

## Focus

# Towards a “Mediterranean model” of science communication

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Can (and should) there be a “Mediterranean model” of science communication?

For those of us who work in the field of science communication in a country which is on the Mediterranean Sea, this has always been a question that spontaneously leaps to mind. This is because we “feel” there is something intangible in our way of communicating science that is rather similar to the way of a French, Spanish (or even Brazilian) colleague of ours, whereas it is slightly different from that of an American or British one.

And yet, the more in depth this question is studied in time, the more complex the answer becomes. This is due to the fact that beneath the surface of this apparently naive question of ours, there lie many deep-rooted and persistent problems. These problems concern the meaning of “model”, the existence of models in man’s cultural evolution, the existence of communication models as well as the existence of models in the development of science and in science communication. Finally, they concern the possibility that there exist a space, namely the Mediterranean basin, where the knowledge produced is so uniform and characteristic that this region should be considered able to put forward specific cultural models.

The issues raised are such and so many that they cannot be addressed in sufficient detail in this article. Perhaps, they cannot be answered by a single person, either. But, despite the fact that these issues are being examined more and more in-depth in time, our naive question still comes to mind, and our primitive feeling will not go away.

This is why we feel we should outline, to ourselves and to our readers, if not “the answer”, at least a path in the “search for an answer”. Of course, only a bare outline of such a path can be traced here. Our hope is that our readers will find this unsophisticated overview challenging enough to motivate a more thorough debate on each and every one of the above-mentioned questions, as well as other questions that will probably ensue from such a debate.

### 1. The Mediterranean space

The Mediterranean Sea is a sea of cultural as well as political, economic and social contradictions. These contradictions are intense and often invigorating. In the course of their history, the civilisations that flourished around this closed sea, which nonetheless lies open to the Atlantic Ocean, have actually produced the most varied cultures (as well as economies and social organisations): some were tolerant, while others authoritarian; some were progressive, while others conservative; some of them were rational, while others irrational. It was on the Mediterranean shores where democracy was born and tyranny was conceived, where philosophy was invented and libraries were set on fire, where there have been religious conflicts and the concept of human rights developed, where Galileo lived and where he was put on trial.

Therefore, those who claim it is not possible to identify either in the general history of culture, or in the history of scientific culture a “Mediterranean model” are right. There is no such model, at least not in the sense of a single, systematic way of thinking which developed in a linear and coherent manner.

However, the fact that Western civilisation was born around the Mediterranean Sea is indisputable; as is the fact that (Hellenistic, Arabic-Islamic and European) science appeared, time and time again, solely on the shores of this sea.

It follows that, despite its numerous contradictions, the Mediterranean Sea has a certain number of specific cultural characteristics of its own.

## 2. On the evolution of human culture

One of the characteristics which distinguish the biological evolution of *Homo sapiens* is the fact that, despite being scattered throughout the planet, the groups of these particular mammals have always been in contact and produced offspring. So much so that we can speak of a species that is not divided into distinct races.<sup>1</sup>

From the point of view of cultural evolution, things stand more or less in the same way. The various groups that were gradually created have never stopped having mutual, cultural contacts. But, despite the fact that there have been no definite historical or geographical gaps between the various civilisations, and there has always been a cultural osmosis (which was continuous at times), it is possible to identify distinctive traits in each one of them. It is possible to distinguish rather clearly the Aztec civilisation from the Chinese one, and the latter from the Roman civilisation. It is possible to speak of cultural diversity.

## 3. On the definition of a Mediterranean cultural model

The concept of model can have different meanings, not only when it is used in different branches of knowledge, but also within the same field of knowledge (for instance, in cultural anthropology). Many experts on human cultures (for instance, experts on Gestalt theory) believe that the concept of model can be determined with sufficient thoroughness and they use such a concept to represent the essential and distinctive issues which make up the core of a certain culture.

If this is true, then there may be distinctive issues which are characteristic of different cultures and, therefore, can be determined as intercultural models. In the Mediterranean basin, such common issues do exist and their number is conspicuous. Therefore, it is possible to find a model connecting the various civilisations that have appeared around this sea, a model which remains more or less the same even after going through profound changes. In this sense, it is possible to speak of a Mediterranean model. In other words, in the tangle of Mediterranean contradictions, it is possible to observe a certain group of characteristics constituting a model. It is possible to see a thin and often torn membrane which somehow keeps these intense contradictions together and sometimes helps invigorate culture.

## 4. The Mediterranean model in science

In the field of science, this fragile membrane occasionally presents a network of nerves<sup>2</sup> that we shall try to identify. We shall call these nerves, *à la Kant*, “ideals” in order to distinguish them from scientific ideas that, on the contrary, tend to be universal.<sup>3</sup>

According to Kant, scientific ideas have a constitutive function and are universal unless there is evidence to the contrary. They describe reality or how reality can be represented on the basis of a systematic series of formal, abstract concepts (theory) and their empirical verification (experiment). They are accepted or rejected after being examined by means of logical, deductive reasoning and the above-mentioned verification of the experiments and/or observations. Some scientific ideas are Newton's universal law of gravitation, Einstein's theory of general relativity, the Big Bang model of cosmology and the neo-Darwinian synthesis in biology. Quantum mechanics, with all the ensuing problems concerning its philosophical interpretation, is obviously a constitutive scientific idea as well.

