

## Evolutionary theory in South-East Europe

# A True Fact

What's the status of evolutionary theory in the science and schools of Eastern Europe?

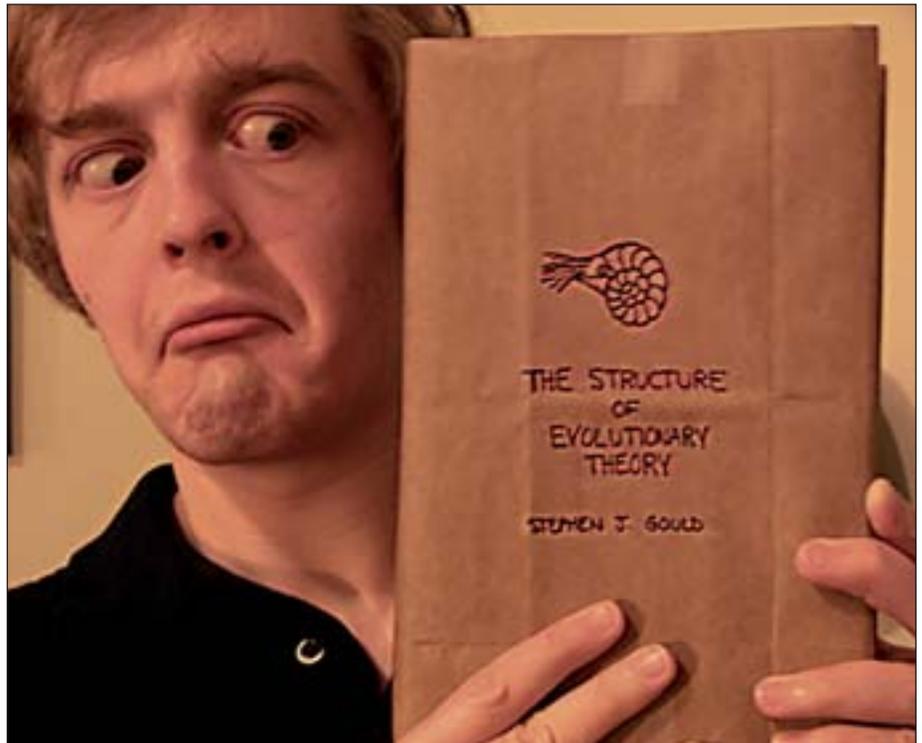
Livia Puljak collected some snapshots from the Balkan states.

“D<sup>escended from the apes! My dear, let us hope that it is not true, but if it is, let us pray that it will not become generally known,” the Bishop of Worcester’s wife reportedly said upon hearing about *The Origin of Species*. Well, subsequently, it has become generally known, at least in South-East Europe, where Darwin’s theory of evolution appears to be accepted as biology’s most basic theory. Here, there are no conflictual situations such as have occurred in the United States, where religion has made intrusions into science’s traditional domain, with attempts at bringing intelligent design to the biology classroom, or at choking off human embryonic stem-cell research on religious grounds.</sup>

### Croatia: Scientific and theistic evolution peacefully coexist

Krunoslav Brcic-Kostic at Rudjer Boskovic Institute says Darwin’s theory is accepted in Croatia, at least in the scientific community, and has its place in the biology curriculums of Croatian primary and secondary schools. “But how this theory is accepted by the general public, I don’t know. To find that out would require more research.”

Despite this, Croats declare themselves to be religious: according to Croatia’s 2001 Census, 88% of Croats are Catholics. Perhaps it’s a little surprising to hear that evolutionary theory is so widely accepted by the Croatian academic community and in schools, especially since religious education is part of the curriculum in Croatian primary and secondary schools. In effect, Croatian children learn about evolution in one class, and then are taught about God the Creator in another. How did Croats achieve this peaceful educational and scientific coexistence of God-created and Darwinian worlds? Maybe all the Croatian life scientists and science teachers make up the 5.2% of atheists in the 2001 census, and wield absolute control over the Croatian biology curriculums?



In fact, the Catholic Church’s position on the theory of evolution has adjusted over the last two centuries from one of officially ignoring it, to a statement of neutrality in the 1950s, to a more explicit acceptance in recent years. Today, the official Catholic position regarding evolution is fairly non-specific, stating only that faith and scientific discoveries regarding human evolution are not in conflict, although the existence of God is necessary to explain the spiritual component of human origins. Basically, theistic evolution is in charge of the soul, while scientific evolution is in charge of the body. And although they may have evolved differently, body and soul are successfully cohabiting in the Croatian educational system at the moment.

As for research, the most talked-about Croatian study linked to evolution is that by the young Croatian scientist, Tomislav Domazet-Loso, an evolutionary geneticist at the Rudjer Boskovic Institute. Together with Diethard Tautz from the Max Planck Institute for Evolutionary Biology in Plön,

Germany, he revealed that disease genes emerged very early in evolutionary history. For this research, they used a novel statistical method called phylostratigraphy, which was developed by Domazet-Loso. Published in 2008 in *Molecular Biology and Evolution*, their finding suggests that genetic diseases primarily affected ancient cellular processes that emerged during the early stages of life on Earth. This led them to the conclusion that all living organisms today, not only humans, will be affected by similar genetic diseases. Furthermore, this implies that genetically caused diseases will never be beaten completely because they are linked to such fundamentally ancient biological processes.

