

ORAZIO CIANCIO (*)

THE THIRD NATIONAL CONGRESS OF SILVICULTURE. NEW HORIZONS AND OUTLOOKS FOR THE FUTURE

One year after the Third National Congress of Silviculture significant moments of the event are presented, main results are analyzed together with horizons and perspectives for the future of Italian forestry.

Congress outputs may be synthesized in the following issues: i) participated and informed decisions; ii) innovative research; iii) new cultural approach.

In relation to future perspectives, the Congress suggested innovative ideas and theories, as referred to in the final motion. A new forest strategy for the full implementation of sustainable forest management has been traced, on the basis of synergism between scientific and humanistic knowledge and of consciousness that future of silviculture implies the recognition of the growing importance of forests for the quality of life.

Key words: silviculture; forest culture; forest rights; forest policy.

1. INTRODUCTION

Authorities, illustrious academics, ladies, gentlemen, dear students, I want to thank the Veneto Region and in particular the Councillor of Environmental Politics, Architect GIANCARLO CONTA, and the Manager of Forest Services GUIDO MUNARI for allowing us to present the proceedings of the Third National Congress of Silviculture in this wonderful villa.

The choice of Veneto for this event has a double significance. The first one is linked to the forest history dating back to the Republic of Venice, and to the precious contribution of technical knowledge handed down through the centuries; furthermore the school of Padua was founded by the late lamented member of the Academy LUCIO SUSMEL, to whom we owe much for the progress of forest and environmental sciences. The second aspect deals with the history of our congresses. The first Congress was held in Florence, the second one in Venice after 44 years, the third one in South Italy.

(*) Presidente Accademia Italiana di Scienze Forestali; ciancio@aisf.it

Continuity is very important in the forest science, for operative and technical activities as well as cultural and scientific ones.

The presentation of the proceedings taking place today in Piazzola sul Brenta acknowledges the scientific and technical commitment of the forest community and represents the necessary link between the second and the third Congress of Silviculture.

The Third National Congress of Silviculture, held in Taormina from 16 to 19 October 2009 was sponsored and organized by the Accademia Italiana di Scienze Forestali, the Corpo Forestale dello Stato and the Regione Siciliana, represented here today by myself, by Dr. GIORGIO CORRADO and Dr. LUCIANO GERACI, respectively. On behalf of the academy's members and, I believe, of all foresters, and myself I would like express heartfelt thanks to them and to Dr. MICHELE LONZI and Dr. CARMELO DI VINCENZO, who could not be here with us today.

I would like to thank the Chairman FIORENZO MANCINI, the 49 members of the Scientific Committee and the 16 coordinators of the 8 sessions comprising the Congress. In addition to having made a significant contribution in terms of scientific and technical knowledge, the members of the Scientific Committee, and in particular the Session Coordinators, have proved their outstanding organizational skills and they refereed the submitted papers in a very short time. Without their dedication and that of the 10 Chairpersons who brilliantly managed these three days it would have been impossible to hold the Congress which was successful beyond even the most optimistic forecasts. It is sufficient to mention that 32 agencies accepted our invitation, we had 5 speakers from abroad and 566 participants – educators, researchers, administrators, and technicians not only from the world of forestry itself, but also naturalists, environmentalists, etc.

During the eight theme sessions that structured the Congress, 182 papers and 73 poster were presented for a total of 255 contributions collected in the 1588 pages of the 3 volume Proceedings. A review of this enormous amount of work made it possible not only to evaluate the development of forestry thought and technology, but also to verify methods used in silviculture with an eye focused on the future of Italian forests and activities related to them. In brief, the presentations emphasized what we can call the «culture of the forest» in an attempt to raise the awareness of the general public. The Congress concluded with the approval by acclamation of the Final Motion that you can find at the academy's website (www.aisf.it).

I mention these data because the success of a Congress is generally measured by the number of participants and by its scientific and technical contents. And, here many of the contributions were absolutely original. This

in itself would be sufficient for full satisfaction with the organizers' work. Yet, in my opinion, there is another way to ascertain whether a Congress has really made a contribution to scientific and technical progress, that is the scope and quality of the discussions among participants and non-participants. And, this is even more significant if the dialogues or differences of opinion take place on the "edges" of the Congress, so to speak.

