

Explanation Is to Be Found behind the Name of Each Species

*During the 25th meeting of the European Vegetation Survey (EVS) working group, which was held in Rome in April 2016, I used the opportunity to ask several question about the developments in the European phytosociology and the legacy of the past, which was one of the main meeting subtopics. My respondent **Francesco Spada** (Department of Environmental Biology, University “La Sapienza”, Roma, Italy) was one of the two plenary speakers of the meeting, where his invited lecture was focused on “Anecdotal Geobotany Revisited”.*

Monika Janišová (MJ): At the beginning I would like to link our interview to your lecture yesterday, which I liked very much. You know what was the geobotany before and what it is nowadays. So you can compare.

Francesco Spada (FS): I have my botanical roots in those enthusiastic days of the early Italian phytosociology when we were young autodidacts. In my case, the discovery of the German language was a very important tool for my introduction into geobotany. I was 21 when, by chance, I became Hausknecht (servant of the house) in a traditional country house in the Italian side of the Tyrolian Alps (Südtirol) where a huge German minority lives. I had the privilege to spend there three splendid seasons in haymaking. And there I became an amateur ethnographer of rural life. But the most important gift of this experience was the learning of the German language. When I came back to Roma and to my botanical studies, I could finally read for the first time the book of Heinz Ellenberg “Vegetation Mitteleuropas mit den Alpen”. It was the discovery of what I never had been able to learn at the University before. And thus I could be brought into the fascinating world of the classic German phytogeographic literature. At that time, when “geobotany” still was perceived as a synonym of “phytogeography”, the approach was basically and predominantly historical. Today we call “historical biogeography” a distinct branch of another (perhaps actualistic?) biogeography. Indeed, phytogeography should deal with the development of ranges not only according to ruling environmental constraints but also during time. However, it first happened later in the seventies and eighties, that geobotany lost one of its basic fundamentals – the historical perspective – what we today in this congress call the legacy of the past in the assessment of the present day vegetation. In my opinion, what happened is that geobotany turned its back to the historical issues, i.e. the developmental mechanisms of a local vegetation across time, concurrently with the outburst of mensurative methods in plant ecology. Before, historicism was a widespread scientific mentality in comparative sciences, it was basic in phytogeography. One



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Francesco Spada during his lecture on “Anecdotal Geobotany Revisited”. 25th EVS meeting in Rome (April 2016).

example. Stands of *Stipa capillata*, *Stipa pennata*, or whatever, in regions which today belong to forest biomes, since they suggests refugial stands of grasslands, they are the reminiscence of a more or less remote past. This is what was basic for all those classic students of phytogeography in earlier times. And it is no longer so. Today, after years of splitting syntaxonomy and site-ecology, fiercely insisting on local factors and species number, we are going to annihilate all historical knowledge, just focusing on where plants grow, whether they are silicolous or calcicolous, etc. We can find a lot of immanent outputs with the indicator values of the species, but we forget that species might also be indicators of other, earlier environmental scenarios, etc. *Stipa*



Francesco Spada presenting the vegetation in the Nature Reserve Castelporziano.

suggests that a steppe biome was there many thousand years ago, and therefore we should see it as a relic stand of the macroclimate of that time. This is the perspective of the “older” geobotany. The Central and Eastern European countries, which have a long tradition of recording the local vegetation, have not yet denied the historical knowledge. Where the historical knowledge has disappeared completely, is Southern Europe. There is an enormous difference. What we today mainly perform with South European geobotany, is either a nomenclatural approach, which emphasizes endemics, endemic behaviours, endemic communities, or a neverending count of attributes, etc. The style of description is too often tautological or narratively empty: “This is a *Quercus ilex* stand and this is *Quercion ilicis* ... and this is important because it is a local *Quercion ilicis* with this or this endemic feature ... ” (forgetting the most important explanatory key: it is a subtropical formation in a world of temperate ecosystems). This is the basic frustration I feel, which I tried to explain yesterday in my presentation.

MJ: Is the situation similar in Northern Europe?

