

# Toward the sharing of intelligence: historical dynamic and current trends of Public Communication of Science & Technology in Europe

PIERRE-MARIE FAYARD\*

(*Université de Poitiers, France*)

## Resumo

A lógica corporativa e da comunicação pública na Europa Ocidental promove o distanciamento entre pesquisa científica e sociedade. Entretanto, hoje, a comunicação científica e tecnológica não aparece mais como uma atividade restrita e de elite, mas como uma real necessidade de desenvolver e de compartilhar inteligência.

**Palavras-chave:** comunicação científica e tecnológica, comunicação científica na Europa Ocidental, estratégias de comunicação pública

## Resumen

La comunicación científica y tecnológica en Europa Occidental desde los años setenta sustentase en demandas que refuerzan el distanciamiento entre investigación científica y sociedad. Entretanto, hoy, la comunicación científica y tecnológica no es mas una actividad restringida y de élite, pero una real necesidad de desarrollar y repartir inteligencia.

**Palabras-clave:** comunicación científica y tecnológica, estrategias de comunicación pública, comunicación científica en Europa Occidental

## Abstract

Since the seventies in Western Europe, instead of putting the main focus on scientific contents, the practices of Public Communication of Science & Technology (PCST) lean on public demands to choose and to design both topics and strategies. Corporate and communication logics re-inforce that processes between the ivory towers of scientific research and society. By now, PCST in Western Europe doesn't appear anymore as an elite an restricted activity bus as a real necessity of developing and sharing intelligence.

**Keywords:** public communication of science and technology, Western Europe communication, communication strategies

\* Author of various books and articles about PCST and comparative analyses on science journalism in Europe, Pierre-Marie Fayard found the PCST International Network in 1989 that will hold its fourth international conference in Melbourne next november after Poitiers (1989), Madrid (1991) and Montreal (1993).

# GLOBAL FRAMEWORK FOR THE RELATIONSHIP BETWEEN SCIENCE AND SOCIETY

## The historical project of popularisation

Since sciences and technology are acting as major forces for change and progress for Humanity, the *political project* of popularisation aims at making understandable and accessible to the general public, the specialists' knowledges. Since the *Siècle des Lumières* the scientific disciplines have largely deepened the respective amounts of knowledge they concentrate. Various new, inter and sub-disciplines have appeared. Though the global level of education of the public have largely increased, the gap between sciences and the rest of society is still continuously growing. Experts and expertises each time appear as more specialised and more concentrated on specific and narrow areas. Moreover, the language the scientists have shared in the past centuries doesn't exist anymore. Consequently the gap between the everyday life languages and the scientific ones is becoming wider and wider. Up to experts themselves have difficulties to communicate between them because the growing specialisations of their own disciplines.

The imbalance it brings, is worsening because science and technology deeply affect ways of living, of working, of travelling, and up to having relations between us (...). A central issue aims to fill the gap between science & technology progress on one side and culture and society on the other side. But communication remains uneasy. The crescent specialisation process in scientific disciplines generates the creation of a multitude of new languages, that are both close and specific to each new distinctive discipline. As a result, sciences are becoming each day more unknown and strange to general public. On the other end, social and cultural concerns seem each day farer from the scientists' preoccupations. By now, ninety per cent of the scientists Humanity has produced, is now alive! What's more, the higher international competitions and the interferences they have with economic and political issues, combined with the acceleration of scientific and technological discoveries, broaden once more the gap between science and society. A two ways communication appears as a necessity: from science to society i.e. the general public and from cultural concerns to scientific institutions.