This is precisely what happened. Evidently, the Congress presented innovative ideas and theories, that are easily identifiable in the final motion, on which we believe it worthwhile and appropriate to express favourable or contrary opinions. This, as we know, is the essence of research, and it would be a shame if it did not happen, because would be no scientific progress without it.

Technological and scientific developments take on concrete form through discussing ideas and refuting theories that go beyond common thought and established knowledge: that is when new horizons are presented. I believe that when this occurs in forestry – which has been dormant – or better, in crisis – for some time – it is a fitting acknowledgement for the organizers and sponsors of the event.

2. POSSIBLE HORIZONS

An introduction is essential. The forest is part of the «systems of organized complexity», this expression sums up what Warren Weaver has said concerning dynamic systems in nature which are characterized by a considerable number of variables that are connected in an organic whole.

He maintains that the problems raised by those systems are «just too complicated to yield to the old nineteenth century techniques which were so dramatically successful on two-, three-, or four-variable problems of simplicity. These new problems, moreover, cannot be handled with the statistical techniques so effective in describing average behaviour in problems of disorganized complexity».

If this is the case, then we have to ask which are the possible scientific and cultural horizons that open or can be opened by the Congress. The approaches outlined during the event that will be developed in the near future can be summarized as followed: i) *shared and informed decisions*, ii) *innovative research*, iii) *new cultural approach*.

i) *Shared and informed decisions*. Decisions which are not shared inevitably lead to the repudiation of even technically valid programmes and plans because they conflict with the desire for knowledge and above all, with participation and understanding on the part of the involved and interested groups.

- ii) *Innovative research*. Research per se should, and I emphasize *should* always be innovative, but often – whether we are aware of it or not – we repeat what is already known or we add something to what has already been formalized and defined. This may be useful when it happens, but it does not open new horizons, it does not trigger what is commonly called a scientific revolution. In other words, we work mostly to make small improvements to a container that remains the same and unchanged over time. Instead it would be necessary to develop research that is capable of bringing about change in the old container which from the scholastic period on – that is about the last 250 years – has codified, oriented and defined technical and scientific work in the world of forestry. Sometimes we can almost think that the old ideas which are so well rooted in epistemology are the reflections of a forestry world in conflict with the little that we know about that marvellous, complex biological system that the forest is. In brief, we need new thoughts, a new philosophical approach to nature. Or, if you prefer, a new way of seeing the forest.
- iii) *New cultural approach*. The new cultural approach is inherent to the two foregoing points. If someone continues to ask why we wanted to make the “culture of the forest” the focus of the Congress, the answer is very simple, in fact, it is obvious: *culture is humanity's only real asset*, an asset that grows if many participate and share in it actively.

LUIGI LUCA CAVALLI SFORZA maintains that «Cultural innovations are new ideas, inventions, discoveries, many of which have the purpose of improving conditions of life. With modern means of communication cultural innovations [...] can be conveyed to a large number of individuals [...] in a very short time».

This is the first task and main commitment of the scientific and technical community: to create the conditions for the cultural, economic and social development of the forestry world and for the progress of forestry and environmental sciences.

In essence, if they are implemented, these approaches can lead to a knowledge-filled change in silviculture, giving life to real and credible sustainable forest management through the foresters' continuous and indefatigable efforts.

3. EDUCATING AND INFORMING

If we do not want to trivialize the scope of events that influence current scenarios it is essential that public opinion be properly and correctly informed about the issues crucial to the future of all.

Regarding this *educational* process we must teach young people science, and yet, as RENATO DULBECCO notes «Scientific education in schools does not always achieve its goal, because it does not convey the excitement that comes with the discovery of something new, which is the most important part of science». It is essential that young people be educated to feel what Richard P. Feynman calls «the thrill of discovery», that is the sudden sensation of having grasped a new and marvellous idea. The duty of educators and academics is a constant commitment to research, to feeling the tension of research for the truth – scientific truth.

As to *informing*, during the Congress we announced that the Accademia has put the *Forum Foreste* on line (www.forumforeste.it) where we have already launched an open discussion on the most important issues in forestry.

It is a discussion not just among foresters, but among all those who love the forest. For some time I have been saying that communication is the Achilles heel of our field: foresters cannot succeed in making the general public aware of the work they do for all of us. And what is more: students cannot always take part in discussions of topics they consider particularly interesting. Doctoral candidates and researchers using normal means of communication often do not find the space to fuel a true and free scientific and technical discussion.

