can represent theirs. The journalist's challenge: maintain access to sources and audience loyalty. Both the 'attention' business model and the 'paid-content' business model of journalism provide incentives for news organizations to enforce audience loyalty. If a news organization loses its readership, there is no attention to sell. Advertisers will leave and the journalists will ultimately lose their jobs.

The traditional attention business model – selling ads – is being challenged by the Internet. All news industries are facing serious trouble. Several will be shutting down. There is today no obvious solution to how journalism will be paid in the future.

This is a grave issue, which society needs to focus on. The present challenge of journalism is not due to a decreased interest in or appreciation of good journalism. It is due to the decline of the present business model of commercial journalism.

Journalism is being forced to reduce its capacity, while other attention workers such as PR, those representing interests of stakeholders in the innovation economy, may be increasing their capacity, due to the increased competition for public attention. This may shift the balance of the innovation communication system away from the interest of broader society.

5.2 Separating Journalism and 'The Media'

By adopting information technology and the Internet for news publishing, news publishing may become subject to Moore's law. News publishing seems to be going from a business with little research and development (R&D) to being R&D-intensive. R&D can involve all aspects of the news business: Integrating new journalistic methods with new publishing methods, new distribution methods and new business models. News organizations, steeped in centuries-old traditions, are heading for dramatic change.

Anybody can now publish anything from anywhere, any time, at negligible cost. The result is accessible to everyone, everywhere. Technology has removed the barriers to starting news services, introducing a zero-margin cost for distributing more stories or reaching more readers. As the access to infrastructures for mass communication changes, the traditional business model of journalism may not survive. Bundling the content with the physical infrastructure for distribution—"the medium"—may no longer be competitive. It may soon be a liability for competition, adding little more than extra infrastructure costs that competitors do without, especially in situations of enforced 'net neutrality,' not allowing Internet service providers to prioritize certain content ahead of other content traveling their networks. Journalism may therefore soon be separated from "the Media."

With that said, it is not impossible that business models for journalism building on vertical integration of equipment, infrastructure and content can re-appear. Vertical integration is found among successful game manufacturers, such as Nintendo, who produce integrated hardware, system software and games, using the Internet for connecting customers with each other, letting them play games against each other. If and how such business models can be applied to journalism is yet to be seen. Until now, the trend in journalism is a separation between the content and the delivery infrastructure.

This does not destroy journalism. It intensifies competition for global news markets by offering the power to efficiently address vast, worldwide readerships. Professional journalism organizations will continue to identify readerships, capture mass attention and build credibility, perhaps on a larger scale. But new business models are required for journalism in the new era of low-cost, broad communications methods.

In retrospect, before the Internet, publishers relied on probability models to gather information and pinpoint their readerships' 'sweet spot.' Advertisers paid for the probability of gaining reader segment attention. The Internet now permits measurement of where and when a reader looks at news stories or ads, enabling 'pay per action.' So advertising's efficacy is no longer bound to probabilities. Advertisers can pay for direct access, get more information about readers and interact directly with target audiences via the advertisement. This provides both new possibilities and new challenges for ad-based journalism.

The Internet and its measurement programs provide publishers with growing opportunities to pinpoint information that resonates with readers, drives traffic to their publications, increases their credibility and attracts advertisers who want proof of reaching targeted audiences and generating behavior. In short, we predict that news publishers will invest more in R&D to gauge reader behavior and the

popularity of content with a targeted audience, combined with entirely new services and new business models. When revenues from ads no longer come from selling the probability of generated attention from a bundle of stories but from how many readers of a certain story respond to a certain advertisement, the barrier is broken between the newsroom and the advertisers. New models are needed to ensure the independence and good reputation of the journalist.

6 Toward an Agenda of Academic Research

Academics created an early ‘roadmap’ for innovation-journalism-related research at an Innovation Journalism workshop at Stanford in 2006 (Nordfors & Ventresca 2006). The results are summarized here.

Innovation Journalism, the innovation communication system and attention work in the innovation economy are suitable themes for scholarly research. An explicit agenda can show how journalism affects innovation and vice versa, as well as how journalism can cover innovation processes and ecosystems. Such research can clarify how innovation processes and innovation ecosystems interact with public attention.

Research raises issues about the ethics, practice and various types and forms of journalism. Similarly, research on innovation journalism can explore how news organizations may be organized and how such journalism can be profitable. The ‘innovation journalism’ concept focuses on fresh issues at the intersection of how innovation occurs and how journalism’s social organization affects what is ‘news.’