## Growing specialisation acts against community

The *Siècle des Lumières* produced the first huge enterprise of popularisation the world had ever known before. Using printing, i.e. the very new technology of communication of the time, the *Encyclopédie* of Diderot and d'Alembert appeared as a great campaign that put together all the knowledges of the "philosophers" of the time. It's interesting to remind that the use of the word "scientist" became usual only recently. To make

them accessible to the non-specialists, the *Encyclopédie* has concentrated the knowledge and know-how of Humanity using a "multidisciplinary" approach. It was a very collective enterprise. Each expert gave a contribution related to his own field of expertise. With that monument, the *honnête homme* of this century had access in a common language (French instead of Latin) to all what human beings knew in that time in Europe. Various centuries after, even if the capacities of the informatic memories could allow it, it's impossible to imagine the possibility of the existence of this kind of predecessor of the encyclopedists: Pic de la Mirandole! Moreover, data don't mean knowledge... and the gap between the enterprises that produce knowledge and the global society is going on and on!

In this end of the XXe century, the profusion of huge, small and complex scientific ivory towers, with their own specific languages is spreading all over the Planet using the international high tech systems of communication. Doing so, the very experts of each sharp field of scientific investigation could meet and gather on a global scale. So they are spending more "cybertime" together, than for exchanges with their other colleagues and fellow citizens. Globalisation gives more possibilities to specialisations, and liberates them from their geographical dependences! As a result, the multiplication of tiny but *homogeneous* communities set up on global scales, strikes against the geographical communities composed by *heterogeneous* components. One may say that a chinese high energy physicist might have more time and concerns in common with a swiss high energy physicist than with the neighboring grocer who is living round the corner of his block of buildings! Globalisation gathers at international level the very few experts of each tiny field, and separates them from their local communities. Finally, globalisation acts against national, regional and local community feelings, even if the perception of world-wide concerns are growing by now.

## Linked evolutions between scientific institutionalisation and popularisation forms. What's new in the communication era?

Looking at the history of the structuration of scientific communities, one can note that each qualitative and/or quantitative change in the field has been accompanied by some innovations in PCST forms. Let's just mention an example. Before last World War II, the creation of the C.N.R.S. - Centre National de la Recherche Scientifique sets free the French scientists *from any teaching obligations*. But the very ones who were at the origin of that decision acted also in favour of the creation of the *Palais de la Découverte* "for the people of Paris", they used to say. This qualitative step in scientific activity was accompanied by the creation of something able to fill the gap between "lay people" and the brand new full time researchers! Anyone could feel the dimensions of the nowadays challenge to "communautarize" sciences and technologies understanding.

This parallel evolution is reinforced by the characteristics of the communication era in which we've entered. To make a long story short,

the communication logics globally act in favour of the development of PCST. Incentives are appearing under various aspects and directions. According to an external scale, some managers of scientific organizations have perfectly understood all the advantages they could take from public communication campaigns (...). On an internal scale, they've learned that corporate and organizational communication could stimulate the scientists' activities. They are becoming aware of the necessity of filling the gap between science and society for a set of excellent reasons. Among them, one can list the importance of making science popular to the public and above all for younger generations.

In an each day more scientific and technological era, the needs for PCST are not just limited to the general public. They also concern the policy and decision makers. Because of the necessity of the two ways communication practices above, the dialogue between science and culture may summarize the historical and political objective of popularisation, in order to "re-create" and to maintain the link between specialisation and community.

## II

### POLITICAL OBJECTIVES & STRATEGIC ISSUES FOR COMMUNICATING SCIENCE TO THE PUBLIC

#### Good intentions don't lead automatically to success. Strategic issues for communicating science to the public

Though communicating science to the public is rather an old story in the European cultural patchwork (SCHIELE, 1994), to be convinced of the necessity doesn't mean automatically: efficiency. The way, methods, media and resources are employed i.e. the chosen strategy of public communication might always provoke perverse effects in the general public's attitudes (FAYARD, 1988). Instead of bridging the gap between science and society, between experts and non-specialists, it could stress the importance of the differences that do exist between scientists and lay people! In order to achieve the political project of communicating science to the public, bad popularisation could even be worse than no popularisation at all. The celebration of the efficiency of the experts could stress the depth of the gap between scientists and non-specialists.