Faced with so many problems and the consequent doubts that the complexity of forestry work raise in their daily lives, professionals cannot find the place to analyze, to communicate and above all to make known the difficulties they encounter or the results they achieve. On the other hand, naturalists and environmentalists who have lots of space in the media have no opportunities to discuss the great issues concerning the sustainable use of forests with foresters.

These communications problems can be overcome through the *Forum*, making an interesting and constructive contribution at a time when important journals which, albeit in a limited context, have made it possible to disseminate forestry knowledge are vanishing because of real financial problems.

Sic stantibus rebus, the administrators of agencies or managers of forestry firms have difficulties when it comes to knowing what and how much research has accomplished and is accomplishing in the various fields of forestry and environmental sciences; neither is it easy for them to inform others of the directives they implement in the interests of the community.

I would like to ask all of you not just to participate in the *Forum*, but also to work to make it known. At the end of the year, the most interesting contributions posted on the *Forum* will be published in the Annals of the Accademia. Knowing that they can publish what they have achieved through their work could indeed be a stimulus for young people.

4. KNOWLEDGE AND CREATIVE THOUGHT

Now, I would like to make a few brief, very brief comments, even if by doing this I am venturing into an area where even angels fear to tread, into deep and dangerous waters.

But, since the Congress was concerned with innovative research in silviculture and some of the presentations will have important repercussions on theoretical-scientific, technical, economic-financial, social and ethical aspects, I believe that today's meeting should be the time to devote to discussions of the many and delicate issues currently tormenting forestry. If these matters are not dealt with appropriately in the near future it could lead to the erosion of the professional field of action typical of forestry.

If it is true that scientific research is the sum of creative thought and forward-looking vision that is triggered by a practical issue, then knowledge becomes the preparatory tool in order that research find the solution. But this cannot happen if we first do not solve a problem of thought, in other words, if we do not first construct hypotheses. And, it is precisely the use we make of hypotheses that comprises the central element of the experimental theory or of pragmatism.

In environmental and forestry sciences we often look for similarities among different phenomena to verify whether the explanations in one field – with the necessary modifications – can be useful for solving a new and different problem. The forestry issue involves aspects of practical, social and civilizing or cultural nature. Hence the importance of empirical knowledge with its need to abide by principles of innovation and concreteness related to creativity and to the systemic approach.

5. THE CULTURE OF THE FOREST

According to this new vision, perhaps it is no longer legitimate to talk about the forester and the forest, but rather of the forester in the forest. In other words, we have to seek out the man-forest interaction with the environment and specifically with the cultural and social environment. Reciprocal influence is a temporal process which means that forester's cognitive and practical work must be revealed in relation to «changing times», or if you prefer, to the constant changes on the global and local levels.

We are already aware of a bond between the conception of intelligence as the ability to propose new goals and new solutions to existing problems in forest management and the cultural conditions of contemporary society. Now we must release the foresters' work from the belief in fixed, predetermined goals and ideas of which some members of certain privileged institutions or academic classes believe themselves to be the repositories.

The forester is free to the extent that he or she is a spokesman for the culture of the times, grasping its motivations and above all, feeling that he is an integral part of it. Tradition is the necessary counterbalance to innovation, and in this way it highlights continuity and not the breaks. We must create a cultural circuit that can strengthen the desire to overcome resistance tied to a partial and reductive view of the forest.

«Culture of the forest» is not an option, it is a necessity but often individual and local interests do not permit the real growth that would be necessary and useful. The efforts of technicians, researchers and academics must centre on the solution to this high priority problem.

6. THE RIGHTS OF THE FOREST

In May 1995, at the end of a roundtable on «The Forest and Man» and after a discussion that was, lively to say the least, I proposed a motion that was approved stating that: «The forest is a complex biological system that plays a determining role in maintaining life on this planet. Like all living systems, the forest is an entity that has “an intrinsic value”. It is a subject with rights that must be protected, conserved and defended» (CIANCIO, 1997).

For the first time, an ethical problem was brought to the attention of the cultural and scientific community in official terms and in a prestigious venue - the Accademia Italiana di Scienze Forestali.