Journalism plays a central role for innovation, making the resulting reputation mediated. An ongoing project (Luoma-aho 2009) is performing thematic interviews of key people (journalists, PR-practitioners, entrepreneurs, venture capitalists, analysts, angel investors, lawyers) in the innovation industry in the Silicon Valley and constructing a model for the formation of media reputation of innovations. The focus is on journalism, as it is the journalists’ impressions that most shape how the innovation is presented in different media and how the innovation is perceived in the end. The project asks “What sources and clues do journalists combine to form their impressions of an innovation?” The project contributes to both theory and practice by addressing the sphere of reputation formation and the experiences and clues individual journalists apply.

Research on innovation increasingly focuses on interaction between sense-making (Weick 1993, Obstfeld 2005) and technical activities. Innovation studies now emphasize the ecology of institutions and actors that shape specific innovations. Their interactions bring complex dynamics to broader technology systems (Nelson 1982) and innovation systems (Hughes 1983) now viewed as ecosystems. Journalists are intermediaries—actors who broker information and other forms of knowledge and who monitor and provide accounts of activity in industry and markets. They are key components of the interaction dynamics of the innovation ecosystem.

The ‘micro processes’ underlying interpretation and sense-making that occur in managing novelty are also being studied. Innovation often involves copying

solutions from one context to another and applying them in new areas where they may change the order of things. In one instance, 'green' generation of electricity, semiconductor methods, are yielding to nanotechnology. The research looking at these issues considers especially the work of intermediaries and arbiters such as journalists.

This is part of renewed interest in how work and occupations influence organizations, innovation and entrepreneurship. Journalism and the media have key roles in innovation and institutionalization. This raises issues of how entrepreneurs engage media attention and how such attention shapes emerging technologies, markets and industries. The growing areas of social and institutional entrepreneurship are also involved, providing additional comparative perspectives on links between innovation and journalism in business and the economy.

Studies of journalism as an occupation show us how particular 'beats' or coverage conventions have developed and stabilized. Work on changes in the social organization of newsrooms, the role of new media - the development of business journalism in particular - highlight how underlying social arrangements shape what is 'news' (Ainamo 2006). Work on the social effects of journalism in different political eras and countries underscores the links between media and society, providing insight about 'fairness,' 'objectivity' and media 'embeddedness.'

Several researchers are beginning to study Innovation Journalism issues¹³ relevant both to 'how innovation happens' and 'what journalists do.' The growing body of work highlights key issues:

- How is journalism affected by innovation?
- How does journalism cover innovation?
- What are the effects of innovation journalism?
- How do innovation policy and innovation journalism relate?
- What is a productive research agenda for innovation journalism?

These key issues can be subdivided, for example in how journalism covers innovation:

- How do current practices in journalism as a profession/occupation shape innovation coverage?
- What features of innovation make it a distinct area of news media coverage?
- What are the issues around building a new innovation 'beat'?

Systematic study of innovation journalism promises to highlight issues important for both innovation and journalism researchers. Current wisdom suggests that innovation is dispersed, often as 'traces' that accumulate over time. These 'traces' are weak signals, hard for journalists to report on for various reasons (Uskali 2005). Specifying research ideas in the two areas of journalism and innovation will

¹³ See for example work on Innovation Journalism by D. Nordfors (Stanford University), E. Kauhanen (University of Tampere, Finland), T. Uskali (University of Jyväskylä, Finland), K. Mast, A. Zerfass and S. Huck (University of Hohenheim, Germany), and the Finnish Global Innovation Journalism (GINJO) program which has been launched by the Universities of Tampere and Jyväskylä and the Helsinki School of Business.

enhance research in both communities and has implications for training and supporting journalists who 'cover' innovation.

The assumption driving the emergence of public innovation policy for independent innovation journalism is that it communicates ideas and focuses public attention on innovation ecosystems that may boost innovation-driven growth. Another aspect of this assumption, noted above, is that innovation journalism may be for innovation ecosystems what political journalism is for democratic systems, reporting on the ongoing competition between ideas and participants, with similar effects on the system. Traditionally, research on innovation systems deals with national and regional policies, developing and exploiting local competences, and analyzing and improving local economic competitiveness (Freeman 1995). Innovation journalism introduces social construction, creation of shared knowledge and community building among targeted readerships in at least one documented case (Sandred 2005), which reports about success.

