THE NOTIONAL SPACE OF THE INTELLECTUAL LOAD OF THE ARCHITECTURE STUDENT: ARCHITECTURE SCHOOL - WHAT SHOULD IT BE? THE FRAMEWORK FOR A POSSIBLE DISCUSSION ON THE FURTHER DEVELOPMENT OF THE ARCHITECTURAL SCHOOL

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ABSTRACT: (My) current view of the teaching structure in schools of architecture. From my point of view, it is based on what is essential: the relationship between the main subject of the field - studio teaching and accompanying fields, or the period of self-study. A view after more than twenty-five years of successive and simultaneous work at four schools of architecture in the Czech Republic, with a short experience abroad (ETH Zurich). I created simple models of current and potential (often discussed) situations. The models simulate the relationship of the essential elements of the study in terms of their meaningful mastery by the student. Words and images are assembled into meanings in the brain's semantic space, creating a message that should be understood. At the same time, the models illustrate how the project communicates with two basic tools: non-verbally (pictures) and verbally. The form of reflection is motivated by the pursuit of accuracy of perception[1]. Because: we learn, among other things, by exposing our thoughts.

KEYWORDS: architectural education; university education; purpose of study; graduate profile; content of the study program; studio project; accompanying disciplines; self study

STARTING POINTS, COORDINATES[2]

The studio is the basic subject of the field, the royal discipline of the field, the focus of the actors (students and teachers).

Accompanying disciplines make the most of the possibility to communicate information in an applied form, directly on the basis of the work in the studio; not in an ineffective autonomous form "an sich" for possible "ad hoc" application; these are all disciplines from the whole range of disciplines that are offered for architectural education;

Self-study is the basic form of study; "College study is independent study under the direction of and/or in collaboration with a teacher";[3]

The aim of the study is the expansion of thinking, expressed (most often) by the project[4];

A project is a guide to the preparation, execution and maintenance of a work[5]; in the context of a school of architecture, it should then, of course, also meet the conditions imposed on research or scientific work; according to the year of study, not in terms of difficulty, but in terms of the nature of the work and the outputs.

ELEMENTS OF SPACE

Figure 1 is a model of a bachelor's degree, Figure 2 is a master's degree. From left to right: self-study, studio, accompanying disciplines.

Fig. 1.: Elements of space - bachelor's degree. (Created by: Author)

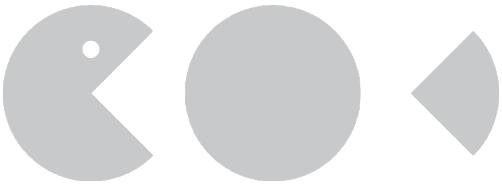

Fig. 2.: Elements of space - master's degree. (Created by: Author)

ELEMENTS-PRINCIPLE OF SYNERGY

For the display of the synergy (originally, or for the

Fig. 3.: Elements-principle of synergy - 100% hue saturation. (Created by: Author)

Fig. 4.: Elements-principle of synergy - attenuated hue saturation. (Created by: Author)

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[1] prof. PhDr. Rudolf Koutek, CSc.

[2] The unit of measurement for this balance sheet is the standard student. It does not take into account the 20% or so of students who navigate any acceptably conceived model of study structure, regardless of its addressability; or those who study in the sense of "I have never let school get in the way of my education." Mark Twain.

[3] Radek Kolařík, since 1996

[4] related to the study of architecture and urban planning; for the reasons stated in the conclusion, the consideration does not directly relate to the field of landscape architecture

[5] Jiří Plos, most often, since 1993

presentation at the conference) an illustrative CMYK colour model was chosen (colours are subtracted). The elements are displayed in proportion to each other, with a hint of blending (colour subtraction). In view of the black and white version of the proceedings, the symbol from the Japanese platform computer game Pac-Man[6] was used for the models in monochrome, allowing in contrast the addition of hue saturation. Figure 3 shows a model of 100% hue saturation and its sums. Figure 4 shows a model of attenuated hue saturation and its sums for selected situations where studio deployment is attenuated for various reasons.

They are crucial for the quality of teaching:

- proportion of elements
- their hierarchies
- relation to the imaginary centre of the study
- a measure of synergy

I look at the individual models from these perspectives and comment on them.

MODELS OF SPACE

They show the current state of the teaching structure prevailing at the faculties of architecture of technical universities. Taking into account the differences in the length of studies at the bachelor's degree level, or the total length of studies, the model of FA CTU was used as a basis. For the other schools, the model is then applicable in corresponding semesters. Thus, the normal or standard semesters are shown, not those in which a bachelor's thesis or diploma project is prepared. Similarly, it is necessary to take into account, for example, the specificity of the bachelor's thesis at the FA CTU: it is not a building design, but a documentation for a building permit with elements of documentation for the execution of the construction, based on the building design prepared in the previous semester as part of the study for the bachelor's thesis.