FS: They have another approach to plant ecology. The historical feeling and the historical perception of the vegetation mosaic did not, in my opinion, completely die out there. And it probably is the same as in Central Europe. I remember that when we were in the Pavlov Mountains during the excursion within the IAVS Symposium in Brno, those who guided us, apparently had in mind this perspective since they spoke about “steppe species” showing us relict grasslands. It means that they took an earlier plant cover into consideration. So there still is among these scientists the perception of an

historical development. In my opinion this approach is today completely lacking in Southern Europe where this perspective died completely out during the last decades, also due to the lack of linguistic knowledge and accessibility to the classics. But forget the question of German, I only mean that it is necessary to read other languages which were classic at a certain time or to understand topics we deal with. Today, English is classic and we study English in order to understand a new type of scientific thinking. Another day it could be Czech and we have to read Czech. There cannot be any barrier due to language among scientists. Think about what many of us missed not studying Russian, for example in the case of plant functional traits ...!

During an IAVS excursion a few years ago (2011), in the vicinity of Lyon we visited a splendid lake, which is surrounded by huge stands of *Buxus* with a canopy dominated by temperate trees, a temperate forest with a subcanopy of lauryphills. And within this forest there were many rocky outcrops, screes and topographical discontinuities with isolated spots of species belonging to *Festuco-Brometea*, among them *Artemisia alba*. I had a very prominent numerical ecologist at my side, we were walking together. I said “Look, this is the heritage of another landscape, a grassland, which has nearly disappeared ..., it has been submerged by the modern, postglacial temperate forest, which apparently incorporated an earlier forest with tertiary relics, like *Buxus* in this case.” He was fascinated by that and at the very end he said: “How can you prove it?” I could not outline any quantitative method, I was not prepared for such a challenge. I went home with this struggle in my mind. Indeed, the explanation is simply to be found behind the name of each species, its “biography”. If

we go back to a plant name, we would be able to deduce from it where it lives now, where it formerly lived, where it lives as outpost of a larger range, where the core of its range is, and therefore where its zonal biome is today located, as well as which macroclimate is controlling its present range.

Therefore, if this biome today is zonal under given climatic condition, and today we find a little fragment of it elsewhere, outside its zonal areas and macroclimate, the easiest explanation is that this fragment is testimonial of a former environment when this biome was shifted in space. A consistent part of the explanation is therefore to be found just behind the name of a plant. I think that quantitative measures are a splendid approach to the empiric explanation of the world, but they cannot be something *per se*. My feeling is that we have forgotten to follow the significance of one splendid functional plant trait, which simply is the species name and all properties this name involves, what this name is hiding in form of florogenesis and vegetation history... Chorology is also a function as much as it is the relation with species with similar phylogeny and traits.

MJ: Two reasons came to mind, which could be at least partly responsible for the disappearing anecdotal approach: First, we might have less fieldwork and field experience, and second, science nowadays is pushed to be applied. So we make classification and typology to be used in NATURA 2000. But what you are talking about is a completely basic research, which builds our knowledge but only hardly can be applied and as such it is not very promoted nowadays.

FS: Yes, I agree, this is one of most explanatory reasons of the most recent development in geobotany. I am sure you are right. And another possible reason of this change is that the former type of thinking was not formalized from the beginning. The phytosociological method was not written down anywhere; it was only transmitted orally. And, if not formalized, it decays. For example, Braun-Blanquet wrote somewhere very early, that we should go for well-developed aggregations, that we should focus on late-successional communities in order to have a kind of phytogeographically consistent descriptive model. And this is exactly what we did not do. All the enormous number of names in syntaxonomy we have produced for what is a multitude of different stages of degradation, development or reconstruction of the broad-leaved evergreen forest, is due to a lack of this praxis and principle, which Braun-Blanquet recommended to follow. And no one did. He explained it in his book in 1964, for the first time, but it was too late. One or probably two generations of phytosociologists were already operating around. And we must also thank Mueller-Dombois and Ellenberg, van der Maarel, Westhoff who put down a substantial description of the methods in the eighties. So the method was formalized too late in order to

prevent some probably not appropriate development and application in the field.

MJ: I would like to ask you personally, which type of vegetation did you study and which is your favourite one?