6.1 Tentative Research Topics of Interest

The role of journalism in innovation systems poses many questions for researchers:

- What evidence is there of journalists as stakeholders in innovation systems?
- How do current innovation diffusion models treat the role of journalism?
- Can the concept of attention work offer new ways of including mass communication and PR in economic models for innovation?
- How does innovation journalism influence democratic systems?
- What models and evidence are available for the innovation communication system (interplay between journalists/ communicators/others)?
- How can journalists maintain credibility and trust with innovation ecosystem audiences?
- Can Innovation Journalists spread 'gossip' (in social networks, 'gossip' as partial information)? To what degree do standards like 'objectivity', 'balance' change when reporting on distributed, long-term 'weak signal' processes like innovation?
- What lessons flow from historical evidence about the role of journalism/ media in innovation systems from inventors such as Edison and case studies of their innovations?
- What roles does journalism play in the social construction of innovation?
- What metrics identify the influence of innovation journalism on innovation-community identities - and vice versa?
- How do stakeholders in innovation use journalists to achieve their goals, and vice versa?
- How does journalism contribute to public perception of an emerging industry?
- Will Innovation Journalism increase economic growth?
- What kinds of innovations lend themselves to Innovation Journalism coverage?

The profession of Innovation Journalism poses many additional questions:

- What are the conflicts of interest in Innovation Journalism practice?

- How similar/dissimilar is it to other emerging areas of journalism coverage?
- What are effective strategies for innovation journalists in managing readership attention and credibility while gaining access to sources?
- Why have journalists not covered innovation more?
- What obstacles derive from the peculiarities of the language of ‘innovation’?
- What obstacles derive from journalism as a profession (systems of jurisdiction, the role of the state, education, ideologies, etc.)?
- What are best ways to teach Innovation Journalism?
- How to alert, engage managing and departmental editors to consider Innovation Journalism?
- How do journalists currently think about innovations—tacit/explicit models, metaphors, etc.?
- What comprises a ‘History of Innovations’ seen through how journalism has covered innovation?
- Mental models of innovation: what makes innovation difficult for journalists to cover as ‘news’?
- Where is Innovation Journalism currently practiced? What variation worldwide and across the full spectrum of media? Which institutions are more, less likely to cover innovation?
- What are the existing markets for innovation journalism? What business model(s)? How can advocates imagine alternative markets or business models?

Methods for quantifying innovation journalism demand investigation:

- Mapping current practices;
- Evaluating and ranking Innovation Journalism: quality, standards, effectiveness;
- Measuring the activity and impact of Innovation Journalism;
- Establishing and monitoring Innovation Journalism credentials;
- Comparing media carrying Innovation Journalism: volume, focus, specialties, neglected areas;
- Attributing (or introducing?) innovation journalism to media worldwide;
- Comparing innovation journalism trends in all media.

6.2 Innovation Indicators, ‘Hot spots’ and mobility

The conceptual framework of innovation journalism, innovation communication systems and attention focuses on the collective ability to generate new shared language as a key for innovation. This can be useful for more than understanding the role of journalism and communication in innovation ecosystems. Considering innovation from a sociolinguistic language formation and communication point of view may help in designing new tools and solutions for understanding and measuring innovation.

Consider the potential of defining innovation indicators based on language and communication. Innovation indicators are important for people working with public innovation policy; they play an important role in shaping decisions about what society will do to improve its ability to innovate. People have innovative

ideas worldwide, but where will they succeed? What about such places makes new ideas happen there? Finding the places is easy, once they succeed—like Silicon Valley. But it is hard to identify good indicators for benchmarking would-be innovation ‘*hot spots*,’ offer a clue of why innovation is going well or not and predict which are the coming hot spots.

So far, the number of registered patents is considered a key innovation indicator. But it does not tell the whole story. Patents can be key in some sectors, such as pharmaceuticals, but in fields such as software and services, patents are much less relevant. It is a complex issue. Innovative regions are ranked by, for example, the ‘European Innovation Scoreboard.’ Rankings usually use indicators such as those in the U.S. Science and Engineering indicators (NSF), or the EU Science and Technology Indicators from Cordis. They assess aspects such as workforce educational level, number of registered patents or published research papers—numbers measurable in surveys or from public registers. They usually miss one crucial innovation issue: mobility and interaction across disciplines, cultures and regions.