On the contrary, scientific ideals have a regulative function and point out the objectives to be pursued in science, or rather for scientists, and, for some time now, for all those who take part in the making of

decisions which affect the progress of scientific activity. Scientific ideas are explanations. Scientific ideals are aspirations; visions of the world; metaphysical prejudices. Therefore, they are not universal, but rather they are subjective. And, contrary to Kant’s views, they change in time. Some widespread scientific ideals have been and, in some cases, still are: homogeneity (the uniform and coherent vision of nature), mathematisation (the image of nature’s book written in mathematical language) and mechanicism (the image of the universe as a great Meccano model). Another scientific ideal is the realism pursued, in partially different ways, by physicists such as Albert Einstein, Paul Dirac and John Bell when each one of them pointed out in his own manner the need to reconsider the role of the observer and of measurement in quantum mechanics.

Scientific ideas as such do not belong to any ideal. And no ideal can claim the exclusive authorship of scientific ideas. Both the physicist who holds a pragmatist view of the world, and the one who supports a sophisticated realist model believe and are able to demonstrate that  $E = mc^2$ . Of course, unless there is evidence to the contrary.

A more or less coherent set of scientific ideals forms a model; or a vision of the world; and a model is able to greatly channel research and foster certain scientific ideas rather than others. This statement does not imply in any way a subjective view of scientific activity on condition that the following are demonstrated:

- a) The history of scientific ideas conforms to rational principles (as well). Because, if this were not the case, every rational attempt to channel scientific ideas would be made in vain;
- b) Scientific ideals and their metaphysical nature can definitely channel scientific research.

However, it would probably be better to analyse the above statements in a future article.

For the time being, let’s limit ourselves to the fact that it is possible to identify a set of scientific ideals which constitute a Mediterranean model; and among them there definitely is the ideal of universalism, that is scientific ideas are discussed and evaluated on the basis of their intrinsic value without taking into consideration the sex, religion, nationality or ethnic background of their author.

Another ideal fitting into the Mediterranean model is communalism, that is all the results obtained must be made publicly available for two reasons: so that they can be reviewed and, moreover, so as to contribute to the cultural development (and not just cultural development alone) of the entire human race.

Of course, these ideals represent most of the global scientific community. So much so that they are fundamental characteristics of the Republic of Science.<sup>4</sup> Consequently, it could be objected that what we are trying to present as the Mediterranean model is the “scientific model” itself.

In fact, these two fundamental ideals of modern scientific activity are absolutely not to be taken for granted, not even within the scientific community. Such ideals have to be revived and reacquired continuously; and the process of reacquiring them is absolutely not to be taken for granted either.<sup>5</sup>

However, there exist typically Mediterranean scientific ideals, which contribute to determining a distinct Mediterranean model (though not necessarily in contrast with other models) within the more general scientific model.

A few such ideals are probably: searching for unity in knowledge; acknowledging the intrinsic value of knowledge, regardless of its immediate practical usefulness; concentrating closely on the fundamental issues of science; being extremely careful of the things in common between different disciplines, where the latter are distinct fields of knowledge that are connected between them and by unitary culture; respecting history; holding a cultural rather than technological view of scientific activity (technology is a means to knowledge and technological innovations are the result, rather than the aim of new knowledge); knowing that all cultural achievements, including science, can “become obsolete” (something that has already taken place in scientific culture) and have to be continuously reacquired.

## 5. The Mediterranean model of science communication

If we admit the existence of such Mediterranean ideals, then, there also exists a “Mediterranean model of science communication” which has disseminated them in the past and still does today. A model that should be further explained, obviously not in order to render it normative (fortunately, such an attempt

would fail in any case), but in order to be able to study it more thoroughly and, by so doing, at least to contribute to the continuous reacquiring of scientific culture in our society.

This Mediterranean model of science communication is based precisely on the scientific ideals it disseminates. Therefore, its principal characteristics are at least four: interdisciplinary character, the acknowledgement of the intrinsic value of knowledge, respect for history and multimodality.

