

# **EDITORIAL**

## PERSONAL REMEMBRANCE OF VLADIMÍR NOVOTNÝ

This issue of *Anthropologie* is dedicated to doc. MUDr. Vladimír Novotný, CSc. (\*7 April 1939 – †30 November 2019), anatomist, morphologist and anthropologist. Vladimír Novotný was a long-time member of the editorial board of this journal, to which he contributed his merits, his wisdom and his broad scope presenting a unique mélange of natural science and art, reality and fiction, facts and storytelling.

Undoubtedly, Vladimír Novotný was an unforgettable personality, full of contradictions that are difficult to grasp. In the following text, we take the liberty of bringing a personal recollection that attempts to capture his broad scientific soul and makeup. We were both among the first students to enroll in the study of anthropology at the then newly re-established Department of Anthropology at the Faculty of Science, Masaryk University. The same department he helped to rebuild in the early 1990s. We belonged to the last generation of Novotný's students and had the privilege of being the youngest of his colleagues, so naturally we have little knowledge of his early years and most of his scientific and academic career. Moreover, we have come to know him only in the last chapters of his career, at the stage of stocktaking and conceptual crystallization of his long professional experience (philosophical self-reflection or long practice with theory). Therefore, this is neither an exhaustive nor a coherent overview of Novotný's work. Rather, our contribution aims to provide insight into his professional and personal legacy as we perceive it through our senses.

### Morphology, Morphometry and the Shape of the World

Novotný's central theme as a scientist was undoubtedly morphology and quantification of shapes – morphometry, which he pursued throughout his life from many perspectives and in many ways. In the early decades of his professional career, he devoted himself primarily to microscopic study of the anatomy of specialized nerve endings, particularly receptors, and afferent fibers in the joint capsules of the cat (*Felis ocreata, f. domestica*), bat (*Myotis myotis*), and macaque (*Macaca mulatta*) (Malinovský, Novotný 1980, Novotný 1967b, 1971a, 1973b, Novotný, Halata 1969, Poláček *et al.* 1969). Starting with these studies, there is a motif of morphological basis of behavior that had resonated in his studies as well as teaching activities throughout his professional life.

From a theoretical and practical point of view, however, among his most important topics in anthropology are the studies of sexual dimorphism of the human skeleton, and especially of the pelvic bone (Novotný 1973a, 1983a). Through his comparative studies of the pelvic bones (and entire bony pelvises) of macaques (Novotný 1964, 1967a, 1968, Poláček, Novotný 1963) and their comparison with humans, he has contributed to the understanding of the specific dimorphism in the human bony pelvis and its evolutionary origins as a trade-off (as postulated by contemporary Life History Theory) between the locomotion and reproductive demands of the bony pelvis, which are set differently in each sex (Novotný 1983b, 1985, 1986, Novotný, Vančata 1985).

Together with his students and colleagues at the time, he was able to extract key aspects of pelvic bone dimorphism and translate them into the form of methods for estimating sex in skeletal remains (Novotný 1971b, 1981b, 1986, Novotný et al. 1994), which are in high demand and widely used in both paleodemographic studies and forensic casework. He was always very progressive in the technical aspects of his methods; on one hand, he was a proponent of reliable, but simple solutions, on the other hand, he was aware of the advantages of modern statistics and especially computer technology (both for its efficiency and for its social appeal). We dare to say that he was ahead of his time, when he tried to take advantage of the most modern trends (in modern terms "to be up to date") and to implement his methods into an automated, computerized algorithms already in the era of punched card data processing.

While Novotný's work on the pelvic bone is considered groundbreaking, he studied sexual dimorphism, both by himself and with his students, on many other bones of the human skeleton (calcaneus, talus, cranium etc.), and published the results obtained both in the form of original studies (Novotný, Malinovský 1985) and scientific reviews (Novotný et al. 1993). In addition to the techniques for sex determination, the methods enabling practitioners to estimate age at death using dental characteristics (Vystrčilová, Novotný 2000) or to assess signs of birth based on skeletal characteristics (Novotný 1979) are particularly noteworthy. He even applied his findings to the study of well-known paleontological finds of human skeletal remains (Novotný 1992, Novotný et al. 1991, 1991, Vacca et al. 1992) and historical figures (Novotný 2001).

