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THE IMPORTANCE OF CONSTRUCTION LAW IN CIVIL AND STRUCTURAL ENGINEERING EDUCATION

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During the process of creating civil or structural engineering curriculums, the people in charge sometimes do not recognize the importance of including interdisciplinary subjects that are not directly related to civil or structural engineering fields, such as construction law. There are a variety of reasons for this. The first part of the paper provides an overview about curriculum's creation processes at German universities. It describes the involved parties and the difficulties in finding a fair balance between the interests of all involved lecturers while observing the legal guidelines. The second part covers whether or not and to what extent construction law courses should be included in a civil or structural engineering program. It discusses the advantages and disadvantages of including construction law courses. The conclusion is that courses in construction law are necessary to ensure graduates' employability and the qualification to work professionally. However, civil or structural engineering graduates do not have to become Construction Law experts—they only have to acknowledge the seriousness of a situation and to identify a legal problem. This enables the building industry to save money that otherwise might have been spent on unnecessary legal consulting.

Keywords: Legal education, Structural engineering programs, Legal consulting.

1 INTRODUCTION

Private and public building law plays an increasingly important role in the building industry. Today, everyday working practices of civil and structural engineers are dominated not only by complex technical issues but also by legal issues. Dealing with the law concerns all persons involved in a construction project; that is why knowledge about legal pitfalls will become more important regarding, *inter alia*, the construction schedule in project management and project costs (Hohnecker 2008). Further, innumerable technical rules and codes as well as legal requirements, e.g., fire protection standards, must be observed—otherwise litigation and claims for compensation could be the result. Graduates must know how to act in accordance with the law to prevent expensive lawsuits. Also, in terms of professionals' fees, for graduates it is important to know some legal basics to avoid personal disadvantages.

Despite this, in civil and structural engineering programs construction law education plays no more than a minor role. This may be because legal training for engineering students does not seem implicitly relevant. Further, students' workload in civil and structural engineering programs is extremely high, and time devoted to

specific technical subjects and internships in curriculums is limited. Thus, there is little interest to reduce it further by offering interdisciplinary courses like construction law.

2 CURRICULUM CREATION PROCESS AT GERMAN UNIVERSITIES

German universities are dominated by bodies with memberships of lecturers, academic and administration staff, and students on an equal footing, so developing a degree program's curriculum requires time and endurance. The curriculum creation process is subject to German university law. Although university law in Germany is federal law, therefore every federal state has its own University Act, the legal requirements are similar (for the Federal State of Saxony: Saxon Higher Education Liberty Act of 2013). In this paper, the curriculum creation process will be illustrated by the example of the Saxon Federal State. The procedure described below is also applicable if changes are necessary in the curriculum of an already-existing program.

The creation process starts normally, with the idea for a new study program. Involved in the process are the dean for study affairs, the study commission, the board of the faculty, and the rectorate.

2.1 Content-Related Processes

First, the dean for study affairs needs to analyze which degree, i.e., a Bachelor's or Master's, should be awarded, and which orientation the new program should have. Furthermore, he or she has to evaluate which courses can support the objective of the study. While creating the course names and the course's relationship to the whole study plan, the dean for study affairs needs to meet all legal requirements. Additionally, he or she has to obey many rules not legally binding that are coming from non-academic organizations, such as accreditation agencies, the Standing Conference of the Ministers of Education and Cultural Affairs of the Federal States in the Federal Republic of Germany, chambers, and professional associations (Holschemacher and Quapp 2013). However, according to German Constitutional Law, universities and in particular the lecturers are responsible for the course contents of degree programs. According to Article 5.3 Clause 1 of the Basic Law of the Federal Republic of Germany, the Freedom of Science allows the professors to define content and method of their courses (especially the topic), the form (such as lectures, seminars, practical and non-practical exercises), the structure, and the duration (Fehling 2012). All professors in a degree course have the same fundamental rights of free teaching. However, if all professors enforce these rights, study-period planning would be chaos. So, to facilitate things, there must be a balance within practicing lecturers' fundamental rights (Holschemacher and Quapp 2013). The dean for study affairs and the study commission are mandated to create a program which balances the fundamental rights of the lecturers, all legal requirements, and the demands from non-academic organizations.

2.2 Formal Process

The formal process starts with a proposal by the dean for study affairs for a new program's curriculum. After informal discussion with the lecturers about module contents and teaching hours, the dean will create a program's proposal and present it during a meeting of the department study commission. Ideally, during this process, the

dean would be able to reach a consensus between all involved lecturers while observing the legal guidelines.

Next, the study commission considers the proposed curriculum proposal according to §91.3 of the Saxon Higher Education Liberty Act. Afterwards, the new program will be discussed by the board of the faculty. After the board's discussion and decision, the new curriculum and the relevant study and examination regulations must be approved by the rectorate, according to §13.4 of the Saxon Higher Education Liberty Act.

3 INCLUSION OF CONSTRUCTION LAW IN CIVIL AND STRUCTURAL ENGINEERING PROGRAMS

At German universities, the question whether and to what extent construction law courses should be included in civil or structural engineering programs often is discussed between construction law lecturers as well as structural and civil engineering professors. Most of universities in Germany offer lectures in public and private construction law in their civil and structural engineering programs to a different extent, e.g., from two weekly lecture hours (*cf*. RWTH Aachen University 2012) to four (*cf*. Brandenburg University of Technology 2012).