1st, 2nd and 3rd semesters of Bachelor studies:

- disproportion of elements;
- elements are perceived without prioritization, mutual relationship or hierarchy;
- it is not clear what is the centre of the study;
- the degree of synergy is practically zero.

The consequence is a distorted understanding of the goal of study and teaching by their actors. The distortion consists in the fact that students at the beginning of their studies have practically no opportunity to realize what is the main subject of the discipline and therefore the aim of studying architecture and urban planning.

Fig. 5.: 1st, 2nd and 3rd semesters of Bachelor studies. (Created by: Author)

4th semester of Bachelor's studies:

- disproportion of elements, self-study atrophies to disappear;
- position of elements reversed;
- central dominance of accompanying disciplines; studio often pushed out of the space;
- the degree of synergy is practically zero.

This is undoubtedly a crucial period in which the conditions for the meaningfulness of the remaining years of study are shaped-a key moment for discussion.

Fig. 6.: 4th semester of Bachelor's studies. (Created by: Author)

5th semester of Bachelor's studies:

- atelier and self-study are atrophied (little space for their development due to the dominance of accompanying disciplines); self-study is usually sporadic, without any noticeable reflection in the studio;
- elements distant from each other;
- the centre of the study is still not obvious;
- the degree of synergy is practically zero.

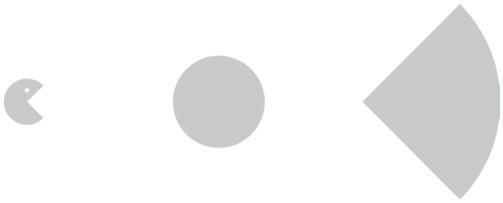

Fig. 7.: 5th semester of Bachelor's studies. (Created by: Author)

6th semester of bachelor studies-bachelor thesis:

- atelier and self-study are atrophied (disproportion between the development of thinking and the teaching of craft in favour of the teaching of craft due to the nature of the bachelor's thesis); self-study tends to be sporadic, with no noticeable reflection in the studio;
- elements are distant from each other;
- the centre of the study is still not obvious;
- the degree of synergy is insufficient.

Comment on the discussion: the teaching of craft should always be present, but should never overshadow the primary goal of architectural studies-the development of thinking.[7]

Fig. 8.: 6th semester of bachelor studies-bachelor thesis. (Created by: Author)

1st and 2nd semesters of Master's studies:

- the general reduction in the intensity of deploy-

Fig. 9.: 1st and 2nd semesters of Master's studies. (Created by: Author)

[6] Pac-Man (Source: https://cs.wikipedia.org/wiki/Pac-Man)

[7] "Today, I draw the opposite conclusion from this observation: anything that is not somehow related to practice and is not honed by it does not need to be taught at all. Hence such hatred of disciplines in which forms of thought can be recognized and practiced, disciplines that have no immediate relation to practice, i.e. classical philology, philosophy, mathematics, classical literature, art and music." LIESSMANN, Konrad Paul. The theory of uneducation: the fallacies of the knowledge society. Prague: Academia, 2008. XXI. century. p 46. ISBN 978-80-200-1677-5.

ment is a consequence of the current bachelor degree course

• synergy replaced by penetration

• self-study is not sufficiently developed

• deployment intensity slowly returns to normal; sometimes at the cost of exhaustion before DP processing

3rd and 4th semesters of Master's studies:

• significantly individual: It depends on how each student approaches his/her studies; whether he/she decides to prepare a pre-diploma project as a preparation for the culminating performance that he/she should submit in the diploma project, or whether he/she chooses the path of simply completing the studies without this motivation (more likely the model in Figure 10, usually valid for the 20% of students who show almost professional independence in their approach to studies; sometimes this time is used for a rush to accumulate credits, which results in the completion of up to three semester projects in one semester (more in Figure 11, usually applicable to the majority of students who pursue simple completion without further ambition or motivation).

• The distinctly differentiated approaches naturally lead to completely different models applied by students in the master's degree.

Fig. 10.: 3rd and 4th semesters of Master's studies. (Created by: Author)

Fig. 11.: 3rd and 4th semesters of Master's studies. (Created by: Author)

MODELS OF VISION

The models should be identical for all normal semesters of the Bachelor's and Master's degree.

Acceptable model (FA CTU)

• element proportions are uniform;

• their position is hierarchical;

• the studio is therefore not in the centre of the studio;

• a degree of synergy is absolutely necessary;

• disproportionate synergy of pairs of elements without synthetic link to the studio (low studio efficiency).

