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WHY AND HOW TO INTRODUCE THE TEACHING OF HISTORY IN THE CURSUM STUDIORUM OF STRUCTURAL DISCIPLINES IN ENGINEERING FACULTIES

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SUMMARY

Historia magistra vitae is not only a saying, but a true sentence. We cannot do our best without the knowledge derived from the past. We must learn from the past to act in the best way today. In fact, errors, faults and failures in structures and architecture could be avoided with knowledge and experience.

Social progress is connected to technological developments, and vice versa. Just consider two examples. First, the developments of the research about Fracture Mechanics were driven by the necessity to increase the basins of some damaged dams during the energy crisis in the 1970s. Secondly, the cracked experienced by some cast iron bridges drove the production of iron and steel as pure as metals. To study this phenomenon a new branch of science was born: fracture mechanics [1]. Several eminent engineers and historians traced the history of civil engineering and our task is now to translate their teaching to students of engineering together with the study of technical topics and BIM tools. It is important that future professors in science universities should have a general preparation and insight sufficient to teach successfully.

Keywords: *History of Sciences, Human, technical and social sciences, Unidirectional versus transversal engineers education, Engineering trades, "Full" engineer.*

1. INTRODUCTION

In the past, many outstanding scientists, in the broad sense, have introduced their works and treatises on the theory of elasticity and resistance of materials, which were correlated with a historical preface, such as *"Historique abregé"* [2],*"Historical introduction "*[3], *"History of Strength of Materials"* [4], *"History of the Theory of Materials"*[5]. However, these works can be considered just mere introductions. Many of them are definitely valuable, but they are removed from the context and exclusively for documentary, notional and/or uncritical purposes [6]. As such they were often considered by the novices engineering students, and therefore eluded. In 1981, Edoardo Benvenuto published a revolutionary work in this mean, the *"The Science of Construction and its historical development"*[7], which was translated in English as *"An Introduction to the History of Structural Mechanics: Part I: Statics and Resistance of Solids; Part 2: Vaulted Structures and Elastic Systems"*. The title does not highlight the development of the autonomous discipline that has developed since the time of Aristotle. In fact, his editorial project was not immediately understood by most, although it did not go unnoticed by his educated friend, the overseas emeritus professor Clifford Truesdell who invited him to publish it for Springer in New York. He wrote: *"It seems to me that your book makes it possible for a student to learn the science of structures in part from the classic, in part from your criticism and discussion of major essays. Such a course is difficult to provide and hence rare; if it is successful, it is the best of all methods"*[8]. Here lies the core issue: engineering students should learn not only from the traditional literature on the topics, but also from their critical interpretation which necessarily goes through history and the reasoned reading of the events that have contributed to the development of this

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