Mobility and interaction may be between professional domains; as stressed in this chapter, innovation is not driven by science *or* technology *or* business *or* politics, but by their interaction. Mobility and interaction is also geographical: Silicon Valley hosts people from all over the world. Though people-mobility can be measured, doing it is controversial—people have the right to privacy. It is also difficult to quantify easily (its much easier with number of patents or math-test ratings).

Innovation is often about new combinations of existing concepts, or re-framing something in a new context. In the ’70s, few people thought of computers as relevant for storing pictures, even less music. But bringing artists into the computer world, and vice versa, was probably more important for innovation than doubling the number of excellent COBOL programmers (then the dominant programming language). Yet many innovation scoreboards care more for programmers than artists, not addressing their inter-communication. Even if they think of it, such scorekeepers may worry about how to address such issues: How does a measurable quantity relating to artists relate to innovation? Does the number of art galleries scale with innovation? How? How can innovative artist-programmer interactions be measured?

Perhaps innovation hot spots are more likely places with low thresholds between people doing different things, where people become acquainted easily and where they can interact flexibly in making novelty happen. Perhaps they are places with high concentrations of people who find few things as important as the next big thing, who want to be a part of it, who like chatting about it with anybody who is interested, regardless of profession or background. In Silicon Valley it is not rare that people start companies with individuals they got to know at their children’s birthday parties.

This diversity of people in the innovation ecosystem implies the need to share a language that lets them chat about what interests them. Otherwise they will have difficulty sharing interests and adding their own parts in a way that others will understand. Innovation is about introducing novelties, which often come with new words and stories, so perhaps innovation hotspots are more likely to be places

where people in the innovation ecosystem can rapidly develop new, shared language.

Internet tools have been developed that measure language development. Google Trends is one example. It charts how often a particular search term is entered vs. the total search volume across various world regions and languages. Perhaps innovation indicators can be found via sources like Google or Facebook, finding hotspots on the geographical as well as the social map, where new language grows fastest. Analyzing how the new language connects to market value weighs these things together.

Today, few of those dealing with how we innovate think about to how we generate the shared language needed for innovation or its success. Sociolinguistics and studies of innovation can be a great pair!

7 Innovation Journalism Initiatives

7.1 Stanford University

Stanford Center for Innovations in Learning (SCIL) hosted the VINNOVA seminal innovation journalism program in 2004, during its first year of operation.

In 2005 the Injo program became incorporated as a part of SCIL, sorting under SCIL co-founding director Stig Hagström. It continued to be operated in collaboration with VINNOVA.

Since then, Finnish, Slovenian and Pakistani journalists, supported by several sources, have joined the program at Stanford. Each year they combine workshops and conferences at Stanford with covering innovation in hosting newsrooms across the U.S.

On 1 January, 2009, the program was upgraded to a Stanford research center, the 'VINNOVA Stanford Research Center of Innovation Journalism,' It sorts under Stanford University's H-STAR institute (Human-Sciences Advanced Research). VINNOVA is a co-founder and the main sponsor. Stig Hagström is the founding director, I am founding executive director.

The new Stanford facility will pursue human sciences and technology research in areas that affect and promote the development of innovation journalism worldwide, i.e., journalistic coverage of innovation processes and ecosystems wherever they occur, studying how journalism influences innovation, how innovation influences journalism and how journalism can cover innovation. The new Center is building a global network of research in innovation journalism by hosting visiting researchers from Sweden and other countries.

Research on the role of journalism in the innovation economy is multidisciplinary, it has several academic and non-academic stakeholders. It is much helped by horizontal research structures, bringing together research from any relevant traditional verticals in the university, as well as engaging in collaboration with non-academics. Such an approach by universities is the key not only to studying

innovation, but also to being successful in facilitating innovation around the university, as has been demonstrated by e.g. Stanford University.

The scholarly activities of the new research center are aiming at academic conferences, funded research opportunities, and the development of a peer-reviewed specialty journal. The program arranged a workshop with academic researchers in 2006, resulting in a report on interesting themes for scholarly research, presented earlier in this text.

The first Innovation Journalism Program activity was the Innovation Journalism Fellowships, where each year selected journalists mix workshops and conferences at Stanford with covering innovation in hosting newsrooms. The program collaborates regularly with external partners such as SRI International, US National Academies and the World Economic Forum Media Entertainment Industry Partnership.