One has to remember that for the larger parts of society, science and technology sound as hard matters to get. For a large amount of people, science might remember them scholar failures or at least insuperable difficulties. That's because most of the time, direct public communication strategies have to be avoided in order not to scare lay people, and take them away from popularisation performances (FAYARD, 1992). It's quite impossible to *convince* the general public to PCST campaigns. In communicating science and technology to the public, the central issue doesn't consist in having dialogue with people convinced of the importance

of science or with pre-interested people in these matters. The political objective of popularisation of science is to reach people who haven't spontaneously neither the possibilities nor the desires of having science communication within arm's reach! For this larger part of the general public, specific strategies of communication had been developed since the seventies in Europe.

Communicating science and technology to the public is not an easy game to play. When an expert talks to another expert who share with him the same field of expertise, he can make references to experimentations whose feasibility or unfeasibility the latter could imagine, using this knowledge. The *proof by the experimentation* always remains as a possibility between them (BACHELARD, 1967). But when the same expert (or a populariser) is talking to non-specialist audiences, they can't rely on any common scientific experimentation to validate what the expert is explaining to them. Therefore they only may *trust* or *distrust* the expert's talks. That is the reason why amounts of scientific and technical signs and instruments are shown as a proof in popularisation product or events, to take place the demonstration! (ALLEMAND, 1983)

## The spread of indirect approach in communicating science to the public, in the seventies

In the early seventies, a ferocious critic of the direct strategy of traditional popularisation took place in Europe, denouncing its lack of efficiency in reaching the political objective mentioned above. The question was how popularisation of science could reach the similar objective as scientific research does for the scientists? (ROQUEPLO, 1974) Science makes understandable facts and reality and could make possible action and transformation of the surrounding world. So has to do popularisation of science, said the promoters of new ways and methods for PCST in these early seventies!

To solve the problem of the absence of references, the strategy consisted in choosing everyday life situations in order to meet the public on the basis of its own interest and needs for information. Instead of giving the main focus on scientific contents, the new ways to communicate to the public chose to put the emphasis first on the *relation* between popularisers and the general public, and then only on useful scientific contents. No longer, the popularisation process used to start its operations from pre-existent scientific contents. New methods initiated the operations from questions that did exist in the everyday in order to *root* PCST in the receptive compost of people's curiosity. Thus, the main tasks were to identify real and public questions instead of transmitting messages.

One central rule of communication itself emerged: the efficiency of any communication is measurable at reception! Leaving direct communicating strategic models focused on high density scientific contents and short term will, the breakthrough consists in diluting *light* contents in

*real* everyday life situations. This kind of invisible approach avoided the spontaneous resistances and/or run away of lay people when they came to identify such words as science or technology. It avoided to generate public fears such as to be out as ignorants. This first time of the renovation of popularisation of science in Europe filled partly the gap between science and society. No longer promoting an absolute image of science, it made it more human and so, less unfamiliar to the public.

## Top-down & bottom-up approaches:

### Current array of methods & medias for PCST in Western Europe

In terms of methods, one might make a schematic distinction between top-down and bottom-up approaches for communicating science and technology to the public. The first one appears as an unidirectional way of acting where the specialists determine alone what should be told to the non-specialists, and what the latter have to know. The purpose aims to disseminate scientific and technological contents from specialised areas to non-specialised ones. This is the traditional "one way process" of popularisation. By now, public relations strategies of scientific institutions or universities are proceeding in that way. The previous paragraph has shown that mainly in the seventies, PCST has changed of perspective: putting the focus on non-specialised needs for scientific and/or technological information. Doing so, it has promoted bottom-up approaches, and it has imagined new methods of communication.