FS: I love the broad-leaved evergreen forest of the Mediterranean countries, which is one of the easiest to study. It is very poor in species but very intriguing. Nevertheless, in my opinion, it is still completely misunderstood. Only one scientist in the eighties, Specht, if I am not mistaken, observed that this is not a kind of evergreen shrubland, rather something different. It is a broad-leaved evergreen forest. And according to this, you have the link between this forest and its subtropical analogues, which are today occurring, for instance, on the Canary Islands and in East Asia. The legacy of the past ... Otherwise we misinterpret it as it simply was an evergreen xeromorphic shrubland, which only is a product of a long-term human disturbance.

I like this vegetation, I like it most.

MJ: The European Vegetation Survey working group was established 25 years ago. I suppose that you have been with the group from the very beginning. Could you tell us something about its start and the main ideas behind it?

FS: Yes, I was EVS participant from the beginning. It started in Roma. Sandro Pignatti was one of the founders, if not the founder. At the very beginning this group gathered people from all European countries. Sandro Pignatti started it in a very informal way using some facilities available at the Botanical Garden and he went on for 15 years without anything more. And everything arose spontaneously. I remember his famous "ordinated chaos", since everything appeared chaotic but everything ended well. It was very romantic and impressively good, because a real new spirit in coenology characterised this era. It gathered people interested in many aspects of geobotany, coming from different countries with different experiences, especially the German and Anglo-Saxon scientists, and soon after the East-European scientific world which at that time very seldom used to meet. So it really was a pioneer initiative.

MJ: What were the aims of this initiative?

FS: It was focusing on a more consistent typology of vegetation not only based on those rare species that we seldom find in the plots, which by the way are the ones which detect the individual associations. The aim was to unify the methodology but also to provide ideas for a more complex, a more realistic way to build up a typology. It was the idea of providing a satisfactory framework for the ongoing typification of vegetation types, which eventually had its outcome in the Palearctic classification. This, in order to

provide a description of vegetation types based on a syntaxonomy, which should take into account consistent biogeographical foundations since, at that time, syntaxonomy had already become a thing *per se* (not because of Latin!).

MJ: Twenty-five years is a long time. But it seems that we are still not ready. Are you, personally, happy with the developments and achievements of the group?

FS: No, I am not happy. Methodology is becoming more and more sophisticated. I do like many aspects of the current methodologies, since they allow to overcome the arbitrary procedure of deciding what and how. But at the same time innovative methodologies, which should instead develop other aspects of geobotany, did not. For example the nomenclatural divisionism of some branches of syntaxonomy is still recruiting an enormous number of students and scientists in an effort, which does not provide any consistent progress. A new syntaxonomy should be something, which gives us insights in relationships, which focuses on a kind of phylogeny of the communities, a kinship of another type. Instead, what we do today, is to find more and more local units, entities, endemic types (as taxonomists do) or, alternatively, to model processes that are beyond any understandable feedback on the observed vegetation structure. Therefore, we still are where we were thirty years ago.

MJ: And what about our ecological understanding, has it also not developed much?

FS: The ecological understanding, summarized by the indicator value of species, for example, has

experienced an enormous progress, but not the understanding of the role of individual species or species guilds in the development of a particular community. Many scientists are studying the structure of communities mainly focusing on species number or spatial and functional relations among individuals and not on patterns of coexistence based on the historical assessment of a species pool, which could be an innovative contribution.

MJ: What are your wishes with respect to further development of the EVS activities?

FS: I feel well from the point of view of the methods and the scientific approach of EVS today. I only complain that the debate is slightly low, the discussion about these topics is nearly non-existing. This scientific society is otherwise very nice, very kind. There are no unpleasantly dominant personalities ruling or giving the impression to steer. It is extremely free, extremely positive and collaborative. Therefore, if innovative things should occur in geobotany this should happen in the EVS framework. We should more actively stimulate the scientific discourse. I experience a scientific period, which I do like, but I am concerned by the fact that we want to extract explanations on community patterns stressing quantitative outputs shaped by disciplines originated within other conceptual backgrounds. On the contrary, we could find satisfactory evidence in simple Aristotelic logic, based on: "What does the name of a plant imply? Which kind of functional properties does it imply?", today neglected due of a kind of "hubris" for sophisticated statistical methods, which are splendid tools, but unfortunately still far from the intrinsic structure of the geobotanical target. This is my opinion.



Sandro Pignatti and Francesco Spada, the "fathers" of the European Vegetation Survey, during the 25th EVS meeting in Rome (April 2016).