The program at Stanford hosts *The Conference on Innovation Journalism*, run yearly since 2004, the global meeting point for people interested in the topic. Each Fellow is responsible for arranging a session at the conference. The conference offers a meeting place for people from over the world to develop their interest and networks around innovation journalism. Conference documentation is available from the Innovation Journalism publication series¹⁴, published by the program at Stanford. The series, indexed by Google Scholar, also publishes essays of interest in innovation journalism. Since 2007, each conference has its own website where all documentation is available¹⁵. The publication series has set up a working group for developing the routines for peer reviewed academic publishing.

The Innovation Journalism Fellowship Program aims to co-develop the concept and community of innovation journalism in a global arena. This involves:

- Forming a collegial network of innovation journalists for mutual benefit of network members;
- Identifying and developing best practices;
- Shaping common understanding of professional ethics and Innovation Journalism's role in society;
- Understanding and developing the business of Innovation Journalism.

Each year, Innovation Journalism initiatives around the world nominate InJo Fellowship candidates. The initiatives screen candidates and guarantee funding for their InJo Fellows.

The program encourages its fellows to be entrepreneurial, curious, active and social, interested in expanding their knowledge in new directions and participate in community-building. The Fellowship program is 5-6 months long, starting with an

¹⁴ The innovation journalism Publication Series. ISSN 1549-9049.. <http://www.innovationjournalism.org/essays>

¹⁵ IJ-4, the Fourth Conference on Innovation Journalism 2007, <http://www.innovationjournalism.org/ij4> ; IJ-5, the Fifth Conference on Innovation Journalism 2008 <http://www.innovationjournalism.org/ij5/docs/>

introduction period at Stanford. Thereafter, the Fellows are hosted by U.S. newsrooms. There are recurring activities at Stanford throughout the Fellowship. Each Innovation Journalism Fellow presents a session at the yearly conference on innovation journalism. The Fellows also interact in an online community throughout the Fellowship. Between 2004-2008 the program hosted 38 journalists from Sweden, Finland and Pakistan. During their fellowships they produced, apart from their contributions to the yearly Innovation Journalism Conference, over 400 stories, which were published by their hosting newsrooms.

The hosting newsrooms represent a broad selection of types of publication, offering many angles on the coverage of innovation: Fortune, San Francisco Chronicle, CBS CNET News.com, Business 2.0, Red Herring, Wall Street Journal, Fast Company, AlwaysOn Network, VentureBeat, PC World, GigaOm, Bloomberg, Xconomy, IEEE Spectrum, Technology Review, IDG News Service, PodTech.net, Wired, Seed and Technogizer.

A recent study published by the IAMCR world conference presents and explores the experiences of the international Innovation Journalism Fellowship Program during its first five years, 2004-2008, analyzing the work outputs (journalistic stories) and practices of the innovation journalism fellows since 2004. (Uskali 2008)

7.2 Sweden

The first Innovation Journalism program in the world started in 2003 as a pilot by VINNOVA in interaction with the Swedish Foundation for Strategic Research, and the Council on Competitiveness in Washington DC, USA (Nordfors 2003). It ran the first round of Innovation Journalism Fellowships in 2004, in collaboration with Stanford University.

In January 2009, VINNOVA co-founded the VINNOVA Stanford Research Center of Innovation Journalism, which sorts under the H-STAR institute at Stanford University. VINNOVA is funding the participation of Swedish researchers in the research center, which will be looking at the relation between journalism and innovation. The innovation journalism research program is presently under formation.

The Swedish innovation journalism fellowship program for active journalists offers an opportunity for individual journalists to increase their knowledge, to develop skills and practices in cross-disciplinary work, and increase professional level in covering innovation processes. It also offers opportunities to create international and national networks of colleagues who cover innovation.

The Swedish Fellowship program starts with a yearly open call for applications. Only individual applications are allowed – a company or editorial office cannot apply and appoint a fellow.

A panel of key persons from the news media industry, leading academics and policy makers chooses the fellows. The principle for selecting the fellows are both professional criteria like journalistic merits and potential to make an impact back home, as well as social skills like the ability to take initiatives and work in teams.