However, Novotný perceived morphology very broadly, as "the shape of the world" or "the world as shape". For him, morphometry was not just "measuring bones". For him, the task of morphology as a science was to investigate how living (life) processes become externalized, i.e., shape became for him a generally hidden, but researchable correspondence (in the dynamics of life, even *communication*) between the essence of a living entity and its outer shell. In addition to some passive or automatic consequences of the internal functions of the organism, he also included the aspect of intentionality and subjectivity in the whole process. Shape was not only what manifests itself externally from the inside in a hidden or less obvious way, but also what the organism makes known about itself intentionally and with a purpose (as means to attract, to signal, or to deceive). Morphology thus became literally "shape-speak" and the shape of the body became an essential component of the very dynamic "theatre of the world" (theatrum mundi). The human expressions of gesture, facial expressions and pantomime were, of course, the most relevant to this. In this way, his world of morphology was directly connected to theatre and theatrology (Novotný, Oslzlý 1997), and the scientific study of facial shape became a means of studying the truthfulness of emotional expressions and the degree of their "edginess" on the theatre and in life, i.e., morphology as a professional means of distinguishing shape (authentic, genuine), as a secondary manifestation of inner life processes from shape (artificial, staged), as a deliberately produced representation of one organism with the aim of influencing others.

Overall, Novotný was attracted by the function of shapes in social interactions as signals or controllers of the social environment, whether it was the female figure (Novotný, Králík 2007) or the human face (Novotný 2003, Novotný *et al.* 2003). He sought different ways of understanding and studying them in terms of the relationship between form and function, which together produce a behavioral trait. In these ways, he was very close to current trends in cognitive or evolutionary psychology, and, again, we must emphasize that some of Novotný's ideas were well ahead of their time (though he was certainly inspired by the old physiognomists).

The inherent nature of the living form and its "multi-purpose" (a product of biomechanics, growth conditions, the externalization of emotions, a means of manipulating the environment or adapting to various environmental influences...) posed a challenge for Novotný to search more intensively, more closely and more "to the core". In fact, there may be more important data hidden in the shape (the shape "hides" them) than one is able to find out just by looking (at least to the uninitiated), by scientific analysis of the studies of previous authors, or even by exact measurement by some traditional means. A more intensive search for the real, but as yet hidden, "factors" among the large number of apparent (but partial, incomplete) clues at the time already directly implied multivariate statistical methods, e.g., factor analysis, which Vladimír Novotný and his colleagues successfully used in their studies (Novotný 1985, 1986). At the same time, his quest for perfect description, decomposition and shape analysis led him to collaborate with morphometricians and to successfully apply geometric methods (classical Fourier analysis) to the study of the shape of the incisura ischiadica major of the human pelvic bone and its sexual dimorphism (Novotný et al. 1996, Vacca *et al.* 1997). Their studies thus represent not only a factual advance in the subject, but also one of the first ever applications of the more complex shape analyses (in today's terms geometric morphometrics) in our country. Novotný considered the advanced methods of geometric morphometrics to be the right way and the future of morphology, and further developments clearly proved him right.

#### Systems Theory and Philosophy of Science

The second motif of Novotný's work was Bertalanffy's (1901–1972) General System Theory and the systems approach in the natural sciences, which he purposefully tried to apply to anatomy and anthropology (Novotný 1981a, 1991, Novotný et al. 1983). He sought inspiration in the works of all the major philosophical conceptions and critiques of modern science, from the Renaissance origins to Karl Raimund Popper and his modern followers. Among all of them (Thomas Samuel Kuhn, Paul Feyeraband, Imre Lakatos, and others), his enthusiasm for Kuhn's conception of the scientific paradigm, scientific revolutions, and the postmodern world of the dynamics of nature, the sense of human meaning and their interactions stood out.

