



Dr. Juhász-Nagy Pál

(1935 – 1993)

In search of truth - Pál Juhász-Nagy's life and work

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Everyone who knew him was shocked to hear the devastating news: Pál Juhász-Nagy, (Pali to his friends and colleagues), long-time professor of Ecology and Mathematical Biology at our university, died on April 5, 1993 after a short, serious lung illness.

He was born in Debrecen, eastern Hungary, on January 29, 1935. During his secondary school studies at the Reformed (Calvinist) College of Debrecen, he developed his interests in biology, mathematics, literature, history and languages. Originally, Pali wanted to become a classic philologist, from which track he was deterred by his excellent biology teacher. He began his university studies at L. Kossuth University, Debrecen, transferring to L. Eötvös University two years later. There he was a student of R. Soó, a leading figure of the Braun-Blanquet phytosociological school in Hungary, and A. Rényi, the world-famous mathematician and developer of fundamental ideas in probability and information theory. This biological-mathematical duality has strongly influenced Juhász-Nagy's scientific career. Pali graduated as a biology-chemistry teacher in 1957, and received his PhD degree in 1958. He returned to his hometown and taught in the Department of Botany, L. Kossuth University until 1969, when he joined the Department of Plant Taxonomy and Ecology, L. Eötvös University as an associate professor. He was appointed to full professor in 1979, and as a corresponding member of the Hungarian Academy of Sciences in 1990. He received the most distinguished Széchenyi-award from the Hungarian government in 1991. Official high-level acknowledgement came very late; the period in which Pali could work away from all problems was painfully short.

Pali devoted his full life to research, teaching and education. His early studies (1957-1963) were concerned with the phytosociological and ecological analysis of meadow communities. Thanks to his strong mathematical background, his interests soon turned towards methodological and theoretical problems in plant ecology. Continuity of vegetation, interspecific association, various aspects of sampling, and characteristic areas of communities were treated in much depth in his papers between 1964-1968. At the same time, he realized the weakness of concepts of contemporary vegetation ecology and launched a series of papers to clarify some of the methodological and theoretical problems of this subject area. Succession, niche theory, supraindividual organization and biological indication were also in the focus of his work, which culminated in several books and book chapters published in the past 10 years.

Prof. Juhász-Nagy was a pioneering investigator of community-level pattern, and initiated a new school of spatial analysis of vegetation (1967-). He generalized the notion of diversity to supraindividual objects, such as floras of sampling units and faunas of planktonic samples. He developed a specific sampling design and a set of information theory models for the analysis of the spatial dependence of plant populations and communities. Various information theory statistics, as depicted in the function of sample plot size, serve the purpose of identifying areas, intervals and orderings that characterize community pattern.

For many people he appeared to have a limitless memory; but unlike many such creatures in the world, he had an excellent logical command over the enormous body of information in his head. He

did not simply have many drawers: he knew precisely which drawer to pull out in order to obtain some basic insight. Pali's broad knowledge of biology, statistics and philosophy explains the high diversity of his activity in other research areas. Several of his papers, written together with J. Izsák, discuss the idea that diversity is not restricted to plant and animal communities, but is also a useful concept in the analysis of human mortality data (1981-). He also contributed to the history of biology in articles about Haeckel and Darwin, for example. Pali was a great admirer of Darwin's rich scientific legacy. To him, Darwin's crucial observation was what Ashby calls, in modern terms, the *required diversity*. This led him to collaborate with a few colleagues, including his dear friend G. Vida, to work on a rather novel type of coevolutionary model: the *Phylogenerator* (1987-90). This model follows in a neat way Hutchinson's concept of an "ecological theatre" and the "evolutionary play".

At first glance, many of his works appear to extend into areas far from biology: for example, several papers and a book, co-authored by L. Zsolnai, analyze the relationship between ecology and economics. Widespread misuse of the word "ecology" motivated him to clarify conceptual foundations and to reveal connecting points between ecology and the humanities. An outstanding example of his multidisciplinary work is his book, *The Fading Diversity* (written in Hungarian and published simultaneously with this volume). The fate of this book illustrates all too well how hard he had to struggle throughout his life to achieve scientific and human truth. Although the first draft of the book was submitted for publication about 20 years ago, the former political system in our country did not tolerate the freedom of thought he represented so persistently and therefore prevented its publication.

