

The Emergence of Science Communication in Scandinavia

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Abstract

In the Scandinavian countries, science communication emerged along with the institutionalization of the sciences in the 16th and 17th centuries. The first institutions for communicating useful scientific knowledge to practitioners were established in the field of agriculture. Public science lectures became commonplace around the mid-19th century. Popular science lectures formed part of the first radio transmissions in the first part of the 20th century, and non-lecture radio shows soon followed. In the second half of the 20th century, science journalism gradually secured a firm setting in the news media, supported by the establishment of associations of science journalists. Science centers emerged in 1985 (Sweden), 1991 (Denmark), and 2003 (Norway). In Sweden, the Government introduced science outreach as a “third leg” mission for the universities already in 1977, while Norwegian and Danish Governments followed suit in 1989 and 2003, respectively. In all three countries, research and formal education in science communication is still very much in its infancy.

Introduction

Historically, science communication has been part and parcel of the institutionalization of science. The Royal Academies in Stockholm, Copenhagen, and Oslo (formed in 1739, 1742, and 1760, respectively) were all established to promote science and technology, and this included communication of scientific knowledge to patrons and others in the aristocracy. The first institutions specifically aimed at public communication of science emerged in the first quarter of the 19th century, such as the Danish Society for the Dissemination of Natural Philosophy (Selskabet for Naturlærens

Udbredelse, established in 1824 by Hans Christian Ørsted). Due to the spread of affordable printing presses, popular demand, and the tireless efforts of dedicated individuals, popular science magazines emerged in Denmark a couple of decades later, in Norway in 1877, and in Sweden in 1911. Around mid-19th century, Folkehøjskoler (Folk High Schools) and other associations were established to educate farmers and workers, some of which, like the Danish Askov Højskole, included courses in mathematics and in the technical and natural sciences. The first governmental initiatives in science communication probably was the establishment in the second half of the 19th century of extension services for farmers, allowing for the communication of useful knowledge from new-founded experimental test stations and national agricultural universities.

Throughout the 20th century, science communication increasingly became an integrated part of national cultures in the Scandinavian countries. Soon after the introduction of first radio and later television, science programs were featured regularly. The first popular science radio shows simply were lectures “on air”, but quickly regular popular science shows emerged. Some new initiatives in science communication reflected societal change, for example, the consensus conferences launched in Denmark in 1983 as part of the national institutionalization of technology assessment. Others, like the founding of national associations for science journalists, consolidated already existing developments.

Sweden was the first Scandinavian country to institutionalize science communication as a third leg obligation for the universities in 1977; Norway followed suit in 1989, Denmark in 2003. In all three countries, the new governmental commitment to science communication initiated reflections on how to communicate science and the role of science in society. Also, new institutions such as the Swedish Council for Planning and Coordination of Research (Forskningsrådsnämnden), founded in 1977 to coordinate and plan research, but also to initiate science communication activities; the Norwegian Foundation for Research Dissemination (Stiftelsen for forskningsformidling), established in 1992 by members of the scientific community to disseminate scientific knowledge; and the 2006 Danish scheme for funding science communication using national lotto funds. Today, most universities in Scandinavia have dedicated programs or

departments for science communication/science outreach/public relations of science. Degree programs for science communicators, however, are few.

Methodology

This paper presents information about the emergence of science communication in the three Scandinavian countries: Denmark, Norway, and Sweden. The paper forms part of a larger effort to produce more or less standardized timelines for a number of countries around the world. Treating Denmark, Norway, and Sweden in the same paper is useful for purposes of comparison not only because of the close historical connections between the three countries, thus making possible comparisons between Scandinavia and other parts of the world, but also for highlighting cross-national differences between Denmark, Norway, and Sweden.

The following historical works has been consulted:

- Denmark: Kragh et al. 2008, Andersen and Hjermitsev 2009.
- Sweden: Frängsmyr 2000, Kärnfelt 2000.

Also, colleagues in Sweden (Cissi Askwall, Vetenskap & Allmänhet, and Anne Maria Fleetwood, Vetenskapsrådet) and Norway (Norith Eckbo, University of Oslo) have provided valuable information. Their contributions are kindly appreciated.

Results

The national results are presented in tables 1-3. Based on the list provided by the convener of the session, Toss Gascoigne, one figure including key events from all three countries has been produced, see figure 1.