As of January 2009, the following Innovation Journalism initiatives were nominating Fellows:

INJO PROGRAM	ORGANIZER	FUNDER	InJo Fellows in 2009	InJo Fellows since 2004	Visiting Researchers in 2009	Visiting Researchers since '06
Sweden	VINNOVA	VINNOVA	6	35	1	1
Finland	Helsingin Sanomat Foundation	Helsingin Sanomat Foundation/ SITRA / Tekes	4	9	1	2
Pakistan	Competitiveness Support Fund	Competitiveness Support Fund / USAID	4	10		
Slovenia	Vibacom	Scholarship Agency of Slovenia	1	1		
Mexico	FUMEC	CONACYT	1	1		
TOTAL			16	56	2	3

The program was evaluated in 2006-2007 by external experts (VINNOVA Report VR 2007:08). The aim was to determine if it was legitimate for a national agency to run a program for the media industry: Is the program interfering with the press integrity? Is it constitutional that a national agency has influence on the free press? Can the funding be interpreted as hidden press subsidies? The evaluation also addressed the necessity of the program.

Given the specific setup and the aim of the program, the analysis showed that it is not only possible for VINNOVA to run a program, but also that it is VINNOVA's obligation to do so.

The aim for the program is also to have an impact on news media in Sweden. The fellows are expected to develop and launch new perspectives, assume the role of Innovation Journalism practitioners and catalysts within Swedish media, produce methods and tools that promote Innovation Journalism, and establish a national and international network of innovation journalists.

VINNOVA has initiated a second review of the program activities and the organization to form a strategic plan to secure the program goals. The aim is to measure program impact, both with regard to development and professional expertise, as well as identify measures that can be implemented for program improvement. VINNOVA also wishes to identify possible directions for research on Innovation Journalism and institutionalize cooperation between educators, industry and media companies.

7.3 Finland

The principal Finnish Innovation Journalism activities since 2004 have fallen into two categories: the pioneering and testing period, with 'proof of concept' the primary concern and the establishing period, in which InJo is being implemented.

Pioneering and testing period (2004-2007):

- 2004: Finland Launches Innovation Journalism Programme thanks to docent Seppo Sisättö, University of Helsinki: First Course for Professional Journalists and a first academic, two-year research project (Tekes/University of Tampere);
- 2005: Finland launches world's first Innovation Journalism course for undergraduate students, by Dr. Turo Uskali (Department of Communication, University of Jyväskylä);
- 2006: Finland launches national Innovation Journalism Fellowship Program (Sitra). First Finnish InJo fellow, Jyrki Alkio, Helsingin Sanomat to Stanford program funded by many sources. First InJo Post-doc researcher to Stanford, Turo Uskali, Department of Communication, University of Jyväskylä;
- 2007: First National Association, Finjo (Finnish Society for Innovation Journalism).

Establishing period (2008-2012):

National Finnish Innovation Journalism Fellowship Program

- Three Finnish InJo Fellows to Stanford Program for five years (2008-2012)
- Budget 700,000 Euros
- Funded by Helsingin Sanomat Foundation and Sitra

Global Innovation Journalism research project (2008-2010)

- Joint-venture of University of Jyväskylä, University of Tampere, and Turku School of Business/Futures Research
- Planned outputs: research articles, textbook
- Cooperation between Stanford University, University of Oxford, and other world-leading research universities, and researchers
- Budget 1,000,000 Euros (Tekes 900,000; Helsingin Sanomat Foundation 100,000)

7.4 Slovenia

The need to implement innovation journalism was first recognized by entrepreneur/innovator Violeta Bulc, owner and director of consulting company Vibacom. A meeting with the program at Stanford in November, 2005, resulted in the introduction of Innovation Journalism ideas in Slovenian media and the business community. Systematic, broader introduction of the topic followed, including best practice cases in local and national newspapers, radio and TV stations, and different conferences.

The main Slovenian contribution to InJo has been to extend the concept not only in national newspapers, but on all levels of the "innovation space", a concept referring to a space of interaction between stakeholders of innovation, including government, journalism/media, local communities, artists and art industry, business, education, academia, research and development and NGOs.

Injo has been introduced in elementary and secondary schools, among college students, in business environments and in local communities. Based on field experiences, the Injo concept has been joined with the concept of innovation communication, with these major projects ongoing:

- **Slovenian Regional Conference on Innovation Journalism—Stanford after Stanford:** to exchange global and local experiences and knowledge on innovation, share methods, models, cases and tools that identify opportunities for innovation and transform them into success stories for the media and their target public segments;
- **Injo awards:** The main award goes to a professional journalist for the best media contribution on innovation in Slovenia. Corporate media contributors are also recognized;
- **Systematic education:** The award for schools also relates to the special project called [Innovation Journalism for schools](#) (InJo Jr.), a series of workshops for elementary and high school pupils and teachers to support innovation awareness;
- **Scholarship for the Stanford program:** is given to a Slovenian journalist or researcher who reports on innovation and science through diverse aspects of the media;
- **InCo (Innovation Commitment):** connects participants and interdisciplinary networks to encourage the media to adopt a more proactive role in representing innovation through stories to target public readership and place innovation into a wider social context;
- **Manifest:** [Manifest InJo-InCo 2008](#) sums up activities before and during the annual Regional Conference on Innovation Journalism and Communication (“Stanford after Stanford”) and establishes the major vocabulary on innovation.

