

## Division 4 presentation

### **The Role of Soils in Sustaining Society and the Environment**

#### **Lay Description**

Division 4 is more generalized and entails the transfer and outreach of our knowledge base to segments of our society where soils and soil science are frequently misunderstood or sometimes under appreciated. It takes the soils information generated in the other three divisions along with developing new scientific information and addresses public literacy in soil science, education, international conventions, consequences of human activities on soil ecosystems, policy issues, food security, history of the discipline, etc. This division might be considered the “capstone” division because it must integrate our scientific body of knowledge so scientists, policy makers, and those specialists remote to soil science may become more informed about the utility of this most essential natural resource at the Earth's surface. It is the scientific entity that interacts well beyond traditional bounds.

#### **Technical Description**

There is a need to provide soil science input in many policy-related topics addressing environmental and social concerns. This Division will provide the soil science input in the decision-making process and address special issues that will be brought to the attention of the IUSS especially in relation with the human and socio-economic use of the soils.

#### **Division 4 is organized in five commissions:**

- *Commission 4.1 - Soils and the Environment*
- *Commission 4.2 - Soils, Food Security and Human Health*
- *Commission 4.3 - Soils and Land Use Change*
- *Commission 4.4 - Soil Education and Public Awareness*
- *Commission 4.5 - History, Philosophy, and Sociology of Soil Science*

During the 2015 International Year of Soils, the IUSS Division 4 will illustrate its main topics through articles written by Division 4 officers or their colleagues. These will each be highlighted every week from October to December 2015.

For this first week, we are displaying two articles from the Division 4 vice-chair – Cristine Carole Muggler –, and the chair – Christian Feller.

## **Towards the International Year of Soils:**

### **The challenge of bring people to care about the soil**

**Cristine Carole Muggler**

IUSS, vice-chair Division 4, and,

Departamento de Solos, Universidade Federal de Viçosa, Brazil,

As climatic conditions change and environmental problems grow, soil scientists and groups of soil users continue to speak out on the need to care for our soils. We know that soils are an integral part of the Earth system, a result from the interactions between atmosphere, hydrosphere, biosphere and lithosphere that play a key role in regulating those interactions. For this, many of us have given soil a special place and refer to it as a system by itself: the pedosphere. This fragile layer on Earth's surface is essential to life: it creates and is created by life. It is alive!

Still, individuals and society in general do not realize that our quality of life and our welfare are at risk when soils are not cared for. More often than not people are more likely to be concerned with issues around water, forests, and endangered species, and while admirable causes, these do not realise the role of soil in supporting these issues and that securing soil is one of the grand challenges facing humankind. Underfoot, soils look needless of much care and are taken for granted. Despite soil campaigns and outreach movements of the last years soils are still not popular. This puts a challenge for us who know and work with soils, how are we to respond? The International Year is a great opportunity to reach out and spread the word about soils. Not only the functions and essentiality of soils, but also its wonders: amazing biodiversity, incredible colours and unexpected beauty! To realize about soils is a first step to know more about them. With knowing comes enchantment, which is the basis of love and care. This is a chance to bring more people to know about soils and to care.

To engage present and future generations with soils is our ongoing task. For some years now, the Latin American Soil Science Congresses has set aside a day for school children and teenagers to make public presentations and it is amazing to see how they are concerned about the threats to soil and choose to study them. At the last Congress in Cusco, Peru, Ronald Vargas, from FAO, was in charge of the initial presentation. He started to ask the children what is soil for them, and immediately a girl came loud and self-assured with the answer: Soil is *Pachamama*!! The mother Earth from the Inca civilization.

Of course this level of enthusiasm is still sporadic and there is much more to do to raise the soil's profile. Groups, actions, and initiatives are everywhere promoting the need to know and care for soils. This International Year now offers us the possibility of bring them together, making them visible and to generate activities. It is a challenge as well as an opportunity.

## Soil connects Nature and Culture

**Christian Feller,**

IUSS, chair Division 4, and,

Institut de Recherche pour le Développement (IRD), UMR 210, F-34060 Montpellier cedex 2, France.

It is a typical feature of western and scientific thinking that nature and culture are distinguished separately. This conceptual split had become clearly visible during the 17th Century. As a consequence, ‘primary’ and ‘secondary’ qualities of natural bodies were differentiated. Measurable physical, chemical and biological properties, have become the ‘primary’ qualities of the ‘object’. Other qualities, which were perceivable by human senses only, be that perception ephemeral or generic, have been treated as being ‘secondary’. This is characterised by the, sometimes difficult, distinction between; ‘matter’ and ‘spirit’, ‘objective’ and ‘subjective’, ‘natural’ and ‘cultural’, ‘science’ and ‘art’, and similar.