Methods, methodology and meta-methodology or philosophy of science, and the interplay of these levels of "practical gnoseology" were Novotný's "royal" topic as something finally worthy of a real intellect and for himambitious, priding himself on his intellectual competence only a real challenge. Meta-methodology was probably Novotný's most important insight and contribution as a mentor to his mentees. It was the insight that knowledge is a never-ending process of oscillation between a clear awareness of the changing and ephemeral nature of reality, and the pursuit of a sufficiently rigorous and conceptually communicable (transferable among scientists) theoretical conception that would be able to withstand all this flux and change and prove its stability despite time, chaos and entropy. This is probably where he saw the role and importance of a scientist.

Under the aegis of his methodological insight, Novotný often criticized the efforts of today's natural science to seek *mathesis universalis*—the notion that while we don't know everything yet, gradually, with more precise instruments, persisting systematic activities and volumes of data, we will gradually be able to eventually attain ultimate knowledge of everything. He saw a great danger in scientific fundamentalism, which, in addition to the above, is manifested by the fact that proponents believe their models, concepts, and theories to be reality itself.

He was very concerned about the attacks on open postmodern thinking by these currents and saw them as a misunderstanding of the dullards at best, a deliberate (probably self-serving) intention at worst. Postmodern thinking can give the superficial mind the impression of arbitrariness and license-everything is relative, nothing can be relied upon. Novotný pointed out that the exact opposite was in fact true. The dependence of our knowledge on human-made concepts, which are our only means of mediating the connection between the external world and the human mind, unequivocally creates a strong connection to the methods of concept formation and the crucial role of responsibility imposed on the scientist as the "producer of knowledge" as well as on society as the "controller of quality".

He was fully aware of human cognitive and other shortcomings and in overcoming this barrier he saw a certain heroic aspect of human existence. In other words, the role of the scientist is to keep searching, despite being fully aware of his catastrophic cognitive inadequacies, in the face of the immense complexity of the universe. The topic is therefore never finished or resolved, because life is always going on, changing and escaping from the template (prison!) of concepts that man plants for it with his vehement, insistent tendency to classify things using words and their contents and scopes. But since this is the only way man can approach the world scientifically. Since the world never stops changing and flowing, just as man never stops looking at things from different angles (under a changed social necessity, with a different assignment, etc.), scientific work never stops—concepts must be constantly re-argued in a community of experts working on a common theme, their congruence with phenomena alienated, and the "prison" corrected; this is the scientist's task. A "true" scientist is recognized by the fact that he continues even after he becomes aware of all this...

If we were to decide whether Novotný was a representative of a more "Apolline" or "Dionysian" (see Nietzsche, 1872) approach to science (or type of scientist), we probably would not decide – sometimes more, sometimes less harmoniously, both were combined (welded), as if this apparent contradiction was actually a koan and Novotný its living materialization.

The connection between body and mind (soul), or the psycho-physical problem, was also a major theme of Novotný's reflections. He was a fundamental critic and opponent of the European Modern Times ontological dualism—the separation or an independent existence of body and soul. He considered them in general to be the great misfortune of the Western civilization, and a hindrance to any knowledge in human biology and anthropology. All his knowledge of the nervous system and anatomy contradicted this. A quick neural response to an external stimulus releases hormones, these trigger a change in tissue and bodily functions, and their feedback is evaluated by the mind as a particular emotion. There is no place for a sharp demarcation line between brain and body, nor can there be between body and soul. Hence, perhaps, his interest in concepts even today (in the natural sciences) perceived as euphemistically speaking "alternative", such as acupuncture, hypnosis, psychoanalysis, and various holistic trends that hesitate to draw a line between body and mind. But he was even more attracted to the possibilities of human culture and its completely arbitrary symbolism to influence the mind and, through it, bodily functions.

He undoubtedly understood practical science as a deliberate, methodical, routine, almost artisanal activity of the scientist and knowledge as a product, an artifact, which must be constantly refined and redefined in confrontation with empirical facts. In doing so, he often drew comparisons with the Renaissance masters of the fine arts. Craft requires consistency, diligence, renunciation, will, patience, precision, responsibility and repetition of patterns. Cowriting a paper or a thesis with him was a seemingly never-ending struggle. He was capable of editing one paragraph of a text for hours. At first he problematized almost every concept and meaning in every sentence, gradually he replaced almost all the words with others, and after a while he put some back in (then it was "tentatively" edited).