Further activities are ongoing for incorporating innovation communication in the business sector, local communities and universities, promoting the concept via lectures and workshop at specialized conferences or events and through articles in different media. Slovenia’s relatively small size has helped bring the different practitioners of the innovation space together and raise awareness quickly and effectively.

7.5 European Union

The European Journalism Centre (EJC), with headquarters in Maastricht, has been working together with the Innovation Journalism initiative at Stanford since 2006. The EJC has co-organised four innovation journalism conferences, in Amsterdam, Brussels and two in Maastricht, inviting a wide variety of speakers from the journalism industries, but also actors from industry, education, civil society as well as national and trans-national governments.

A European Innovation Journalism Network is under formation, promoting collaboration between its stakeholders, and co-organizing innovation journalism events in the EU.

Moreover, the EJC is in collaboration with Stanford promoting innovation journalism issues with the relevant Directorates General from the European Commission, e.g., DG Comm, DG Research, DG Enterprise and DG Education and Culture. For the latter it was also instrumental in preparing the "Year of Creativity and Innovation" in 2009, as well as preparing a major European-wide conference on the topic in close cooperation with the Dutch Province of Limburg and other stakeholders.

Additionally, in 2009, the EJC plans to extend organizational and logistical support for the European Innovation Journalism network. The objective is to improve networking between relevant actors in the innovation space, develop conferences and workshops on the issue and also look into ways of formulating curriculum elements that can be integrated into existing journalism curricula.

7.6 Pakistan

In Pakistan, an innovation journalism program was set up in 2006 by the Competitiveness Support Fund (CSF), which receives funding through the USAID for bolstering economic development and competitiveness.

Building on other Injo practices and experience, CSF developed the program aiming at the following results from its participation in the International Innovation Journalism Fellowship Program at Stanford:

- Increasing public focus on innovation, business and technology through the Pakistani news;
- Improving communication within clusters or innovation systems, bolstering economic development in Pakistan;
- Encouraging greater understanding of the rapidly developing global innovation economy;
- Recognition of innovation journalism as a practice of bridging the existing gap between business and science/technology in the news ;
- Increased understanding of the role of journalism and the news in driving innovation;
- An international community of innovation journalists supported by an alumni network;
- Enhanced personal networks between international fellows and U.S. hosts along with other participating countries;
- Nurturing greater understanding of a fellow's society in his/her U.S. hosting publication ;
- The program is supporting in linking technology and business reporting in Pakistan and bridging the gap between Pakistani reporting and reporting in the U.S. and other countries. After completing the program, In addition to the Fellowship program, CSF also encourages journalists to participate in the annual conferences of the innovation journalism conferences at the Stanford University every year. Ten journalists from Pakistan have also attended the annual conferences on Innovation Journalism at Stanford University and at the annual TCI conferences.

Almost all the people exposed to the Innovation Journalism initiatives have attained a leadership role, due to their ability to generate unique content on innovation.

One example is the SAMAA TV in Pakistan, a new TV company whose core team is associated with the Injo network. It is the first media organization in Pakistan to produce a television show on innovation. The is establishing collaboration with Injo fellows and alumni in other parts of the world, letting them participate in the production of programs.

7.7 Mexico

A Mexican Innovation Journalism Initiative has been set up by the US Mexico Foundation for Science (FUMEC), sponsored by the Council of Science and Technology (CONACYT). The team of Guillermo Fernandez de la Garza , Madai Quiroz, Ivan Zavala and Jorge Zavala from FUMEC and the related Mexican TechBA incubator in Silicon Valley fitted the Innovation Journalism initiative with the ambition of the Mexican Ministry of Economy to improve entrepreneurship and innovation systems in Mexico..

In order to reach all the decision makers in the government support, policy creation and academic development, I was invited by the Fumec/TechBA entrepreneurial team to Mexico in October 2008 presenting the InJo Program to various stakeholders, such as the Mexican Congress, the governing board of CONACYT, industrial chambers, Universities and the City of Knowledge in Monterrey.