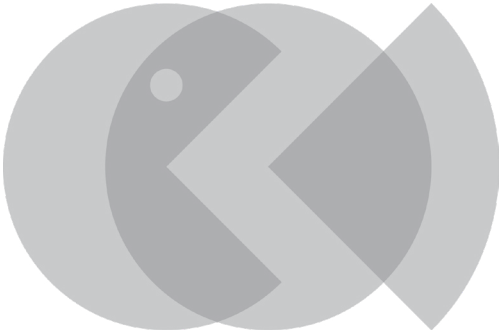

Fig. 12.: Acceptable model (FA CTU). (Created by: Author)

Optimal model (FA CTU)

• the proportions of the elements are uniform;

• their status is equal;

• the studio is in the middle of the studio;

• the degree of synergy is highest;

• the autonomous link between self-study and accompanying disciplines without direct link to the studio disappears.

Fig. 13.: Optimal model (FA CTU). (Created by: Author)

Fig. 14.: An idealistic model. (Created by: Author)

An idealistic model, probably from the point of view of all technical universities, but unrealistic with regard to the position of architecture faculties within technical universities, Czech education and accreditation of courses. Resp. ideal model (School of Architecture AVU, partly VŠUP, ARCHIP)

• the level of studio subsidy is higher than for other elements;

• their position is hierarchical in favour of the studio;

• the studio is in the middle of the studio;

• the degree of synergy is high;

• the autonomous links outside the studio space completely disappear.

The utopian model is valid for the present; in the future, theoretical considerations include

Often used as a reference model for the "classical college student"[8], though more likely to belong to pre-WWII times or be conceivable in top music, ballet, etc. schools;

• the level of studio subsidy is higher than for other elements;

• their position is hierarchical in favour of the studio;

• all elements are centrally arranged;

• the degree of synergy is high;

• the autonomous links outside the studio space completely disappear.

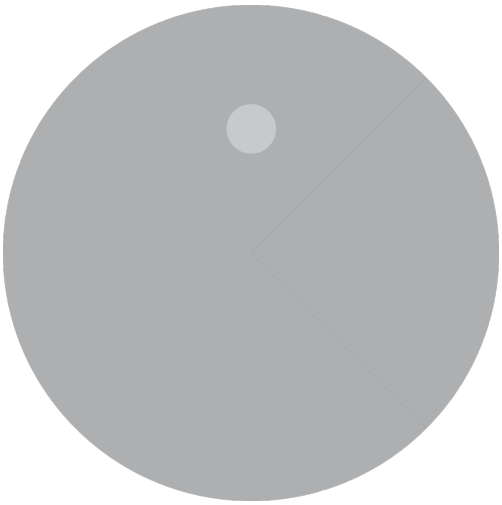

Fig. 15.: The utopian model. (Created by: Author)

Fig. 16.: Accompanying disciplines-commentary. (Created by: Author)

Accompanying disciplines-commentary
Their role is crucial to the achievement of the learning objective. They should pursue the following objectives:

• be in proportion with the other elements at each stage of the study (do not overload students out of balance);

• their position should be as their name says (to complement the main subject of the field-studio);

• they should never become the focus of study (the result is a distorted view of the students of its meaning and purpose);

• the degree of synergy with the studio should be maximal, commensurate with the fact that it is a study and not a practice (i.e. no matter what: the study is about simulated practice, not real practice).

Accompanying disciplines-form
The basis of the teaching of the accompanying disciplines should be a pair of lecture on a consistent topic and an immediately following exercise, in which the students verify the application of the topic of the lecture and thus fix its meaning. This is maximally true in the case of typology (buildings, cities), and subjects related to structures. In the spirit of the motto "Hard on the training ground - easy on the battlefield."[9]

• in contemporary terms,

• analogous to teaching the basics of a language or sport.

The other accompanying disciplines should then be taught in an analogous way: in a targeted manner, to the extent necessary and manageable, taking into account the needs of study and the profession after graduation.

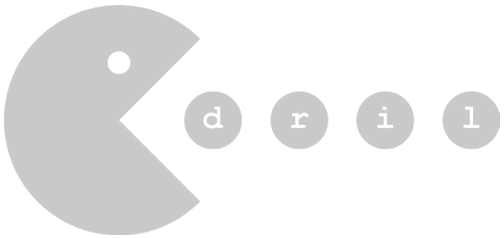

Fig. 17.: Accompanying disciplines-form. (Created by: Author)

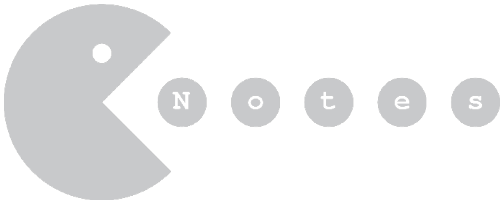

Fig. 18.: Accompanying disciplines-form. (Created by: Author)

Accompanying disciplines-measure of the load
Architect's Notes: the slim book contained everything a builder could manage to complete a building (an apartment building) about a hundred years ago. Now there is multiply more to master. But the human brain-that is, the brain of the architecture student (as well as that of his teacher)[10] - is not twice as powerful. We should take this into account if we are discussing the demands placed on the student, or if we want those demands to be realizable, and above all, student-able. So that they are not a collection of student credits with no apparent meaning to students.