Even using non-interactive media, promoters of PCST are previously taking into account the public perceptions and concerns about science and technology. On the other hand and by their very nature, the interactive media actually give more space to debate and interactions between those who are specialised and those who aren't. TV and radio programmes could include that dimension. Because of the current importance of communication, even non-interactive media are by now seeking to integrate the feed-back of the audiences' perceptions and reactions, in order to better their products and methods. One hasn't to forget the weight of the mass-media economic logic. A media without enough audience, or with an audience on the decline, would be affected by funding problems... So, studies and surveys about the efficiency of non-interactive PCST programmes on the public are on the increase. Before conceiving a S&T programme, it's very useful to be informed on the public expectancies and concerns about science and technology.

### Focus on communication

The re-creation of links between non-specialised people and experts appeared as a double taming process for both category of actors (LÉVY-LEBLOND, 1986). The latter learned about social and cultural concerns and the general public about scientific methodologies, issues and progress. During the eighties, new forms of PCST have emerged. Above all, institutions and political officials became aware of the importance of the issue. One hasn't to forget the high influence of communication in this process that underlined that science and technology can't go further only governed by their own logics. For that reason science and technology from one side and culture for another, met together in "neutral" fields i.e. third areas that do allow the expression of the concerns of each partner. That kind of fields is the one of communication which is playing a central role in modern societies (MIÈGE, 1989).

A specific shift occurred in the eighties in PCST in Europe as regard to the way popularisation was considered before. By now, the theoretical issues of popularisation don't represent anymore the main concerns. Does popularisation translate or does it betray real science? This kind of questions meant that scientists were leading in the debate about popularisation. The militant viewpoint of the seventies that aimed to choose the topics for scientific communication to the public mainly on the basis of social and political concerns also decreases in the eighties. Though professional mediators are the ones that play a major role in modern forms of popularisation, they are dealing with the implication of people in charge of scientific institutions (public relations logics), scientists (communication logics) and communication experts (mass media logics). To materialize their goals, all these actors prefer the use of indirect strategic communication methods, that avoid to scare and to move away the non specialists from the public communication campaigns they organise.

### End results of PCST: "editorial logics" dominates "flow logic"

As regards as products and methods for PCST by now, some main trends are coming out all around the European Western countries. Printed material appears as the major way for communicating science to the public. Its reliability provides long life and seriousness to the messages. This kind of medium also stresses the need of qualitative efforts in redacting the messages with close collaboration with scientists. The growing role of documentation and dissemination services seems to be moved by a similar logic. With the development of the so called information society, one may easily imagine that documentation services will be a creative area to produce new ways and methods for communicating science to the general public and to decision makers.

Globally in Europe (with an exception for U.K.), broadcasting doesn't play a major role in PCST. The "editorial logic", which is the one of the cinema and the literature, dominates the "flow logic" that rules television (TV journals and series, soap operas, telenovelas). Flow logic of broadcasting remains peripheral in communication science to the public in Europe. The production of series with a same pattern behind each sequence, elaborated with the same "software" isn't dominant. Scientific films and documentaries are mainly processed like printed materials: *one* major work, *one* unique story, *one* realisation. They also aim to reach the same characteristics: long term and reliable information through single events. This doesn't mean that scientific TV programmes are not serious nor reliable. But in that area, and because of economic concerns, the structuration of the contents is governed by the mass-media flow logics that first aims to keep the public stucked to the screen. In European PCST the main custom still be the production of *individual* programmes more than series.

From a prospective viewpoint, the combined effect of the growing needs for regular S&T information services and the spread of the information highways and individual multimedia stations, might reinforce the flow logic. Both decision takers and policy makers, and broadlier the multipliers of ideas will have to seek for high quality, fitted and *on line* scientific and technical knowledge and data. But one might also imagine that apart these categories of "organised" audiences, the very general public and the individuals would also seek for those ways of being in touch with scientific information. European PCST that isn't by now ruled by a large mass-media logic, will certainly move towards a new cocktail of "*few* media (GOLDSMITH, 1986) and flow logic"... on request!