As a result, CONACYT and Consejo Mexiquense de Ciencia y Tecnología sponsored a Mexican Innovation Journalism Fellow at Stanford in 2009.

8 The Road Ahead

In an innovation ecosystem, journalism can be seen as a fourth strand of the ‘triple helix’ of industry, universities and government, just as it has been considered ‘the fourth estate’ in democracy. Journalism is an independent actor which, with industry, government and academia, forms the infrastructure of competitiveness.

Together with other attention workers, such as PR and communication, it can form a system for communication within innovation systems, influencing the flow of public attention around the innovation system.

Such an “innovation communication system” needs an innovation system, of its own to foster development. As with other innovation systems, it makes sense to involve the triple helix, the combination of universities, business and government, as well as the ‘fourth strand’, i.e., journalism. The development of Innovation Journalism and innovation communication systems needs the following:

Professional journalism: develop practices and business models for innovation journalism. We need educational systems and professional networks to develop professional ethics and common understanding of best practices, and the journalism industry to develop commercial market for innovation journalism. Innovation journalism, like all other journalism today, needs an innovation system of its own, that will continuously develop injo and its commercial market.

Other industries, for example high-tech companies, need to develop their innovation communication to match Innovation Journalism, creating a market for innovation stories and public attention.

Universities: develop research capabilities for building our understanding of how journalism interacts with innovation, how the innovation communication systems works, the economics of attention work in the innovation economy, how the profession of journalism handles the coverage of innovation and so forth. Develop curriculums for Innovation Journalism, innovation communication. Include the concepts of Innovation Journalism, attention work and the innovation communication in other curriculums relating to innovation, for example at journalism and business schools.

Government: include the concepts of innovation journalism, attention work and innovation communication systems in public innovation policy, e.g., in frameworks that support development of innovation systems, clusters and economic competitiveness. Provide incentives for universities and business to engage in developing themselves and their relations with each other.

Engaging these groups is a minimum requirement for developing innovation journalism and innovation communication systems. Other groups are desirable to engage.

In existing public innovation policy, innovation journalism fits within the frameworks of innovation systems, cluster initiatives, as well as the framework of competitiveness in economic development.

To develop an innovative cluster or innovation system, in the OECD as well as in a developing economy, journalists working in that economy should be able to report on innovation and what is happening in the emerging cluster.

These are challenging times for journalism. It is in a similar situation to the telecom industry in the '90s, when the Internet and telephony deregulation hit. Then, public innovation policy supported industry reformation, enabling it to renew itself. Policies with similar intent may be needed today for the journalism industry. Public innovation policy can help us find answers to the question of what organizations that deal with journalism must do to succeed in future innovation economies.

If public policy fails to address these issues, we face a meltdown of large, established newsrooms, leading to a situation where independent journalism can no longer cover important issues, including innovation.

When addressing the crisis in journalism today, it is constructive to pose the question "What must news organizations do to be relevant in the innovation economy?" This is a broader question than "How can the media industry survive?" The key questions examine how journalism can bring value to its audience in a society where innovation is a leading force of change and prosperity. Journalism itself may prosper by doing so.

David Nordfors is co-founder and Executive Director of the VINNOVA Stanford Research Center of Innovation Journalism at Stanford University. He is a Senior Research Scholar at Stanford University's H-Star Institute. He coined the concepts of Innovation Journalism (2003) and Attention Work (2006) and started the first innovation journalism initiatives, in Sweden (2003) and at Stanford (2005). Nordfors is a member of the World Economic Forum Global Agenda Council on the Future of Media. He is Special Advisor to VINNOVA, the Swedish Agency for Innovation Systems. He was the initial Director of Research Funding of the Knowledge Foundation, KK-stiftelsen, one of the largest Swedish research foundations. He was the initial Science Editor of *Datateknik*, the largest Swedish magazine for IT professionals. He was the founding publisher and editor of "IT och Lärande" (IT and Learning), the largest Swedish newsletter for educators. He initiated and headed the first hearing about the Internet to be held by the Swedish Parliament. Dr. Nordfors has a Ph.D. in molecular quantum physics from the Uppsala University, where he was recruited as a Ph.D. student by Prof. Kai Siegbahn (Nobel Prize in Physics 1982). He was a post-doctoral researcher in theoretical chemistry at the University of Heidelberg on a grant from the Swedish Natural Research Council NFR.

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