The outcome of a joint teaching effort could be, for example, this: "Give me a fixed point and I will move the Earth."[11]

• if we show the students this point, then maybe they will find it,

• and maybe they'll move something,

[8] i.e. a student undergoing an education characterised by Wilhelm von Humboldt, for example, who actually found his ideal in ancient Greece

[9] Alexander Vasilyevich Suvorov

[10] When designing a curriculum, we should always and always keep in mind that the student is studying a discipline (in this case architecture and urban planning) and the accompanying disciplines play a role in it. Teaching mathematics to architects is quite different from teaching it to information technology students. It is not a good sign that architecture students successfully complete a high-level course in descriptive geometry and yet subsequently discover that a stagecoach has a head at horizon height in perspective view; that they talk about a cube and show a prism; that they take a course in statics and talk about a pylon and present a projection at their thesis defense, etc.

[11] Archimedes. Once upon a time, 300 years BC.

• or they understand that they prefer not to move or not to want to move,

• but they'll have something to fall back on when they graduate.

The extracurricular world is not round, it is square. It's not round, it has sharp edges. We have to accept that the imagined intellectual space of the student is more a part of the extracurricular world than the one framed exclusively by the school. I guess that's right. The academic world, for all its respect for its role (not just the now disproportionately socially valued one)[12], should not be a world unto itself. It always has a chance to become a better version of itself.

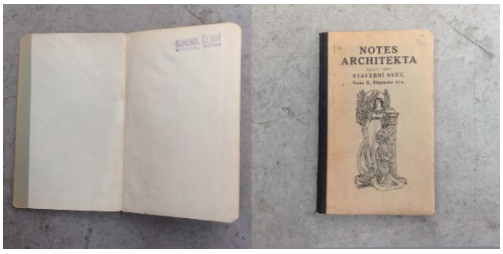

Fig. 19.: Architect's Notes. (Created by: Author)

PROFILES OF INDIVIDUAL SCHOOLS IN TERMS OF THE REPRESENTATION OF INDIVIDUAL ELEMENTS IN THE NUMBER OF HOURS OF TEACHING.[13]

The time shown for self-study is based on the assumption of maintaining the mental health of the students. It is therefore what is left in a 40 hour week.[14] An hour is defined as 45 minutes, i.e. an instructional hour. Again, standard or regular semesters are shown (excluding first years, semesters when a bachelor's thesis or diploma project is being worked on).

Studio project - number of hours per week at each school. Figure 20 in the bachelor's degree, Figure 21 in the master's degree.

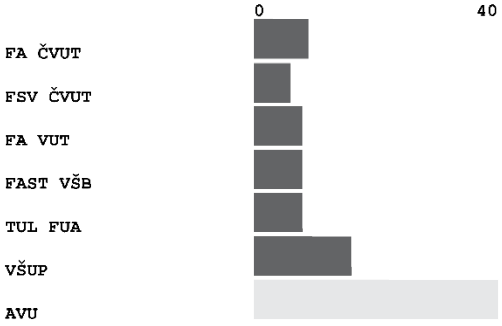

Fig. 20.: Studio project - number of hours per week at each school - bachelor's degree. (Created by: Author)

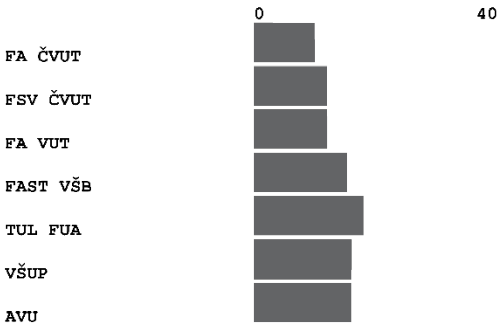

Fig. 21.: Studio project - number of hours per week at each school - master's degree. (Created by: Author)

Accompanying disciplines - number of hours per week at each school. Figure 22 in the bachelor's degree, Figure 23 in the master's degree.