Table 1 Important events in modern science communication in Denmark

Year	Event
1742	Royal Danish Academy of Sciences and Letters
1763	Botanical Gardens, Copenhagen
1769	Royal Danish Association for Agricultural Housekeeping established to disseminate knowledge and advance technology in Danish farming

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1824	The Society for the Dissemination of Natural Philosophy founded by Hans Christian Ørsted to organize public lectures
1844	First Folk High School established for the education of people in rural areas. Topics pertaining to agriculture such as chemistry and biology were taught. Around the turn of the century, Poul la Cour – scientist and inventor – taught history of science and technology at the Folk High School in Askov.
1854	<i>Magazine for Popular Representations of Science (Tidsskrift for populære Fremstillinger af Naturvidenskaben)</i> , first popular science magazine
1860s	First Agricultural Test Stations for communicating agricultural knowledge to farmers
1899	The Folk University, an independent extension service of the University of Copenhagen
1933	First radio lecture on popular science held by Paul Bergsøe
1949	Danish Science Journalists' Association founded for the first time. The association is very short-lived.
1949	Technical Magazine, first popular science radio show (not lectures), starts
1956	First popular science TV shows, such as News from the Sciences (Nyt fra Videnskaberne), From the Science Shop (Fra Videnskabens Værksted) and a series about the atomic age focusing on the atomic test station at Risø
1976	Danish Science Journalists' Association founded (again). No connection to the association founded in 1949
1983	First Consensus Conference (theme: breast cancer)
1984	<i>Illustrated Science (Illustreret Videnskab)</i> , today the largest popular science magazine in the Nordic countries, published for the first time
1986	The Danish Board of Technology established with the task of giving advice to the Parliament and informing the public about new technology
1991	Experimentarium, first science center in Denmark, funded by the Egmont Foundation, Tuborg Breweries, and the Danish Government.
2003	Revision of Act on Universities includes for the first time science communication as third leg mission

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2003	Maja Horst, PhD, title: Controversy and Collectivity. Articulations of social and natural order in mass mediated representations of biotechnology
2004	Think-tank on science communication, established by the Ministry of Science, Technology and Innovation
2004	Science Communication Prize awarded by the Ministry of Science, Technology and Innovation
2005	Working Group on Science Communication Targeted at Children and Young People, established by the Ministry of Science, Technology and Innovation
2005	First national Festival of Research, organized by the Danish Agency for Science, Technology and Innovation
2006	Danish Lotto funds allocated to science communication: 0.39 per cent of the profit of Danske Spil (Danish Games), owned by the Danish Government. In 2014, DKK 6.7 million or \$ 1.2 million are made available for science communication activities
2006	Science communication courses start at the Faculties of Science at Aarhus University and the University of Copenhagen.
2008	PCST-10, Building Bridges to the Future, takes place in Malmö and Copenhagen
2008	Launch of Videnskab.dk, an independent web portal for science communication with support from the Government
2008	Science communication courses (continuing education) are offered by the Danish School of Journalism
2009	Danish Board of Technology heads World Wide Views on Global Warming, a global project on public deliberation about climate change, occasioned by the COP-15 Conference in Copenhagen. More than 4000 citizens from 38 nations participate
2011	Danish Board of Technology closed down by the Government. Re-established as a non-profit foundation in 2012
2014	European Science Open Forum (ESOF) takes place in Copenhagen

Table 2 Important events in modern science communication in Norway

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Year	Event
1760	Royal Norwegian Academy of Science and Letters
1814	Botanical Gardens, Tøyen, Oslo
1823	Norwegian Magazine for Sciences
1825	Bergen Museum for Natural History and Culture
1877	The magazine <i>The Nature</i> (Naturen) for popular science
1905-17	Three large museum buildings at Tøyen, Oslo
1952	Educational TV programs, Norwegian Broadcasting Corporation (NRK)
1952	Norwegian Association of Science Journalists
1960-93	TV program Physics in the Rummage Room (Fysikk på Roterommet)
1975	Open days at the University of Oslo
1989	New Act on Universities introduces public communication of science as a third leg mission
1991	Popular science magazine <i>Apollon</i> published by the University of Oslo
1991	Foundation for research dissemination (Stiftelsen for forskningsformidling) established by members of the scientific community
1992	Norwegian Research Councils publish <i>Media advice for researchers</i> (Medieråd for forskere)
1993	Government report, <i>Science for the community</i> , on science communication
1995	Prize for excellent science communication awarded at University of Oslo
1995	National Science Days established by Norwegian Research Council
1996	PROREAL, science communication program by Norwegian Research Council
2002	Web portal forskning.no established
2002	The Science Center of Northern Norway at the University of Tromsø
2003	PhD in science journalism, Harald Hornmoen, University of Oslo
2010	Researcher Grand Prix by Norwegian Research Council
2010	Inspiria Science Center in Grålum
2012	PhD in science communication, Rebecca Carver, University of Oslo
2013	Course Science communication and journalism at the University of Oslo