## Small scale events and "double step flow" to reach efficiency

Communication rules seem to be leading new forms of popularisation of science in Europe. Consequently, one main focus relies on reception. The efficiency of PCST has to be evaluated at the reception level, and therefore the previous analyse of the receptive audience appear as a beforehand necessity. It's easier to address PCST to small and more homogeneous audiences than large and heterogeneous ones wich have too many diverse representations and concerns. In Europe, PCST campaigns are keen to be dedicated to organised audiences. Multipliers of ideas and young people (that represents the first target group for PCST) could be poured in this category, the latter because of the usual scholar framework of its participation in PCST programmes.

Because science communication to the public remains an uneasy game to play, the organisations in charge of it, use a "double step flow" strategy. That's the reason why multipliers of ideas and opinion leaders represent important target groups for PCST. That could appear as a surprise because theoreicaly popularisation is supposed to dedicate its activities mainly to the wide and general public! That's the very sense of the political project

of popularisation. In Europe, the wide and general public is both reached directly as well as using professional intermediaries that provide efficiency because of their professional skills, and the knowledge they have of their own target audiences. Journalists and media belong to this intermediary area that makes possible the use of the double step flow strategy.

## 4

### TWO DIMENSIONS FOR PCST

#### Bridge the past, to the present: Museum activities. The weight of European science

In Europe, the efforts to re-build social and cultural links between science and technology from one side and the general public on the other, do exist not just in "space" like this article has shown above, but also in "time". In the present space, the PCST issues consist in making possible the relationship between heterogeneous categories of people (diverse experts and general public) that share the same geographical areas like towns, regions, nations or Europe itself. In *time*, the PCST issues include a double direction: from the past to the present, and surprisingly from the future *to* the present.

The classical science museums belong to the first direction effort. They present testimonies of the past and explain the history of scientific revolutions, the development of technologies and the relations they had with the evolution of societies. Museums are seeking to make understandable these scientific discoveries, machines, tools and technologies to the general public. But this working activity with the memory can't be restricted to the spectacle of amazing products. What makes *sense* remains the link between what actually did people who lived before us and our everyday life. Museums' exhibitions aim to draw the tracks and the constraints of these people on our current ways of living, of working, of travelling and so on. Once more they stress the existence of community feelings across the centuries. In science and technology, strong European historical community and common feelings do exist, and represent a very appropriate "cultural compost" for PCST.

#### Bringing the future to the present: the prospective dimension of PCST

The second dimension of PCST, time, refers to prospective i.e. from the future to the present! *Intelligence* in the British acceptance could summarize this effort. It forms the background of such an aspect, meaning specific and strategic treatment of data and information in order to make possible the adaptation of society to the challenges and the realities that are coming... from the future. The adaptation which intelligence hints, could be seen as global and particular i.e. cultural and social, but also

technological and industrial. In the first direction (from the past to the present) PCST aims to create and to share awareness and to provide some kind of cognitive coherence between what has occurred in the past and what is existing currently. In the second dimension, from future to present, the aim is to provide knowledge for facing what the future is bringing, and thus taking advantage of new possible opportunities.

The importance given to policy makers and decision takers as relevant target groups for PCST, shows that it is seeking to enlighten the decision taking processes of these persons. Thus technological assessment and popularisation of scientific issues on current matters are in fact part of PCST. The services to members of parliament and multipliers of ideas as well as all the documentation and dissemination services that are emerging by now, aim to realize this specific function of enlightenment. The new step in the current communication era, supported also by on line networks, stresses the importance of information *for all* and not just for few fortunated in charge of important management tasks. PCST plays a major role in the present democratisation of knowledge but no longer just as peripheral and self-willed activity. In fact, it is standing out as a growing strategic and economic necessity.

## Conclusion

### TOWARDS SHARED INTELLIGENCE

To conclude, PCST in Europe appears as an increasing concern and activity which has moved from the confines of the exclusive theoretical approaches of traditional popularisation. More scientific institutions and research centres include this new dimension in their activities. Indirect communication strategies were ruling the field in the seventies and early eighties with a specific preference for small scale events and double step flow processes. With this growing implication of institutions in the field, pushing logics aim, by now, to take the lead. Because of the very little amount of available interactive media and bottom-up approaches, the risk might be to stick to an exclusive public relation policy. This top-down approach would mean a step behind.