Fig. 22.: Accompanying disciplines - number of hours per week at each school - bachelor's degree. (Created by: Author)

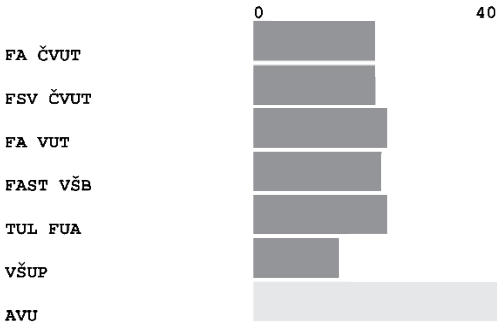

Fig. 23.: Accompanying disciplines - number of hours per week at each school - master's degree. (Created by: Author)

Self-study - number of hours per week at each school. Figure 24 in Bachelor's degree, Figure 25 in Master's degree.

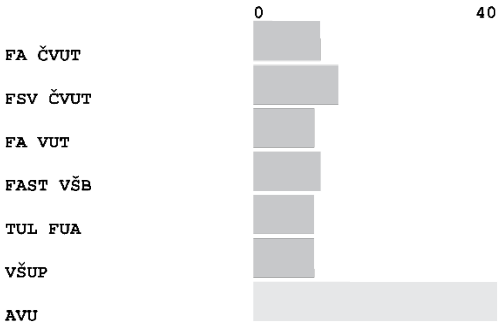

Fig. 24.: Self-study - number of hours per week at each school - bachelor's degree. (Created by: Author)

Fig. 25.: Self-study - number of hours per week at each school - master's degree. (Created by: Author)

The Avu School of Architecture in Prague is accredited only for its master's programme (and doctoral studies, as it is a university-type college). To a certain extent, it can be concluded that this school is the only one in the Czech Republic where the quality of the students it admits is directly dependent on the quality of the studies and the quality of the graduates of all the oth-

[12] "Remember, as long as we pay generals more than teachers, there will be no peace in the world." Jan Masaryk

[13] Of course, this figure is only relevant in certain circumstances. It is based on reality, which takes the state of affairs as it is and assumes that it is relatively the same at the schools mentioned. This is in full awareness of ideas such as "The European Credit Transfer System (ECTS), which is part of the Bologna Process, is supposedly a measure of 'student workload', i.e. the amount of work a student needs to achieve a particular goal. The credits or performance points awarded for certain student activities therefore do not represent any substantive equivalent of study, but only compare the time spent. It is one of the ironies of world history that the Marxist doctrine of the value of labour input, which economic science has relegated with contempt to the dustbin of history, has made a joyous return in European curricula. The value of a study is measured by the average amount of time spent on it. Such a renaissance of Marxism as the core of an educational reform that misunderstands itself as liberal cannot be underestimated." LIESSMANN, Konrad Paul. The theory of uneducation: the fallacies of the knowledge society. Prague: Academia, 2008. XXI century, p.77. ISBN 978-80-200-1677-5.

[14] The number of hours is derived for the purposes of this discussion from the weekly working time of 40 hours stipulated by Act No. 262/2006 Coll., the Labour Code.

er schools that prepare students for it at the bachelor's level (of course, not only the Czech ones). Thus, one could very simplistically say that the students of the School of Architecture of the Academy of Fine Arts could become a kind of mark of the quality of studies at the bachelor's level at other schools. The ratio of admitted applicants from Czech schools to those from abroad could then, very simplistically, serve as an indicator of how Czech architectural education compares to that abroad.

Basic elements - number of hours per week at each school, aggregate picture. Figure 26 in the bachelor's degree, Figure 27 in the master's degree.

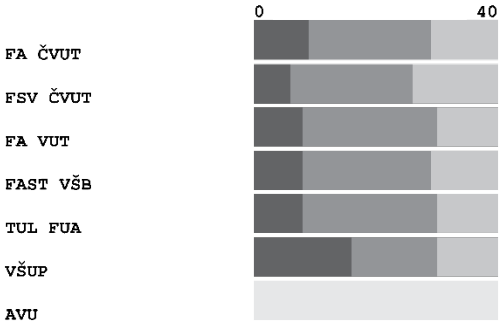

Fig. 26.: Basic elements-number of hours per week at each school - bachelor's degree. (Created by: Author)

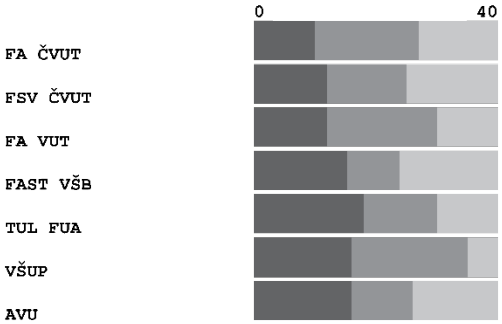

Fig. 27.: Basic elements-number of hours per week at each school - master's degree. (Created by: Author)