Here I would like to mention an event that, to say the least was extraordinary, that recently occurred in the United States of America. On 19 September 2006, the town of Tamaqua, in Schuylkill County, Pennsylvania approved a revolutionary law that radically changed the concept of “legal rights”. In essence, this law gives natural communities and ecosystems a standing with full legal rights. And even the *Millennium Ecosystem Assessment* contains the explicit statement that biodiversity and ecosystems also have intrinsic value.

As often happens, in Italy, we present new and revolutionary ideas, and then years later they are applied in other countries.

7. OUTLOOKS FOR THE FUTURE

We have already spoken about possible horizons. As to future prospects, these concern «*the sustainability of the management of silvo-systems*». Silviculture must also – and above all – take into account the conservation of biodiversity and the sustainable management of the silvo-systems.

Sustainable forest management is based on an incontrovertible condition *the harmony of growth processes among interacting systems*. In this sense a rereading of forestry work during the XX century reveals more shadows than light. It is sufficient to think of the problems related to the conflict between grazing and forests. We have to develop a new forestry strategy for truly sustainable forest management that takes advantage of the synergism between scientific and humanistic knowledge, i.e. that identifies the epistemological bonds and axiological principles.

In our country, over the past few years the awareness of the forest's utility in improving quality of life has led to a decrease in its use for productive ends. At the same time – and here is the paradox – the demand for wood has been increasing. And then, there is a reality we must acknowledge whether we like it or not, one that can be well expressed by an aphorism I have coined: «*Silviculture has high costs and low profits*».

Someone may ask how is it possible to reconcile the constantly increasing demand for wood with sustainable management and conservation of biodiversity. This problem can be tackled in several ways. For example: by reducing wood consumption and optimizing the so-called forest-wood chain, that is the wood-industry processes and the construction industry. And also - perhaps mainly - by giving a strong boost to tree plantations for wood production, that is, by creating forest *agro-systems* destined for the production of quality wood, or large quantities of wood thereby attenuating the impact on *silvo-systems*.

This covers the past and the present, but what are the prospects for the future? In order to give an effective and reliable response I believe that all researchers, and forestry researchers in particular, must stop and consider the relationships between science, philosophy and ethics. Looking into these ties is certainly a fascinating topic. In this context a preliminary question concerns the future of the forest on three different time scales: ten, fifty and one hundred years from now.

The future of silviculture requires both the development of new ideas and concepts as well as an awareness of the forest's importance for improving quality of life.

I picked these time scales because on the one hand they speak to the more or less near future. In forestry a ten year span represents the present more than the future. If we really want to be specific, it is an epistemic future, that is a future with the purpose of drawing up hypotheses in the present too.

Fifty years is the required time span in order that a scientific revolution become established in forestry. Over the coming years technology will have developed even more sophisticated instruments. It is not unlikely that new methods will be introduced and that it may be possible to produce plants

capable of adapting to extreme climate conditions, or plants that are resistant to a wide range of diseases, or plants that can yield products at currently unthinkable rates which, in turn could transform the economies of many geographic areas.

There are tools in laboratories that can promote this revolution, and other, even more sophisticated instruments are being developed. We must not forget that we are living in the era of biology, of human genome sequencing, of molecular engineering processes, of ectogenesis. All of these phenomena and processes will leave indelible marks and will have a significant influence on ethical, social, economic and political guidelines and developments.

One hundred years is a time span for the forest. It is the time that an oak tree needs to grow. We can only imagine the scientific and technological developments that will occur. In the next hundred years it is very likely that the real – and I emphasize real – ecological battles will dominate political agendas throughout the world. In this context the forests will play a determining role in the salvation of Gaia.

Humanity will have to deal with enormous problems that we cannot predict with any precision today. Technology will have made gigantic steps forwards and probably, what in the next few years will be a wide ranging project for energy may prove to be a failure in ecological terms, and vice versa a project developed for solely ecological purposes could clash with the primary needs of vast regions of our planet

But, we may be sure of one thing: we will survive if we do not inflict too much damage on the forests. In a hundred years one possible choice may be that of considering all natural forests as an ecological park. The salvation of our planet starts from this hypothesis. It is another frontier for forestry sciences.

8. FOREST POLICY BETWEEN ECOLOGY, ECONOMICS AND ETHICS

In industrialized countries the forest is no longer threatened by abuse in order to satisfy primary needs; instead it is threatened by a process without a face or soul: a pseudo-culture that knows the price of everything and the value of nothing. Given this situation, what can we do to convince people to make choices whose results will only be visible or tangible in the future? The only way is participation and education.