2013	Think-tank Tau for new ideas in science communication and science journalism established at the University of Oslo
2013	Norwegian Association of Research Journalists

Table 3 Important events in modern science communication in Sweden

Year	Event
1739	Royal Swedish Academy of Sciences
1811	Royal Swedish Academy of Agriculture and Forestry
1911	<i>Popular Science Review (Populär naturvetenskaplig revy)</i> , first popular science magazine
1930	Radio talks about astronomy, held by Swedish astronomer Knut Lundmark
1937	In Science's Shop (I Vetenskapens värkstad), first popular science radio show
1971	World of Science (Vetenskapens värld), first popular science TV program. In the late 1950s, technological progress was covered in the program Technical Magazine (Tekniskt Magasin)
1972	Swedish Association for Science Journalism (Svenska Föreningen för Vetenskapsjournalistik)
1977	Science communication/public outreach established by law as a third leg mission of institutions of higher education
1977	Swedish Council for Planning and Coordination of Research (Forskningsrådsnämnden, FRN) established with the additional task of organizing on a national basis science communication activities
1983	Popular Science Weeks (Populärvetenskapens Vecka) organized by FRN
1985	Teknorama, Sweden's first science center
1997	Science Festival (Vetenskapsfestivalen) in Gothenburg
1997	Strengthening of the third leg mission of higher education institutions: From "just" informing about research to also interacting with society
1999	Communicating Science, an elective PhD course introduced at the University of Karlstad
2000	The Scientific Media Prize awarded by the Royal Swedish Academy of

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	Engineering Sciences
2001	Swedish Council of Research (Vetenskapsrådet) with additional responsibility for developing science communication on a national basis
2002	Science & Public (Vetenskap & Allmänhet, VA) founded as a non-profit membership organisation to promote dialogue and openness between researchers and the public
2002	Forskning.se, a national web portal for science communication launched with support from the Government
2003	Master in Science Communication, 1-year program, offered at Dalarna University (discontinued in 2007)
2004	Euroscience Open Forum is organized for the first time, taking place in Stockholm, initiated by Swedish researcher Carl Johan Sundberg
2006	Professorship in Public Learning and Understanding of Science established by the University of Gothenburg and Chalmers University of Technology (ends in 2010)
2008	PCST-10, Building Bridges to the Future, takes place in Malmö and Copenhagen
2009	The notion of utility of research introduced in the third leg mission of higher education institutions
2013	Forum for Research Communication (Forum for Forskningskommunikation) established by seven research funding bodies, VA, and Vetenskapsfestivalen