Basic elements - the number of hours per week at each school in the first year. This is the time when a

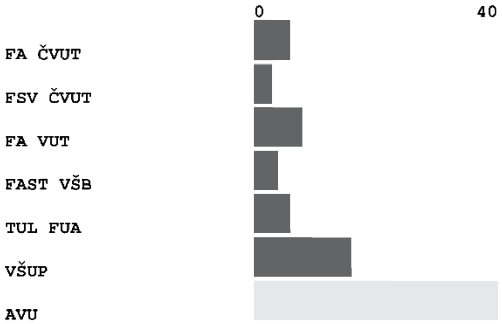

Fig. 28.: Basic elements - the number of hours per week at each school in the first year. (Created by: Author)

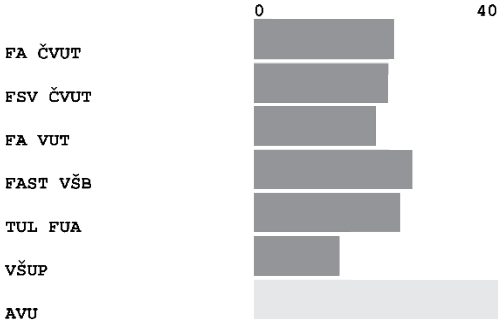

Fig. 29.: Basic elements - the number of hours per week at each school in the first year. (Created by: Author)

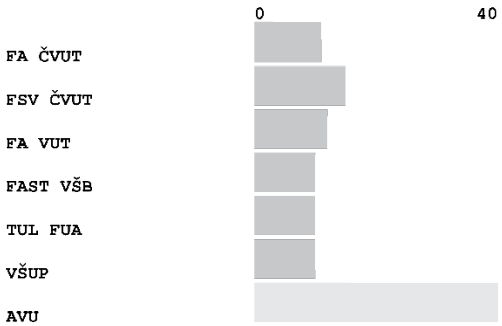

Fig. 30.: Basic elements - the number of hours per week at each school in the first year. (Created by: Author)

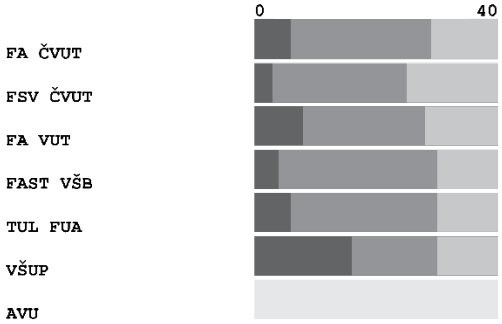

Fig. 31.: Basic elements - the number of hours per week at each school in the first year. (Created by: Author)

student's basic ideas about school are formed and thus his or her relationship to school and to learning. **From my own experience, I have concluded that the students admitted to each are basically the same (they are a reflection of their previous education). Their transformation occurs in the course of their studies. They become (again) an image of the school they graduate from. Understandably, always as a rule, not uniquely.**

Basic elements - the number of hours per week at each school in the year in which the bachelor's thesis is prepared. Here it is also good to take into account the different length of the bachelor's degree: the FA CTU has a three-year degree, other technical schools have a four-year degree. Also, the nature of the bach-

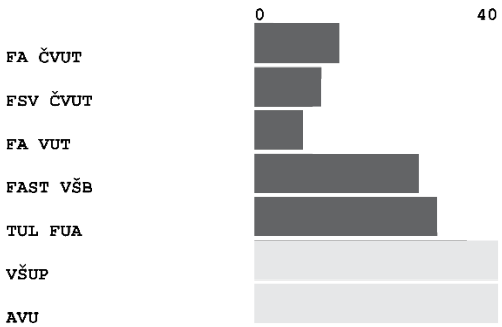

Fig. 32.: Basic elements - the number of hours per week at each school in the year in which the bachelor's thesis is prepared. (Created by: Author)

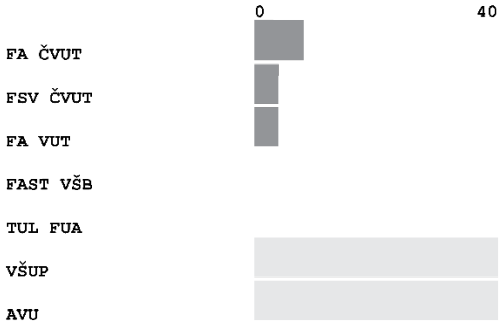

Fig. 33.: Basic elements - the number of hours per week at each school in the year in which the bachelor's thesis is prepared. (Created by: Author)