Foresters must provide technical and scientific information about the possibilities of a management system that is more respectful of the forest ecosystem's functional mechanisms. This information campaign must also target the general public, because only this group is capable of influencing

the process of creating environmental policy with the awareness, as ALDO LEOPOLD maintains, that the increase in [the amount of] wood purchased at the expense of the health of the soil, of the beauty of the landscape and fauna is shoddy economics as well as poor public policy.

The fundamental principle of science is knowing that we do not know. We must learn to read and understand the needs of the forest and put forest knowledge and wisdom at the service of the system. This means adopting the bio-economic approach that highlights the bonds between forest systems and the three E's: Ecology, Economics and Ethics.

«Environmental education » is a process of social and cultural growth that inevitably involves the policies and economic processes related to forest management. An economy cannot prosper without culture; prosperity does not increase without education and training. The road has been mapped, but it is a long and difficult one to follow.

The forest is an asset of public interest. Whoever owns and protects environmental assets generates a wide-ranging «external economy», with values that go beyond soil conservation to encompass health, tourism, aesthetics, history and culture. If this is the case, then we must ask if it is fair that the community does not compensate the owners for the protection they provide.

If, for purposes of the public interest and good we place restrictions on the use of the forest, we must remove the social and financial obstacles related to those restrictions. There is no lack of solutions to this problem. It is not a question of silviculture, but of forest policy.

Up to now the European Union has financed tree plantations for wood production and has only recently become concerned with forests. This is necessary, but not sufficient for meeting society's needs. Currently, through the Rural Development Plans, the EU is providing grants for sustainable forest management. We must seize this opportunity in order that systemic silviculture become truly operational.

Forest policy that encourages systemic silviculture and sustainable forest management will ensure bio-ecological, environmental and productive results through far-reaching functions in favour of the community.

9. CONCLUSIONS

The Silviculture Congress was the third chapter in a book of several chapters being written day after day with important contributions from researchers who belong to the different worlds of forestry and environmental sciences on the one hand and the administrators, managers and technicians on the other.

Research is stagnating due to the inadequacy of the government's financial commitments. Therefore, because of the problems encumbering them, some – and that means the majority – researchers cannot give their best because they are stressed by the enormous waste of time and energy dedicated to finding the funds for their research. Others, who follow the old paradigmatic apparatus, cannot separate themselves from a mindset that is no longer connected to reality. They lack the propulsive thrust that triggers the transition from innovative thought to reality.

And yet, we are living in times of ongoing scientific revolution. It is science that has to tell the great story of nature, or at least of what we imagine nature to be. We must create the conditions for the first draft of a new way of seeing the forest based on concepts of complexity and evolution.

Complex organized biological systems such as the forest are the result of lengthy evolution. We have to convey knowledge to young people, and specifically knowledge on the edge of the frontiers, with the awareness that today's frontiers are tomorrow's boundaries.

I invite young people to come to the silvicultural community and to participate actively in contributing to solutions to the many problems investing the forest world. It may be the opportunity for a full immersion course on the enormous quantities of infinite attractions that the forest offers. The forest, a complex biological system, is the place where it is possible to discover the true essence of forestry science and art, and obtain the spiritual, ethical and cultural nourishment that the foresters cannot do without.

I would like to touch on one aspect that not all people perceive, not even many foresters. And I would express in the form of an aphorism: *There are those who talk about the forest, and those who, instead, speak to the forest.* In order to create a forest culture, we must first learn how to talk to the forest.

And to conclude, I quote a line from PETRONIUS – *Satyricon* chapter. 44 – that is part of the logo of the Accademia Italiana di Scienze Forestali «*Serva me, servabo te*».

REFERENCES

- CAVALLI SFORZA L., CAVALLI SFORZA F., 2007 – *Scienza e Umanesimo: oltre le «due culture»*. I Classici e la Scienza. Gli antichi, i moderni, noi (a cura di Ivano Dionigi). BUR, Milano.
- CIANCIO O. (a cura di), 1996 – *Il bosco e l'uomo*. Accademia Italiana di Scienze Forestali. Firenze.
- DULBECCO R., 1995 – *Ricerca, educazione e società*. Scienza e società. Marsilio, Venezia.
- LEOPOLD A., 1933 – *The conservation ethic*. Journal of Forestry.

