

The Lesson of Architectural Drawing - Towards Virtual Reality

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Introduction

As drawing teachers, we tend to follow certain stages during teaching programmes. We begin by developing students' basic abilities, progress through exercising and improving their skills and – last but not least – we encourage them to express their ideas, i.e. to visualize structures that exist only in their imagination. In the case of architectural drawing, the latter stage is perhaps the one that most distinguishes its method of teaching from those used to teach other types of artistic activity. This paper discusses some issues related to the methodology of this type of architectural drawing, which may be employed to enhance a student's ability to depict a view of the world which exists only in their minds-eye. In this paper, I would like to focus on teaching architectural free-hand drawing and the issues that teachers often encounter during students' exercises.

The main objective of drawing exercises is to enable students of architecture to depict visions and imaginary objects which are related to architecture, however not necessarily picture them directly. They might also be imaginary structures that give a sense of depth – the third dimension – as it is perceived within architectonic, urban or landscape interiors.

If there is any general path that should be followed during the process of drawing - it would be the path leading from observation to hand movement. Every art teacher knows that it is not manual skill, but observation, which is the weakest point in the drawing process for the beginners. The breakthrough made by Betty Edwards verified the earlier understanding of who a talented person really is and that artistic skills are located in an author's right brain, rather than in his right hand.

Numerous smart exercises were developed and tested by Edwards, which help provide an increase in artistic (or rather observational) skills during three-day-courses and enable students to produce acceptable representations. Many would stop at this stage, feeling satisfied by picturing reality, copying photos, or getting involved in some type of New Age art scene, such as Vedic Art. For me, this should not be the last stage of drawing education for a professional such as a painter, graphic designer or architect.

Expectations for the artistic (or let us simplify it to "drawing abilities") of students of architecture, painting or design are different. They are expected not to picture what they see, but rather express what they imagine. Accepting this; the methodology must be

different and cannot – or rather should not – be simply reduced to variations on topics (which unfortunately sometimes occurs).

Art students frequently face problems with linear perspective, whereas architects find it difficult to draw human figures, or feel uneasy working with colours. I think it may be agreed that the highest level of drawing ability that may be reached by any student concerns the ability to present emotions, thoughts, ideas, concepts and particularly in the case of architects, depictions of imaginary three-dimensional structures; all of which may be considered 'imaginary representations'.

Observation remains the core ability. One must move forward through imagination when wishing to depict what cannot be observed – which exists only in the in the imagination. 'How deep are the roots of imagination which relate to the basis of observation?' – it is an important question. Obviously, the more we observe and study when drawing, the more 'snapshots' of reality we take and store in our memory. However, drawing imaginary structures is not simply a question of reproducing what has been observed.

Structuring 3D representations relies on a few basic abilities, such as scaling, shading, and employing principles of perspective. However, these are only basic tools for a draughtsman and the critical point comes at the very beginning of drawing process: how to start, what to begin with? Marking the horizon line and vanishing points leads nowhere, although that is a typical approach to solving the problem, but why – if perspective elements do not provide any vision? The answer is well known to art teachers: a student who feels pressured by a difficult subject usually starts with what is well recognized and the horizon line – as an obvious element of perspective drawing – seems a useful place to begin.

So in order to represent imaginative pictures on a plane surface, a student's imagination should be somehow stimulated. Individually developed syllabi, accompanied by a variety of methods and techniques, foster art education at university level. I would like to discuss some of my experiences gathered during architectural drawing courses and illustrate them with students' work – or rather future students' works, as they were executed by beginners – candidates for architectural studies.

In my opinion; the crucial element that stimulates the imagination is analysis. Initially, it should be carried out through the medium of a specifically arranged still-life. The task should be well defined and in most of the described exercises, it is divided into stages; so that at the beginning, the student does not know what the final problem to solve will be.

In this exercise, a still life is composed of selection of elements: a small easel, a framed picture and a few cubes. Its background is arranged with neatly pinned fabrics decorated with stripes - some horizontal and some vertical; so that the overall composition is based on a balanced set of horizontal and vertical lines. If possible, a student is asked to sit in front of it, to avoid or reduce the effect of the lines' (contour) convergence.

The task is as follows: the composition must be drawn with lines that are not limited to the contours of the illustrated items, but run to the edges of a paper sheet. As drawing proceeds, it soon occurs that straight lines are running from left to right, from the top to the bottom, crossing at right angles. As the paper is gradually covered with a chequered pattern of a variety of stripes, squares, and rectangles, the student's attention is more and more focused. During the next stage, the student has to shade chosen parts of this pattern, so as to provide a sense of depth by making some elements (squares, stripes, rectangles)

appear closer and others further away. Again; this calls for focussed attention: how to depict 'closer' and 'further' – should it be lighter, darker, hiding, covering one another?, etc.

In a very similar exercise, the student is asked to draw numerous sticks of various sizes, most of them leaning against a background, along with horizontal elements laying on a table (a mirror behind multiplies the effect). Again, lines should run to the edge of the paper. In the next step, the student is asked to shade chosen parts and elements; in order to give the impression of an architectonic interior, or urban space, with its 'floor', 'walls' and 'ceiling'.