Conversely, he did not regard real scientific discoveries as something achievable in a lawful, routine way. He was ostentatiously contemptuous of dull fachidiotism and the mindless repetition of already used patterns of methodology in the machinery of modern natural science. Scientific "craft" was for him a necessary prerequisite ("Science is made like rolls in a shop."), but not sufficient. There always had to be a piece of divine power, magic, luck, something not automatically given, something unteachable, artistic, the genius of the creator. In this context, Novotný's attitude towards chance as the creative force of evolution can be mentioned. He thought deeply about the relationship between historical contingent processes, which are the subject of temporal change, and natural laws, which apply causally and universally regardless of historical time and space. When we examine Man,

do we examine the coherence of coincidences or do we look for laws? And in what time frame? He saw the most interesting part of anthropology as precisely the search for that confrontational line between the two dimensions.

As far as we know, he did not write down these ideas systematically, but he mentioned them on various occasions and incorporated hints into his various reflections. He also liked, seemingly "just" to walk around, in fact he was actually "on the hunt for coincidence", or rather, he was going to meet it—he hoped to meet someone he had not anticipated, and with whom in conversation he would come across an idea that he would not otherwise have thought of, which would be new, original and irreplaceable. Thus, with his eyes shining and twinkling, he was waiting to see when, on the line between the systematic, precise readiness of the perfect scientific craft and the unknown, with the contribution of a catalyzing drop of divine genius distilled at random by forces incomprehensible to us, something entirely new would be born, allowing him, always ready and informed, to grasp it immediately... In every empirical fact he saw a hint that Nature gives us and that we have the opportunity to grasp.

#### The Social Dimensions of Science

Novotný perceived science itself as a predominantly social phenomenon. For him, scientific knowledge was a consensus of scientists in a given field and it did not matter much at all about the genius of the discovery or the discoverer, unless he could convince others of it and assert his findings against his peers or competitors. He liked to be the center of attention and liked to make his education, knowledge and skills known and liked to take advantage of opportunities to show himself in public and show off. But even at various outreach events he would always consider the form of the message in terms of its relevance, and at times struggled internally between what he as a scientist really knew about the topic (what he believed he knew) and the need to appear persuasive in the impact of the presentation.

Undoubtedly, he suffered greatly from the "Iron Curtain" (while we did not experience it with him, the reverberations were evident) that hung between East and West for many decades, severely limiting his professional/creative flourishing. He suffered from various limitations, which he was able to compensate for or overcome to varying degrees with the help of acquaintances and foreign colleagues. After the regime

change, and this is how we remember him, he did his best (e.g., by supporting students' trips abroad and establishing various contacts of his students with their foreign colleagues, co-organizing international conferences, etc.) so that the next generations would overcome this barrier and would not suffer in their professional development from the political context as his generation did. He repeatedly stressed the necessity of travelling abroad, especially (among the many benefits and others already mentioned) to find a different perspective on something viewed purely from a distance. But he also often expressed his gratitude to foreign colleagues who worked with him at the time and helped him in various ways.

Surprisingly, and in line with many contradictions in his personality, Vladimír Novotný was very sociable and we dare to say he was "a social butterfly" who, apart from sleep, spent a considerable part of his adult life discussing some topic (more or less professional) with someone rather than appearing somewhere alone. For one thing, he was probably naturally sociable, and he was also well aware of the collective nature of scientific activities and the need for good collegial contacts in accessing sources of material, literature, and professional know-how. He was therefore not averse to various socially accepted sociality enhancers, e.g., smoking, good food, and consumption, while attending social events. In addition to its social nature, he saw professional discussions and contacts as a means of reinforcing the influence of "creative chance", as we would say today: moderated, random brainstorming. He liked to launch provocative topics and questions in these interactions and see if they sparked something new. He liked to be the initiator of things and enjoyed such "launches" and also expected that something positive would come out of it for him, that he would be there at the birth of something and devour the process (and, as many memoirists will likely attest, that he really enjoyed his role in the process). In a sense, one could say that Novotný was a connector of unusual professional minds, a seeker of unusual connections, and a starter of new actions.