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Column	Norway	Sweden	Denmark
Notable events in science media	<ul style="list-style-type: none"> • 1877 Popular science magazine <i>Naturen</i> (The Nature) • 1960 Popular science TV show <i>Fysikk på Roterammet</i> (Physics in the Rummage Room) 	<ul style="list-style-type: none"> • 1911 <i>Populär naturvetenskaplig revy</i> (Popular Science Review), first popular science magazine • 1931 Popular science radio show <i>Den moderna världsbilden</i> (The modern world view) 	<ul style="list-style-type: none"> • 1854 Popular science magazine <i>Tidsskrift for Populære Fremstillinger af Naturvidenskaberne</i> (Magazine for Popular Expositions of Science) • 1933/1949 Popular science radio shows (1933 popular lecture, 1949 popular show) • 1956 Popular science TV shows
First interactive science centre	<ul style="list-style-type: none"> • 2002 The Science Center for Northern Norway at the University of Tromsø 	<ul style="list-style-type: none"> • 1985 Teknorama 	<ul style="list-style-type: none"> • 1991 Experimentarium
Science writing awards	<ul style="list-style-type: none"> • 1995 Prize for excellent science communication awarded at University of Oslo 	<ul style="list-style-type: none"> • 2000 The Scientific Media Prize awarded by the Royal Swedish Academy of Engineering Sciences 	<ul style="list-style-type: none"> • 1996 Geniuprisen (Prize for excellent science journalism) established by Danish Science Journalists' Association • 2004 Science Communication Prize, established by the Ministry of Science, Technology and Innovation
First science festival	<ul style="list-style-type: none"> • 1995 National science days established by Norwegian Research Council 	<ul style="list-style-type: none"> • 1997 Vetenskapsfestivalen (Science Festival), annual international Science Festival in Gothenburg 	<ul style="list-style-type: none"> • 2005 Festival of Research, organized by the Danish Agency for Science, Technology and Innovation
First significant national government program to support science communication activities	<ul style="list-style-type: none"> • 1995 PROREAL, science communication program established by Norwegian Research Council 	<ul style="list-style-type: none"> • 1977 Forskningsrådsnämnden (FRN) (Swedish Council for Planning and Coordination of Research) (discontinued in 2001 when the Swedish Research Council is formed), organizes on a national basis different science communication activities 	<ul style="list-style-type: none"> • 2006 Danish Lotto funds allocated to science communication: 0.39 per cent of the profit of <i>Danske Spil</i> (Danish Games), owned by the Danish Government. In 2014, DKK 6.7 million or \$ 1.2 million are made available for science communication activities
Formation of national associations for science journalists and/or communicators	<ul style="list-style-type: none"> • 1952 Norwegian Association of Science Journalists • 2013 Norwegian Association of Research Journalists 	<ul style="list-style-type: none"> • 1972 Svenska Föreningen för Vetenskapsjournalistik (Swedish Association for Science Journalism) 	<ul style="list-style-type: none"> • 1949 Danske Videnskabsjournalister (Danish Science Journalists' Association) • 1976 Danske Videnskabsjournalister (Danish Science Journalists' Association). No connection to the association founded in 1949
First courses to train science communicators	<ul style="list-style-type: none"> • 2013 Course Science communication and journalism established at the University of Oslo 	<ul style="list-style-type: none"> • 1999 Communicating Science, an elective PhD course introduced at the University of Karlstad. (The course later became mandatory) 	<ul style="list-style-type: none"> • 2006 Science communication courses start at the Faculties of Science at Aarhus University and the University of Copenhagen (undergraduate and graduate levels)
Founding of National Science Week	<ul style="list-style-type: none"> • 1995 National science days established by Norwegian Research Council 	<ul style="list-style-type: none"> • 1983 Populärvetenskapens Vecka (Popular Science Weeks) organized by FRN 	<ul style="list-style-type: none"> • 2005 Festival of Research, organized by the Danish Agency for Science, Technology and Innovation
Year of graduation of the first PhD in science communication	<ul style="list-style-type: none"> • 2003 PhD in science journalism, Harald Horstmoen, Oslo University College • 2012 PhD in science communication, Rebecca Carver, University of Oslo 	<ul style="list-style-type: none"> • ? 	<ul style="list-style-type: none"> • 2003 Maja Horst, Copenhagen Business School. Title: <i>Controversy and Collectivity. Articulations of social and natural order in mass mediated representations of biotechnology</i>
Important national initiatives, reports on science communication and events that changed the way the area was regarded	<ul style="list-style-type: none"> • 1989 New Act on Universities introduces public communication of science as a third leg mission • 1993 Government report stresses the need for public communication of science and technology 	<ul style="list-style-type: none"> • 1977 Science/public outreach established by law as a third leg mission for institutions of higher education • 1997 Strengthening of the third leg mission of higher education: From "just" informing about research to also interacting with society • 2009 The notion of utility of research is introduced in the third leg mission of higher education institutions. 	<ul style="list-style-type: none"> • 1983 First Consensus Conference (theme: breast cancer) • 2003 Revision of Act on Universities includes for the first time science communication as a third leg mission • 2008 Think tank on science communication with representatives from media, culture, industry, research and education, established by the Ministry of Science, Technology and Innovation

Figure 1 Comparative table with key science communication events in Denmark, Norway, and Sweden

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