Nevertheless, in Europe S&T communication to the public is no longer a peripheral activity but a kind of strategic necessity supported by a lot of organisations involved in S&T fundings and scientific findings. Because of the increasing and faster development of science and technology, it's still a growing imperative to bridge the gap between them and society. The only way to achieve that goal leans on bi-directional communication and debate, and on the development of the awareness of S&T actors about the democratic issues and concerns science and technology breed.

The political and strategic necessity of public communication on science and technology is reinforced by the current globalisation that provokes geographical "new deals" but also dangerous dislocations. More than ever before, specialised people are escaping from their own

geographical grounds, because of the facilities they have to be connected world-wide with other specialists. Geographical community feelings could be on the decrease, and the gap between specialists and non-specialists could be broader till dangerous levels... To rebuild community feelings between experts and the general public, the political project of popularisation isn't worthless.

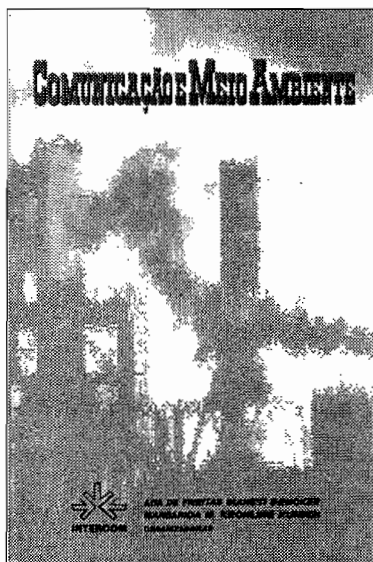
To make a long story short, the new compass for communicating science to the public might be called "shared intelligence" (FAYARD & CARBOU, 1995). The needs to understand the past and the present, and to take advantage from what the future might bring, are increasing in a world full of doubts. Though the written material remains the first vehicle for communicating science to the public, the spread of specific services will be reinforced by the features of the information society. One can bet on that direction to provide new services for the public. From the past to nowadays, PCST always has sought to share knowledge to make understandable the world around, and to provide efficiency in action and not just in representations. The new challenge for PCST isn't just to share data and S&T contents, but also to gather and push forwards the collective intelligence of the heterogeneous components of societies.

## Bibliography

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- ALLEMAND, Etienne. (1983). *L'information scientifique à la télévision*. Paris: Anthropos.
- BACHELARD, Gaston. (1967). *La formation de l'esprit scientifique*. Paris: Vrin.
- FAYARD, Pierre. (1988). *La communication publique des sciences: de la vulgarisation à la médiatisation*. Lyon: La Chronique Sociale.
- FAYARD, Pierre. (1990). *La culture scientifique: enjeux et moyens*. Paris: La Documentation Française.
- FAYARD, Pierre, textes choisis par. (1992). "But were are the cossaks, on popularisation and strategy". *International Journal of Education*, London.
- FAYARD, Pierre (1993). *Sciences aux quotidiens: l'information scientifique dans la presse quotidienne européenne*. Nice: Z'Éditions.
- FAYARD, Pierre & CARBOU, Delphine. (1995). *Fusion chaude: innovation en communication publique des sciences*. Poitiers: Ed. de l'Actualité.
- GOLDSMITH, Maurice. (1986). *Science critic*. London: Routledge & Kegan Paul.
- LEVY-LEBLOND, Jean-Marc. (1986). *Mettre la science en culture*. Nice: Anais.
- MÎÈGE, Bernard. (1989). *La société conquise par la communication*. PUG.
- ROQUEPLO, Philippe. (1974). *Le partage du savoir: science, culture, vulgarisation*. Paris: Le Seuil.
- SCHIELE, Bernard, sous la direction de. (1994). *When science becomes culture*. Montréal: Multimondes.

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