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**Abstract of a series of lectures entitled „*On the borderline of chemistry and biology*”**

„*On the borderline of chemistry and biology*” is a title of book series edited by Adama Mickiewicz University in Poznań, as well as the title of Polish seminar for PhD students organized annually by Prof. Henryk Koroniak. I decided to adapt this title for a series of lectures, which will be given to PhD students of Gdansk university of Technology

Natural events have attracted interest from the beginning of humanity. In the first periods of development of science it was treated as one complex discipline. This resulted in that well-educated medicine doctor studied celestial spheres, other one predicted what will happen in the future, while an acknowledged astrologer discovered a microscope. The development of science caused the specialization of the researchers and simultaneous splitting of science into various disciplines. It is well seen in the case of chemistry where co-existence of many interacting specializations cause many controversies

Continuous effort to understand the meaning of life, to receive a deep satisfaction from human activity, as well as hope to find the clue of immortality appeared through whole history and resulted in interest in mechanism of functioning of life – from microorganisms to human beings. A good example of this may be ethno-medicine, where medicine-men, shamans, lamas, monks and sorcerers, based on careful observation of nature, discovered profitable properties of natural substances of animal and plant origin. In Polish literature exist a nice example of the application of such observations – Onufry Zgaloba mixed bread with mould, which resulted in growth of penicillia. Such „antibiotically enforced” bread have been used as cure against wounds.

In the cases where the natural events can not be explained rationally humans interpret them rising myths and legends. Therefore, myth is a story, which explains particular place of the particular tribe by actual more or less rational means yielding from actual understanding of the world. Myths become more and more complicated with the complexity of social structures of the society and in most cases are illustrations of these structures. It is quite surprising how many myths and legends are finding now rational explanation, among others on the basis on the actual chemical knowledge.

A collection of stories, which will present the set of lectures in the abstracts opens the story of *soma*. *Soma* is an elixir of life and immortality described very detailedly in Vedas – sacred books of India. This is the preferred position of Indian gods. One of nine Vedas is devoted nearly totally to this unusual specific – it describes its energizing activity as well as provide a detailed recepture for its preparation. Unfortunately, it is not easy to find out what was the source of *soma*. R. Gordon Wasson, emeritus baker, vice-president of J. P. Morgan & Co Bank tried to solve that puzzle. Together with his wife – Valentina, they started to study hallucinogenic substances used in religious celebrations by various tribes and communities. He was probably the first white person, who was allowed to use a drink prepared from Diviner’s sage by Mazatec Indians. This happened

during his expedition to South America, where Wasson and Albert Hoffmann (discoverer of LSD) studied the use of hallucinogens by various tribes.

Wasson was not an experimentalist – he had studied detailed books describing the customs and cults of various tribes. These studies led him to the conclusion that soma was prepared from fly agaric. His reasoning is presented in a book “*Soma: Divine Mushroom of Immortality*”. The oldest evidence is coming from X century BC and suggests application of fly agaric by Siberian shamans. They are as petroglyphs (rock engravings) shown in Figure 1. Quite interestingly in a small church in Plaincourau in France one can find a mural painting from XII century showing pre-parents Adam and Eve in paradise with fly agaric replacing traditional apple tree (Figure 2).

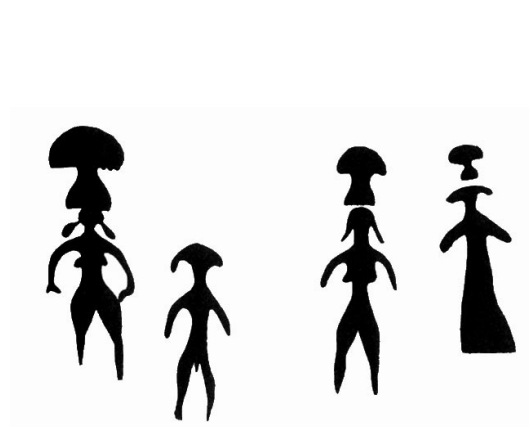


Figure 1. Siberian petroglyphs

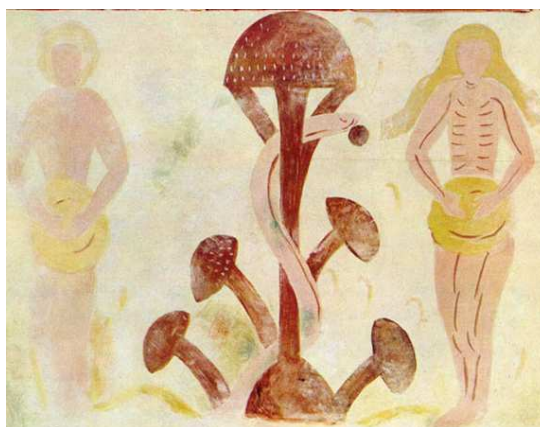


Figure 2. Fresco from Plaincourau

It is well acknowledged today that various fly agaric preparations were most probably used by many communities to mention only Greeks (ambrosia), South American Indians or berserkers (Vikings).

Saint Nicholas was a bishop in Mithra and his legend states that he was distributing his fortune between poor people (this is now reflected by Christmas gifts). He was portrayed as an old person with a pastoral staff and a birch in his hands. Today's Saint Nicholas wears long red gown and red-and-white cap, which evidently do not suit a bishop's dress. What is even worse, he comes to us in a sleigh driven by reindeer. Today we do know that this is a dress of northern shamans (to honour fly agaric). Quite interestingly reindeer are eating these mushrooms (maybe it is why they fly!).

The goal of this series of lectures is to show how technologists can mimic chemical processes appearing in Nature in order to obtain new products and to design new technologies and how the chemical knowledge might be useful in the rationalization of old mysterious and sometimes dangerous myths.

<b>Termin</b>	<b>Dzień tygodnia</b>	<b>Godzina</b>	<b>Miejsce</b>
<b>15.12.2014</b>	<b>poniedziałek</b>	<b>9.15 – 12.00</b>	<b>LUWR</b>
<b>16.12.2014</b>	<b>wtorek</b>	<b>9.15 – 12.00</b>	<b>LUWR</b>
<b>17.12.2014</b>	<b>środa</b>	<b>9.15 – 12.00</b>	<b>LUWR</b>
<b>18.12.2014</b>	<b>czwartek</b>	<b>9.15 – 12.00</b>	<b>LUWR</b>
<b>19.12.2014</b>	<b>piątek</b>	<b>9.15 – 12.00</b>	<b>LUWR</b>