### Bosnia and Herzegovina: The legacy of socialism

In Bosnia and Herzegovina, the synthetic theory of evolution is also taught at all school levels and in all the country’s official institutions, says Professor Suvad Lelo,

from the Biology Department at Sarajevo University. “The theory exists here because some people actually believe in it. However, I have often discussed this subject with my students, and practically all of them study evolution because it is a leftover of old socialist roots. Often they believe in God, and as such do not believe in evolutionary theory, but still they have to study it in school.” However, Professor Lelo says there were no political or religious pressures for abandoning teaching of evolution in Bosnia and Herzegovina. He says that two courses are taught at Sarajevo University’s Faculty of Science: Basics of organic evolution, and General and molecular evolution. In Sarajevo’s Institute for Genetic Engineering and Biotechnology, evolutionary trends are studied and articles of high quality are being published. “To publish in a high quality journal, a scientist needs to use certain scientific methods, so we are basically all evolutionists,” concludes Lelo, who finds the situation in Bosnia and Herzegovina is basically the same as in Croatia.

### Montenegro: The one and only

Mara Scepanovic, Professor of Physics at the University of Montenegro’s Faculty of Natural sciences and Mathematics, has had an active role in the reform of Montenegro’s primary and secondary schools. She says that the theory of evolution has been the only valid biology theory taught in Montenegro since the Second World War. “As for the religious pressures and influences, they have been so minor that they did not even manage to introduce an elective course about religion, nor were they able to make any decisions about the core curriculum,” she says.

Vladimir Pesic, Professor at the Department of Biology, University of Montenegro confirms Scepanovic’s view of the, “evolutionary situation” in Montenegro. He says that evolution is accepted as the fundamental theory in biology both at the University and in primary and secondary school textbooks. Creationism is not even mentioned at any school level. “In Montenegro there is no pressure to teach creationism and there has probably never been any. I think this is because there are two religious institutions in Montenegro – the first one is part of the Serbian Orthodox Church, which is, one might say, in bad relations with the actual government; the other one is the Montenegro Orthodox Church which is only about 5-6 years old, does not have any developed

institutional hierarchy, and is probably too busy with other issues to even begin to engage in such things as creationism,” says Pesic.

### Slovenia: The only relevant scientific theory

“In Slovenia, the Darwin-Wallace theory of organic evolution is practically unanimously accepted as the only relevant scientific theory explaining life on earth,” says Peter Trontelj, Associate Professor of Zoology and Molecular Evolution at the Department of Biology, University of Ljubljana. “It is taught at all levels of the educational system.” However, Trontelj warns that this does not mean that there is a good understanding of evolutionary theory among the general population. “It merely means that the origin of life, including human origin, is viewed as the outcome of natural, rather than supernatural, processes. Furthermore, evolutionary biology has a rather marginal status among life science disciplines.”

Trontelj is not aware of any efforts to push other theories into the educational system to explain life on earth in different ways. “At least none with any public impact,” he says. “Some pre-Darwinian theories are being used in school as examples of non-scientific explanations, or to exemplify the principle of falsificationism.” As for research studies on the subject of evolution, Trontelj says that very few studies originating in Slovenia explicitly address problems of evolution. “Evolutionary biology is usually integrated with other fields like systematics, phylogenetics, molecular biology, paleontology, ecology. The term “evolution” has become popular as ‘decoration’ in scientific papers because of the wider availability of molecular phylogenetic tools, but the evolutionary part usually remains quite superficial. Although a small number of younger researchers are becoming interested in studying purely evolutionary problems,” says Trontelj.

### Albanian evolution

In Albania, there are no questions about evolution, according to Zyri Bajrami, Professor of Genetics and Evolutionary Theory at the Faculty of Natural Sciences in Tirana University, one of the oldest institutions of higher education in Albania. Nor have there been any discussions about creationism versus evolution in the Albanian mass media, although this is perhaps because religion was absent under the Communist regime

and could only re-enter the life of Albanians after 1990, often as a reaction to their Communist past. There are four major religions in Albania.

“In our schooling system, the theory of evolution has always been taught in schools and at universities,” says Bajrami. In Albanian high school biology textbooks, evolution represents about 10% of the curriculum, and bachelors of biology have a compulsory semester course on evolution, which is worth 3-4 credits. Bajrami maintains that the topic is so important because “teaching biology without including the theory of evolution would be most unusual.”

Thus, in conclusion, Mr. Darwin can rest in peace knowing that, at least in South-East Europe, his theory is generally accepted as true fact in science and academia. The “mystery of mysteries”, as Darwin called the origin of species, is no mystery at all in this corner of Europe.

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