French anthropologist Philippe Descola is one of the great contemporary theoreticians of the nature-culture split, showing it to be neither natural nor universal. He argues in his works, *Par-delà nature et culture* published in 2005 (translated by Janet Lloyd, *Beyond Nature and Culture*, 2013), that our tendency to highlight the separateness of culture from nature facilitates a treatment of nature which is not respectful, and causes well-known environmental consequences.

This separation between nature and culture affects the soil, too. For one of the founders of pedology (soil science), Vasilii Dokuchaev (1883) soil is defined as a ‘natural object’, and not so much as a vital or even spiritual ‘subject’. Thus, soil is studied for the causal chains of its formation (genesis), its physical, biological, and chemical properties as well as for its functional use and services for humanity. The International Union of Soil Science Societies (IUSS) has dedicated three of its four divisions to that approach.

Beyond being framed as a ‘natural body’ there are cultural dimensions of soil that are reflected in traditions, such as, pigments for drawing, ceramic material, and colours and clays for customary or ritual body painting. Deeper than this there is a cultural layer of soil that is traceable by the polysemy (multiple meaning) of words like ‘soil’ or ‘earth’. In French, ‘soil’ often hints to an ‘origin’, as can be seen by expressions like “Le sol de nos ancêtres” (“soil of our ancestors”, for human societies referring to past specific cultures and traditions). In German, the term ‘Grund’ can be used for ‘soil’ and for ‘cause’/‘reason’, both. Nikola Patzel in a chapter on *European religious cultivation of the soil*<sup>1</sup> writes that in many cultures of the world people know a “Mother Earth” or a Goddess inspiring all living matter. In Judaism, the memory is alive that the name ‘Adam’ comes from ‘Adamah’, that is ‘soil’ in Hebrew. These few examples show that soil can be meaningful in a dimension which is definitely outside materialistic concepts of ‘nature’, but located in the heart of culture.

This cultural dimension, occurring in different forms in all civilisations, may be also important (and is often ignored in development projects) for alternative approaches in order to change our behavioural patterns towards soils, soil materials, and soil life<sup>ii</sup>.

When writing of *The soils scientist's hidden beloved: archetypal images and emotions in the scientists relationship with soil*<sup>iii</sup> Nikola Patzel describes the inner reality of the cultural dimension of soil which can be called the “inner soil”, including all kinds of symbolic meanings for soil, and even spiritual relationships with it. From a psychological standpoint, the investigation of the “inner soil” leads to the questions: What are our unconscious or subconscious drivers and guiding images in our perceptions and conceptualisations of soil, leading us to love it or be disgusted by it, and to like or dislike certain soil management practices? What are our concepts of soil fertility and of soil health? Which mental and cultural patterns lead us for example to prefer in our soil relationships a computer-technical approach, an economic product value approach, an eco-functional approach, a relation formed by manual labour with soil, or guided by intuitions and symbolic thinking? So, there are many alternatives and complementarities concerning how we deal with soil.

It is one of IUSS division four's original topics to integrate viewpoints and results from the social science and humanities. For Division 4 “The Role of Soils in Sustaining Society and the Environment”, history, education, health, justice, and economy for example all imply cultural dimensions. These perspectives open up the spectrum from physical and cultural soil services for human societies to the soil being a “cultural entity”.

To further develop this dimension at the heart of Division 4 is one of our concerns.

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<sup>i</sup> Patzel N., 2010. European religious cultivation of the soil. Chapter 16, In: *Soil and Culture*. Landa E.R., Feller C. (eds), 2010, Dordrecht, Heidelberg, London, New York: Springer Press.

<sup>ii</sup> Feller C., Compagnone C., Goulet F., Sigwalt A., 2015. Historical and socio-cultural aspects of soil organic matter and soil organic carbon benefits, chap. 14, pp. 169-178. In S.A. Banwart, E. Noellemeyer and E. Milne (eds), *Soil Carbon: Science, Management and Policy for Multiple Benefits*. Wallingford, UK: SCOPE, vol. 71, CAB International.

<sup>iii</sup> Patzel N., 2010. The soils scientist's hidden beloved: archetypal images and emotions in the scientists relationship with soil: Chapter 13, In: Landa E.R., Feller C. (eds), 2010. *Soil and Culture*. Dordrecht, Heidelberg, London, New York: Springer Press.