- When the Mediterranean science communicator addresses both his/her peers and members of different scientific communities or cultures, s/he tends to “cross the boundaries” of the discipline in question and, in a way, s/he crosses the boundaries of science to enhance the points in common between different scientific disciplines and, what is more important, between different fields of knowledge. This communicative tendency has an advantage and a risk, both rather clear. The advantage is that it helps to “comprehend”, that is to keep the entire human cultural system together and, by so doing, to better understand the evolution of science, the scientific way of thinking, the relation between science and other fields of knowledge, as well as the relation between science and society. The risk is the loss of scientific rigour. It is not a trivial risk because scientific rigour is not just a psychological need of scientists. It is an integral part of scientific culture. Losing the sense of scientific rigour equals losing the sense of scientific activity and betraying the complexity of relations between different disciplines, the same complexity that was intended to be highlighted in the first place;
- The Mediterranean communicator tends to acknowledge the intrinsic value of culture and, thus, of scientific culture, in addition to acknowledging its practical value. This tendency also has an aesthetic side: the Mediterranean communicator tends to show and convey great enthusiasm before a scientific theory or a successful experiment, regardless of its practical usefulness. But this tendency is not only about aesthetics, important as this may be. This tendency is actively involved in the dynamics of science. This is so because another vision has always been in contrast with the Mediterranean vision: it is the pragmatic vision, which takes into consideration only the concrete results of science. The conflict between these two visions is rather old and, incidentally, it took place on the Mediterranean shores, too. However, it is of extreme importance because when the pragmatic vision triumphs over the Mediterranean vision, science tends to be forgotten.<sup>6</sup> At present, the conflict between the Mediterranean vision (acknowledgement of both the practical and the intrinsic value of science) and the utilitarian vision (acknowledgement of its practical value alone) has entered a new, more acute stage because of the massive introduction of private capital and of market logic in scientific activity. Private businesses tend, absolutely legitimately, to finance scientific research which bears fruit immediately. The logic of the market, which concerns a growing number of scientific institutions in many countries (state ones, as well), is by definition a utilitarian logic. The growing presence of private capital and market logic attract funds for scientific research, but they risk marginalising research which is based on plain curiosity and whose ultimate aim is to acquire pure knowledge. In the long run, this marginalisation brings about the risks we have mentioned. Therefore, it is important that a Mediterranean vision also exists, along with communicators who are able to convey it;
- An integral part of this view of communication is respect for history. This means knowing that scientific activity can appear, develop and die, as well. Moreover, it means knowing that there are complex, fortuitous factors which influence (in a way that is hardly ever linear and predictable beforehand) the birth, development and death of scientific activity;
- Mediterranean ideals admit a complex relation between science and culture, and science and the entire human society. A close relation, with mutual interference between unequal, ever-changing partners. It follows that substantial communication of the Mediterranean ideals is also complex. This is because it involves different ways of communicating between different subjects who, sometimes explicitly, but more often in a less evident manner, contribute to creating substantial scientific culture and to building the individual and collective “scientific vision of the world”.

At first sight, we can say that there are two direct consequences of the Mediterranean vision of substantial science communication.

The first consequence is that substantial communication does not just imply conveying scientific “ideas” in a linear, top-down approach, from the expert to the layman but it also means conveying

scientific “ideals”; a mission which is just as necessary and important. This mission is accomplished through a communicative flow made up of a giant network of channels which connect (usually in both directions) the most disparate social groups, each of which holds and communicates its own scientific “ideals”. In the first case, the scientific community is the source of the communicative flow. In the second case, it is just one of the actors involved, even though it is always a leading actor.

The second consequence is that the Mediterranean model of science communication is not a normative model, because it cannot be one. There are no hard and fast rules; there are no guidelines to follow. The world of science communication is so big and varied, the “noise” is so frequent and effective that hardly any action can have an effect in a linear way, predictable beforehand. The evolution of the system of science communication, just as the evolution of every social and biological system, can be understood afterwards, but cannot be predicted beforehand.

This does not mean that it is not possible or desirable to channel the processes of communication in a certain direction wherever possible. The quality of communication is a common interest of (almost) all the actors in science communication; and the overall quality of the system of science communication can be improved by improving communication quality in each and every channel of the system, using the most suitable communicative methods for each of them.

## 6. (Provisional) conclusions

At this point we can try to answer the question at the beginning of this article. There is and there should be a Mediterranean model of science communication. It is already an active model within the Mediterranean basin and outside Mediterranean basin. It is, within the Mediterranean basin and outside the Mediterranean basin, in competition with other communicative models.

Nonetheless it is a relatively unknown model as yet. We have identified some of its basic characteristics, but we ignore its details.

We repeat that our proposal is precisely to concentrate efforts in order to acquire knowledge by examining more in-depth each and every one of the points outlined in this article, along with others which we have forgotten to mention. This is because this analysis is important not only for the future of us, communicators, but also the future of scientists and, last but not least, the future of a good part of the quality of our democracy.

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## Notes and References

<sup>1</sup> Luigi Luca Cavalli-Sforza, Paolo Menozzi, Alberto Piazza, *The History and Geography of Human Genes*, Princeton University Press, Princeton, 1994.

<sup>2</sup> *Il Modello Mediterraneo*, Cuen, Naples, 2000.

<sup>3</sup> Pietro Greco, *Ideali scientifici mediterranei in Il Modello Mediterraneo*, cit.

<sup>4</sup> Paolo Rossi, *La nascita della scienza in Europa*, Laterza, Rome, 1997.

<sup>5</sup> John Ziman, *Real Science*, Cambridge University Press, Cambridge, 2000.

<sup>6</sup> Lucio Russo, *La rivoluzione dimenticata*, Feltrinelli, Milan, 2001.