Natural Science vs Radiology (Imaging):
A SWOT Analysis of A Complex Relationship

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Abstract:
Radiology (today better Imaging) plays an important role in medical diagnostics and has evolved to gate keeper. This progress would not be possible without the mutual relationship with the disciplines of natural science.

Although Conrad Wilhelm Röntgen invented his xrays already at the end of the 19th century, a shift of the paradigm occurred silent but steady during last three decades. In the time before this shift the relationship of both disciplines was rather distinct – engineers were responsible for tubes and generators and Radiology “exploited” the equipment and by using contrast media several variants were setup. Although Radiology is reporting images by pattern analysis with human feature extraction, half a century ago Radiology started to investigate if mathematical modeling can enhance/improve radiologists reporting. Starting with the invention of Digital Subtraction Angiography and Computed Tomography a new era started and information technology entered the stage. Sophisticated algorithms enabled to overcome hardware restrictions and image storage and retrieval was becoming a major task. Additionally availability of digital images enabled post processing and soon the idea of decision support systems were born – thus make the relationship between Radiologists and engineers of all disciplines more tight.

The purpose of the presentation is to highlight this evolution from the point of view of a SWOT analysis (Strengths-Weakness-Opportunities-Threads) as well as to depict the interactions and cooperation between the University of Szeged and the Medical University Graz in that field. Appropriate examples of this successful scientific cooperation will be demonstrated.

Biography Univ.-Prof.Dr.Erich Sorantin:
Erich Sorantin was born in 1957 and, after finishing high school, he studied Medicine at the University of Vienna, graduating in 1982. Afterwards he worked in several hospitals, fulfilled training as general practitioner and became fully qualified as Pediatrician and Radiologist.

Already in the mid eighties, as a pediatrician, he developed a system for measuring lung stiffness in preterm babies for guiding mechanical ventilation by computer simulations in these vulnerable patients. In 1988 he joined the team of the Department of Radiology, Medical University Graz, where he became a faculty member in 1994 and earned his professorship in 2002. Currently, Dr. Sorantin is the acting Head of the Section of Pediatric Radiology as well as the Head of the Research Unit for Digital Information and Image Processing. Moreover, he coordinates a multi-institutional, multidisciplinary academic network in Central Europe (50 academic units in 15 countries), which focuses on biomedical imaging and technology transfer of advanced pediatric care as well as radiation protection.

Additionally, Erich Sorantin served as a computer graphics consultant for medical vendors eg.: Siemens AG focusing on virtual endoscopic techniques for approximately eight years. Currently he holds a contract with ulrich medical & Co. KG for an algorithmic approach to injection of intravenous contrast medium in pediatric Computed Tomography.

Dr. Sorantin has been married since 1984, fathered three sons and got a grandson on 2017.