

SCWS2014

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Ladies and Gentlemen, dear Colleagues,

It is a great pleasure and an honor for me to have been invited to share with you a few reflections on the very important themes of your congress.

As you know, many in the academia are active in the popularization of science and technologies to the general public, and especially to the youth.

Myself, I have been active in this field since numerous years, at different levels, in the collaboration with Science centers, through the participation to events and exhibitions, by giving numerous talks in schools or interviews in the press.

Science popularization is important for the economic and social development because of the major role played by science and innovation in our societies and the need of social support for securing the necessary resources, and also – and this aspect is crucial – for attracting talented and highly motivated students to science and technologies.

For individual scientists and researchers, their involvement in popularization is, no doubt, rooted in their passion for research – and they love sharing this passion, propagating their enthusiasm.

There exists also a deep democratic basis to this enthusiasm of sharing scientific knowledge. Since our societies are shaped by science and technology, it is vital that the citizens be active proponents of the major societal choices.

Not that everyone should acquire an expert view of scientific or technical problems – this is of course impossible, and it is also irrelevant.

But every citizen should be put in a position to influence on the great choices, by being informed on the pros and the contras, the risks and the alternatives.

It is the task and the duty of the experts to inform the citizens about these alternatives.

And then leave the citizens make their choice, on a same footing, the opinion of the Nobel Prize being of same value as that of the layman.

But – and here is the important role of science popularization – it is clear that some familiarity with science can only help the citizens to call out the experts and forge their opinion.

As a matter of fact, science and democracy have a long common history.

They were born together, 25 centuries ago, on the shores of the Aegean Sea: democratic discussions in the Greek cities shaped the place of rational discussions that are at the basis of science, and rational argumentation in science conversely propagated to political discussions in the city.

At the dawn of modern science, Galileo Galilei fought three big fights;

- he destroyed the old Aristotelian sky and cosmology, with the help of the telescope, the first modern scientific instrument;

- he built a new way of questioning the world, through experimentation, by inventing the laboratory, and stressing the role of mathematics and measurement;

- and he fought an heroic fight for the freedom of research.

Of Galileo's inheritance, the last one is certainly not the least.

Through the rejection of the Authorities, through the freedom of research, through the time of the Enlightenment, modern science has prepared the way for modern democratic societies.

When we communicate about science, we should not communicate only on its far results, on objects and artefacts that originated in scientific and technological developments – whatever their immense importance to shape our world.

It is of crucial importance that we also communicate on the approach, on the process, on the human reality of science.

Because science is by essence a human activity – certainly not a cold, mechanical, human-less process.

I think we should show how science works, what is the real life of scientists and researchers – and this is in fact what many ask us. It is striking, when visiting schools, when giving public talks, how much the youth and the general public wish not only to understand science, but also to communicate with researchers themselves, on their lives and dreams.

I think we must stress that science requires creativity, invention, fantasy – and also rigor and hard work.

We must stress that progress in science relies on individuals – and that science is also a collective adventure.

We must stress that the greatest advances in science came out of free research, were based on disinterested curiosity – opening the way for numberless technological applications.

Finally, I think we must stress that research gives no guarantee of short term success, and that science requires time and tenacity.

Take the example of the famous BEH boson, for which Englert and Higgs obtained the Nobel Prize last year.

This discovery was the object of a wonderful interest among the public.

But it took not less than 50 years, from the invention of the mechanism to the discovery of the particle that confirmed it. And this discovery involved over all these decades the efforts of thousands of physicists and engineers, and the spending of very large resources.

All these efforts for a small piece of the subatomic world – does it worth it ?

This small piece, the scalar boson, is part of our understanding of the whole Universe, of the history of the Cosmos.

Predicting and discovering the boson has been part of a rational, scientific understanding of how it is that we are where we are – the result of a wonderful historical process, governed by scientific laws.

With this example, we can explain how the creativity of a few bright individuals, like BEH and others, is linked with the efforts of so many scientists, moved by the same curiosity, spending days, nights, weeks and years to conceive, build, test, operate gigantic machines like particle accelerators and detectors.

And only this immense effort made it finally possible to demonstrate that indeed, Nature confirms the intuitions of a few bright scientists.

To achieve this discovery, wonderful progress has been achieved in numberless fields of technology, from gigantic superconducting magnets to the world-wide computing grid, from internet and the web to ultra-fast electronics, from technologies of the supercold and of the supervacuum to the invention of detectors that led to the most important applications in the medical field.

What I think should be stressed is that this immense effort was essentially motivated by curiosity, by the wish of understanding, which attracted to research many of the best students of their generation, that motivated pushing technologies to the frontier, that gathered together huge multinational teams. Remember the motto: even more that the Nobel Prize for Physics, CERN deserves the Nobel Prize for Peace.

This example is just one among so many. In all fields, science and curiosity push human capacities to the limit, - to the benefit of the general progress.

At the condition, of course, that humankind is wise enough to act reasonably – but this is the responsibility of all, not only of scientists: not less, and not more than other citizens.

Science is a wonderful intellectual and humanistic adventure.

I believe it is important to address this message to our fellow citizens, and particularly to the youth.

Science Centers, of which you are eminent representatives, play a wonderful role to propagate this fundamental democratic message.

Thank you for your attention.

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