His passion for photography, especially snapshots of people, was a sign of his sociability. He liked to take pictures of everyone and with everyone. For a while, he was greatly helped by the availability of compact cameras that had fast shutter speeds and could take relatively clear documentary images (snapshots) of people, as well as the tendency of people of the "precellphone era" to see photography more as an opportunity

and a privilege (as opposed to today, when it is more likely to be seen as a nuisance and even a misdemeanor without consent). He donated many photographs and liked to use them to maintain social relationships.

However, his dynamic outlook on life and science probably made him less prolific than were other of his peers and implied his general reluctance to write tons of monographs or textbooks that are "out of date before they are published". He had a volatile, fickle, even neurotic nature, which manifested itself in many situations. He was an exceptionally good public speaker, but he also carefully guarded what he said in public—he composed his lectures and speeches as literary works, prepared them with sidenotes and tweaked them until very last minute, then delivered them as a poem recital or a theatrical monologue, with all the accents, facial expressions and gestures. The form always had to respect the content.

He was probably less guarded in his role of a teacher and a mentor. He did not see the student as a "pupil", i.e., a passive recipient of "eternal truths", but rather as a younger colleague who, with less experience but also a less "worn" mind, performs the thought operations presented by the teacher (i.e., thinks about the same things) and thus represents a replicating methodological event and at the same time a possible source of possible innovation (noticing something that has never been noticed before). However, he was very annoyed by stupidity and especially ignorance, i.e., when someone did something he wasn't even interested in, let alone tried to understand. On the contrary, inquisitive questions and deeper discussions with young colleagues literally energized him. He valued the students' talents, but more in the sense of motivation, engagement and openness to the new. He could not be said to be an elitist, but he did not much approve of unification in education. He saw people as a multitude of diverse gifts and talents, and each as a specific realization of some aptitude that could not be identified with any other person or any unified curriculum. He considered the idea that everyone should learn and should eventually be able to do everything in the same way to be misguided and unworkable ("Not everything is for everyone and not everyone is for everything,"). He considered it crucial to recognize in a person his or her individual talents, and to develop them and let them excel to the maximum.

Thus, we could often experience moments when he let himself get carried away in his explanations and we could glimpse into topics that were not part of the taught material, but were currently resonating in his personal reflections. Even in improvisation he was a great storyteller. One such topic was undoubtedly "Homo cosmicus". He understood the meaning of anthropology not only in the discovery of human nature through the mysteries of the human body and human evolution, but also in the futurology of the human species and the anticipation of our future direction. Some could be chilled by the dark tones of his explanation, problematizing the very continuation of our species ("Maybe we are not really here anymore, we just don't know it yet."), but overall optimistic tones prevailed, and among them the future prospects of man in the universe ("We must shoot for the stars!").

It is difficult to find one aspect of Vladimír Novotný's multifaceted personality with which to conclude our remembrance. However, it is possible to highlight one that has not yet been mentioned: a certain professional pride in his belonging to the global community of scientists and their sojourn on the borderline between existence (Being or Order; understand: defined in concepts and terms) and chaos (understand: non-existent realities, i.e., not yet grasped in terms and concepts), on the key position of the scientist in this fateful struggle of humanity, on the greatest possible courage (or audacity) of all men, namely their usurpation of a piece of God's competence to create the world. Vladimír Novotný made us realize that the best and most powerful thing a human being can experience is the irreplaceable feeling of the first knowledge, that "Eureka" moment, which makes life as a human being worth living. But along with this privilege, which most are not afforded and will never experience, with the joy and intoxication, inevitably comes sobering consequences—an understanding of the infernal nature of the scientist's role. The scientist should question not only his methods and results, but also his social role as their producer and his responsibility to bring such products into the world at all. The Faustian theme of self-reflection and responsibility towards one's thought products is the ultimate theme that Vladimír Novotný has given us in his own way.

> Miroslav Králík, Petra Urbanová Guest Editors

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