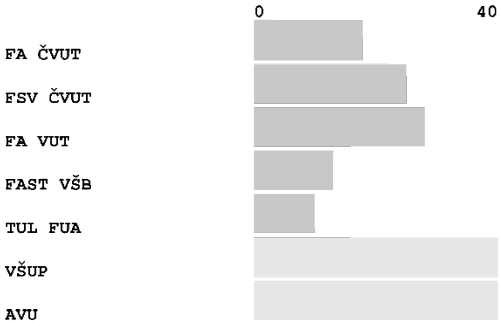

Fig. 34.: Basic elements - the number of hours per week at each school in the year in which the bachelor's thesis is prepared. (Created by: Author)

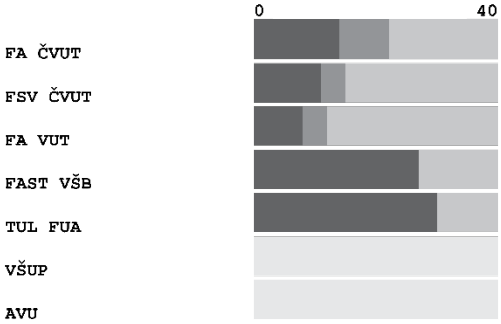

Fig. 35.: Basic elements - the number of hours per week at each school in the year in which the bachelor's thesis is prepared. (Created by: Author)

elor's thesis at FA CTU is different from other technical type schools: it is not a building design, but a hybrid of documentation for a building permit and documentation for the execution of the construction based on a previous study for the bachelor's thesis.

Basic elements - the number of hours per week at each school in the year when the diploma project is being prepared. The issue is not only the practical absence of accompanying disciplines in some schools, but also the meaningful form and content of those that are available. In any case, the question arises as to whom and to what extent students have the opportunity to consult their diploma project in terms of the accompanying disciplines and with regard to the nature of the topic, the assignment of the diploma project.

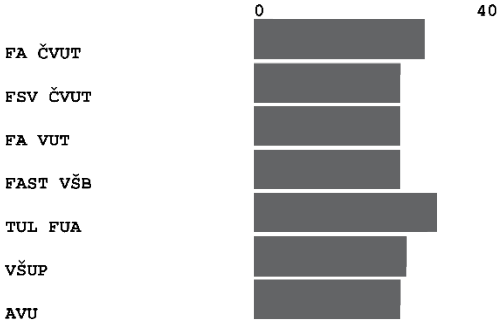

Fig. 36.: Basic elements - the number of hours per week at each school in the year when the diploma project is being prepared. (Created by: Author)

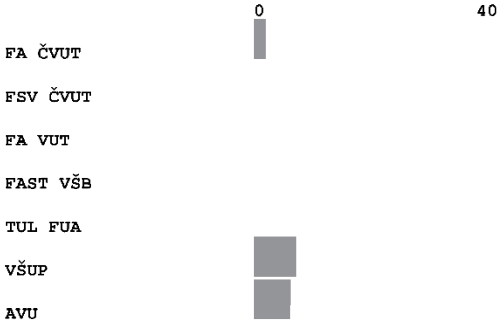

Fig. 37.: Basic elements - the number of hours per week at each school in the year when the diploma project is being prepared. (Created by: Author)

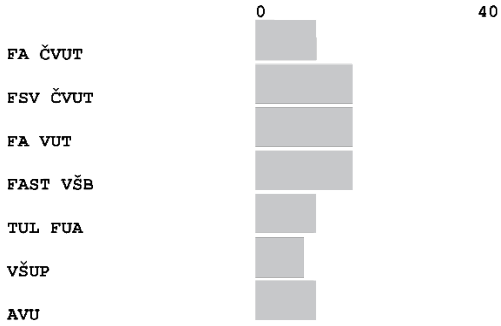

Fig. 38.: Basic elements - the number of hours per week at each school in the year when the diploma project is being prepared. (Created by: Author)

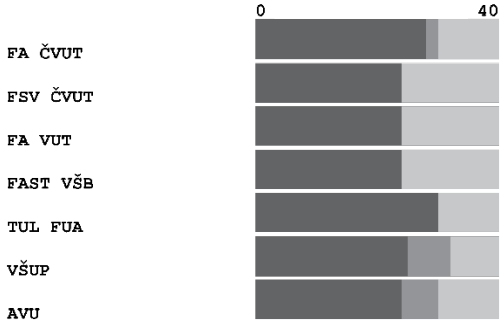

Fig. 39.: Basic elements - the number of hours per week at each school in the year when the diploma project is being prepared. (Created by: Author)

The number of teaching hours is based on the published data for the academic year 2022/2023. The average number of teaching hours per week is given for a normal/regular/standard semester or year, excluding semesters of architectural design fundamentals and those where a bachelor's thesis or diploma project is being prepared.