There is no legal obligation to include construction law in civil or structural engineering programs. But some non-academic organizations—such as accreditation agencies, the Standing Conference of the Ministers of Education and Cultural Affairs of the Federal States in the Federal Republic of Germany, and chambers and professional associations—recommend the inclusion of non-subject-specific contents in civil and structural engineering programs. Thus, the Alliance for the Accreditation of Courses of Studies in Construction (AS Bau) suggests general law education in the basic studies of undergraduate programs, if not at least including the option of building and contract law as elective subjects (AS Bau 2010). Especially in civil engineering master programs, advanced building and contract law courses are recommended for the specialization on the field of construction management (*ibid*).

As mentioned above, universities and in particular their lecturers are ultimately responsible for the course contents of degree programs. But universities also know it is important to create curricula close to the needs and requirements of the industry. Of course, there are advantages and disadvantages to including construction law courses in civil and structural engineering programs, so there are different opinions about whether construction law, if any, should be taught in bachelor's or master's programs and to which extent.

3.1 Arguments Against Legal Education

Law topics are only subsidiary subjects in civil and structural engineering education, which is absolutely acceptable. Thus, the interest of programs' creators in including them in civil or structural engineering courses of studies is sometimes very limited.

One argument against teaching law in civil and structural engineering programs may be that teaching the complete private and public construction law in a short time is not possible anyway. Further, it has been argued that public construction law will not be of interest to civil and structural engineering students, rather to architectural students.

Additionally, civil and structural engineering students normally are not very interested in construction law education. The reason may be that construction law often is taught by legal experts who cannot work within the language of an engineer. That is a problem for students, because the lecturers' interests and requirements often do not meet the demands of a civil or structural engineering education. This results in students complaining about high requirements and theoretical course contents without any practical relevance (Quapp and Holschemacher 2013).

It should also be considered that most of the big planning and construction companies have legal consulting teams, so the young engineers possibly do not need any legal training.

3.2 Arguments for Legal Education

For students it is necessary that they learn to see a connection between an engineer's failure and a civil action, as well as to acknowledge the seriousness of a situation and to identify a problem. Only in this way are they able to recognize the difference between a legal problem they can solve and a situation that requires professional legal support. This helps the building industry to save money that otherwise might have been spent for unnecessary legal consulting.

Further, in some German federal states like Hesse (Hessian Building Code of 2011) and Brandenburg (Brandenburg Building Code of 2010), the law authorizing building project administrators requires extensive knowledge in public construction law. But also, for all other civil and structural engineers, knowledge in public construction law is helpful, especially in the contact with public authorities.

If graduates are familiar with private building law, mistakes in planning costing the industry millions each year can be prevented. For example, planning deficiencies at the new Berlin Airport have so far cost €80 million (Neumann 2012). Another advantage is that legally-trained employees are able to avoid failures in securing and fulfilling contracts, or in remedying defects.

3.3 Discussion

Both sides of the debate have merit. Of course, teaching the complete private and public construction law in a short time will not be possible. Construction law is very complex particularly in the area of professional liability. However, this much detail is unnecessary. Students need not become legal experts by themselves; they should only be able to recognize when one needs to consult a legal expert. Familiarity with some basic legal terminology and a fundamental understanding of the legal system are sufficient.

Furthermore, legal education must be adapted to the special fields of civil or structural engineering studies. Students in structural engineering programs need a different orientation in construction law education than, for example, students in civil engineering master programs specializing in construction management. For lecturers in construction law, for example, it will be a challenge to impart basic legal knowledge helpful for civil and structural engineering students. These lecturers should not be legal experts who cannot find the language of an engineer, and have no idea of a civil or structural engineering education. Civil or structural engineers are also able to teach

construction law basics. This is the same situation in mathematics and science courses given by lecturers with an engineering background. In the end, it is up to the universities to recruit the ideal lecturers for their students' legal training.

Additionally, it is the case that most of the big planning and construction companies have their own legal consulting teams, obviating an engineer's legal training. Nevertheless, one must recognize that not every graduate will find a job in such a major company. After graduation, the majority of civil and structural engineering students work in small and medium-sized companies. Moreover, basic legal training helps firms to avoid failures before they occur and then require lawyers.

4 CONCLUSIONS

Courses in construction law are necessary to ensure graduates' employability and the qualification to work professionally. Legal pitfalls lurk everywhere, from starting a project to managing to completion (Hohnecker 2008). However, many legal problems can be solved or prevented if a civil or structural engineer is able to see the risks and to decide whether legal advice is necessary or not.

Civil or structural engineering graduates do not have to become construction law experts. It is sufficient to enable students to acknowledge the seriousness of a situation and identify a problem. Students must learn to recognize the difference between a legal problem they can solve by themselves and a situation that requires professional legal advice. They should be able to understand legal terminology as well as relevant regulations, standards and codes. This enables the building industry to avoid claims for damages and save money that they might have otherwise spent for unnecessary legal consulting.

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