Pali was a committed and outspoken defender of ecology and non-reductionist approaches in the past era dominated by reductionist molecular biology and biochemistry in Hungarian science. Arguing with the biochemists, many of whom cruising with the wind blown from Moscow, he pointed out that identifying a new species is intellectually by no means inferior to describing a novel type of enzyme.

He was a very courageous man, an not only intellectually so. When he was firmly instructed to teach Lysenkonean "genetics" by the Dean of the Science Faculty at Debrecen, he equally firmly

refused by pointing out that it was very hard to teach something which in effect did not exist. The Dean was so shocked that he could not do anything but accept the argument. In the great Hungarian revolution against communism and Russian imperialism in 1956, he, with some friends, composed flyers in Russian explaining to Soviet soldiers that Hungarians wanted only freedom and were not "fascists", as the communist leaders liked to put it. They were captured and badly handled afterwards.

Pali was an enthusiastic traveler and an indispensable chairman and convener at several international symposia and short courses. In 1963-64 he was a visiting research fellow at P. Greig-Smith's laboratory in Bangor, and he benefited much of the cooperation and discussions with colleagues there. He also stayed in the USA (visiting research centres and universities in New York, Illinois, Tennessee, Pennsylvania and Utah) and Italy for several months, and traveled all around Europe. As member of the faculty of the *International School of Vegetation Science* (ISVS), he presented a series of lectures in Trieste, Zürich, Roma and León, and very actively participated at conferences held in Vienna, Budapest, Basle, Galanta and Marseille. He contributed much to the success of the 34th IAVS conference held in Eger in 1991, via the long-lasting and deep discussions on syndynamics and spatio-temporal models, which will be remembered for a long time by all participants.

Prof. Juhász-Nagy's papers appeared in *Vegetatio*, *Biometrical Journal*, *Acta Botanica Hungarica*, *Acta Biologica Debrecina*, *Hydrobiologia*, and many other scientific as well as popular periodicals. Last but not least, he published many articles in the journal closest to his heart, *Abstracta Botanica*, published by our university department. Under his chief-editorship from 1984, the journal became an internationally-acknowledged forum of statistical ecology. Pali was also a founding member of the board of *Coenoses*, the Trieste-based journal of quantitative community studies.

For him, teaching was perhaps more important than research. He was surrounded by many students throughout his academic career, and was always disputatious and ready to help. He had an unusually high regard and respect for colleagues and students, and all were considered equal by him during discussions. Indeed, he was happiest when one of his students developed a strong argument to refute his beliefs. He taught about 20 dif-

ferent subjects, mainly in the areas of ecology and biomathematics but also including taxonomy, genetics, biophysics and cultural history. He is the author or co-author of several textbooks, including the most widely used "Introduction to Biomathematics". He opposed dozens of theses, and his critical comments were always constructive and straight to the point. Generations of biologists were lucky enough to enjoy his lectures and guidance. His influence on Hungarian biology is penetrating and immeasurable.

It was not pure and sterile science that Pali mediated, but culture and the correct attitude towards our confused world. His seemingly limitless knowledge extended to literature, history, music and art; his oeuvre is a renaissance synthesis of science and the humanities. Pali has been an incredibly helpful man in an altruistic manner. He often quoted the renowned Hungarian novelist and essayist László Németh, who observed that a saint is a person who does the best his moral is suggesting to him without a long-term cost-benefit analysis. Readers will be amused to learn that one of Pali's brief "manifestos" read in his absence (due to sickness) at a Hungarian meeting on community ecology, was referred to by some as "Saint Paul's letter to the ecologists". Lack of self-centeredness and envy were characteristic for him; this may, in part, explain his appreciation of the arts as well: beauty to Pali was a Kantian phenomenon: appealing without self-interest.

Professor Juhász-Nagy was a charming person, and an outstanding individual, scientist and teacher. He had an enormous energy and driving force, and we lost him at the height of his intellectual power. He will be greatly missed. His spirit, ideas and influence will long remain alive.

Bibliography

P. Juhász-Nagy's publishing activity was manifold just as his intellectuality. He did not leave behind any complete list of his publications ready for submitting to scientific administrators who often asked him to do so. It remained our task to compile a bibliography as completely as possible. If something is missing, it remains our responsibility. To facilitate orientation among the wide variety of his work, the list will follow a classification into research papers, abstracts and symposium proceedings, essays, books and book chapters, and interviews, with items ordered by date within each category.

Abbreviations: HF: in Hungarian with French summary; HE: in Hungarian with English summary; H: in Hungarian; E: in English; EH: in English with Hungarian summary; G: in German, F: in French.

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