PROFILES OF INDIVIDUAL SCHOOLS IN TERMS OF LENGTH OF STUDY AT EACH SCHOOL

Left in the Bachelor's degree, right in the Master's degree. The anomaly of FA ČVUT in the bachelor's degree and the understandable longer length of the master's degree at AVU and VŠUP are noticeable.

Fig. 40.: Profiles of individual schools in terms of length of study at each school - bachelor's degree. (Created by: Author)

Fig. 41.: Profiles of individual schools in terms of length of study at each school - master's degree. (Created by: Author)

PROFILES OF INDIVIDUAL SCHOOLS IN TERMS OF NUMBER OF STUDENTS

in architecture and urban planning in the sum and in combinations of disciplines given by their accreditation at individual schools. For some specificity, with due respect to this field, it is not part of this basic consideration for the field of landscape architecture. In order to keep the focus on the essentials. The principles of consideration for teaching this discipline would then, of course, be analogous.

Number of students at each school. Figure 42 shows the number of students in the Bachelor's degree, Figure 43 in the Master's degree.

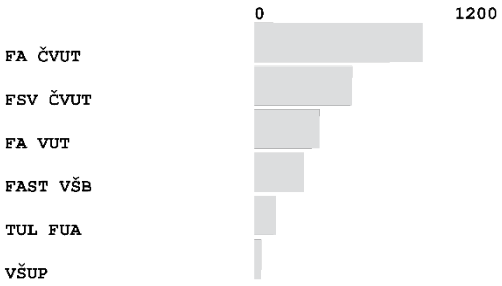

Fig. 42.: Number of students at each school - bachelor's degree. (Created by: Author)

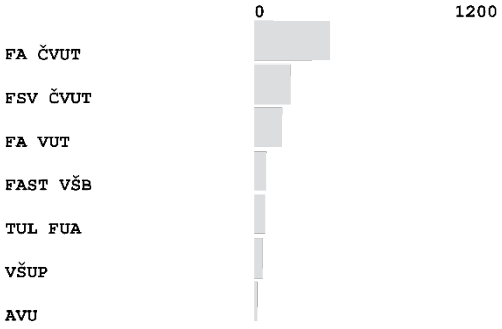

Fig. 43.: Number of students at each school - master's degree. (Created by: Author)

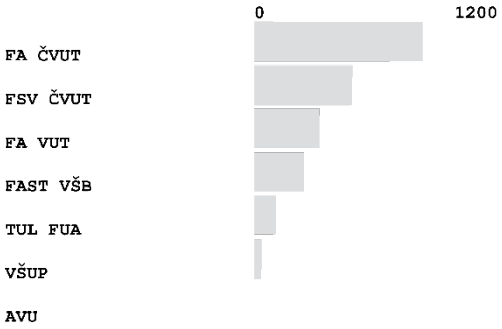

Fig. 44.: Number of students at each school-an aggregate picture of bachelor's and master's degrees. (Created by: Author)

Figure 44 shows the number of students at each school-an aggregate picture of bachelor's and master's degrees.

The student numbers quoted are based on data published for 2021. Specific numbers are deliberately not given as they are not material and the information would not be relevant (student numbers fluctuate according to demographic trends, among other things). I assume roughly proportionate to individual schools. The ratio is the most basic information for reference. [1], [2], [3], [4], [5], [6], [7]

EPILOGUE

The reflection focuses on the crucial relationship that determines the quality of architecture education, which is mentioned in the introduction. The relationship between studio teaching as the main subject of the discipline, accompanying disciplines and self-study. It deliberately omits other important prerequisites. These are, for example, the correct chronology of the accompanying disciplines and the topics of the semester projects. The accompanying disciplines should always precede in content what is to be used (subsequently) in the elaboration of the studio project (the subject Urban Construction should not follow the urban planning assignment in the studio). Equally important is the teaching of typology. In some schools, it is part of the studio teaching without the preceding series of lectures and exercises. The question is whether such a loaded management of the semester assignment is the right conception of the main subject of the discipline.

It goes without saying that a comparison of schools of technical learning is relevant. The University of Applied Arts in Prague and the School of Architecture of the Academy of Performing Arts in Prague are included for comparison. And in particular to make the difference in the models of the basic relationship obvious (and logical). One of the target groups of this reflection is (future) architecture students and this concentrated information can help them in their orientation. The main ones are those who influence the structure of teaching and its direction in the various schools. The reflection is in fact a prelude to the other parts entitled Graduate Profile, Content of the Study Programme, etc.

SOURCES

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