In my experience, initially, students often feel frustrated, since the difficulty of these kinds of exercises lies in the fact that the student (who is usually asked to visualise reality), has to make an abstract composition, while at the same time being forced to do it with care, as well as making sure that the final composition is well thought out. This is also a perfect exercise for the hand, as the discipline involved in marking straight and parallel lines on paper measuring 50 x 70 cm improves drawing skills. The final pictures are fascinating compositions – no two are ever the same! The real value of this type of exercise is in making a student conscious of the intellectual process that occurs while drawing. This effort and their individual artistic interpretation of reality adds to their self-confidence.

Analysis of the subject is crucial, but building up architectural imagination calls for more complex tasks. There are many approaches - let me illustrate the issues with three types of exercises.

In the first type of exercise, the student has to draw an architectural still-life (composed of solids, e.g. cylinders, hexahedrons, prisms) but it must be preceded by drawing the plan (projection) of the studied composition and next its sections (as seen from at least two sides). These values (spatial layouts) exist, but cannot be defined by simple observation from one point. So, in order to define and draw them properly, one must look at the composition from various angles, in order to make the analysis, which, again, encourages architectural imagination.

Once the analysis is made, one draws the composition – marking all of the edges of the solids, along with those which are not visible. In fact, when drawing still life's, we usually see only part of the objects it is composed of and sometimes we are deceived when sitting in front of a square, which might be either regular hexahedron or a cuboid. It is crucial to note, that once plan and projections are ready and the angles from which the composition is seen along with horizon line are defined, there is no need to look at the composition at all! I even sometimes tell my students that having done the spatial analysis, they could continue drawing outside of the studio.

The next step and a more advanced exercise, involves 'cutting-through' solids. The still-life is composed of few pairs of cubes, e.g.: octagonal prism, cuboid prism, cylinder and pyramid – one standing on the other in two or three piles. The student has to study this and as the construction is completed (with all edges marked as if the solids were transparent) each pile has to be 'cut' with parallel cuts; so as to obtain slices of cubes. The next stage is shadowing. In this exercise cuts shall run vertically or horizontally. Diagonal cuts seem to be too difficult and the student often fails to make them properly. For this reason, I tend not to include them in the exercise. It is extremely important that the task can be completed with little help, suggestion or explanation being given by the teacher and that a student must be able to do it on their own.

In another type of exercise, a student is asked to design and draw popular forms within certain architectural, or urban interiors (e.g. a playground, or a hotel lobby). In order to do that, the first step is to draw a site plan and projection (a small sketch completed on a corner of the paper, so that student can refer to it during the work). A crucial aspect of this process is that it forces one to relate to some recognizable elements, their dimensions and arrangements (what are the constituent parts of a playground or hotel lobby, how these places are usually arranged, how high is a chair, or how wide is a desk etc).

As the projection is completed, the proper cone of vision should be marked so that a student is able to define how the pictured subject will be seen. A good question to ask is: "What will be in front of me what I look at this angle?". The next step involves making a small perspective sketch of the designed place. When it is complete, it should be circumscribed with a rectangle of the proportions of the drawing paper. This allows identification of the best composition and avoids problems associated with there being too much empty space at the top or bottom of the paper. It also helps to mark a plane, horizon and the angle of convergence lines.

The above-mentioned types of exercises should be accompanied by studies of texture. These help develop artistic ability through shadowing techniques; e.g. scumbling, hatching etc. The themes of exercises might be related to catchwords, such as "mist", "shine" or "grass" and they are based on picturing specific still-life's composed of fabrics, glass, metal, plants, water and mirrors which are supplemented by directed light.

Conclusion

My teaching experiences have led me to the following conclusions, in the context of the highest levels of education in architectural free-hand drawing:

The most important thing to understand about drawing lessons is that they are about mastering skills and opening the eyes of students to what cannot be seen at first sight. Students should not be focused on making 'nice', or 'attractive' drawings, but should treat each topic as a new challenge and be aware that there will be certain problems to solve. Essentially, a drawing is simply an exercise which contributes to an individual's development. In fact, the more advanced the students, the better they will understand this point.

At the basic level, the lesson of drawing is the lesson of observation – a student must be conscious of this fact and must be focused on observing and studying forms, their sizes, relationships, shadowing and their background.

At the intermediate level, the lesson of drawing is the lesson of analysis. Subjects and composition should be a starting point for further exercises which should encourage (or better, inspire) the student to make intellectual effort and stimulate their imagination. There should always be room for individual artistic interpretation.

At the highest level, the lesson of drawing is the lesson of construction. Constructing forms, composing their masses, understanding their relationships and inner structures does not rely on studying a specific object, but rather involves depicting visions created in the imagination.

If we manage to combine encouraging a student to intellectual effort and independent, artistic interpretation in one lesson, we may achieve really significant results. I think this might be one of the elements of the process which explains why children enjoy drawing and

painting so much – they do not depict the real world, but what they feel, think and know about it. Their interpretation is a result of emotions and in architectural drawing interpretation is the result of knowledge.

For teachers, these are fascinating processes. I still wonder: which comes first? Vision or sketch? Does sketching stimulate imagination, or imagination stimulate sketching? At which point does the imaginary structure appear? Is it on paper, or in mind? Has it something to do with, for example, poetry? A poet does not initially know a poem – it comes into being during the process of writing, so equally, perhaps drawing an internal vision is also a dynamic process during which the vision enters its final, defined form. Whatever the character of this process, I definitively enjoy the moment when a student says: “Here, it will look like this” – when the vision has crystallised and becomes apparent in one’s mind.

As has been already proved by Edwards: drawing enables subconscious collaboration with one’s right brain, but it also gets students involved in more careful observation and analysis of the world, raises their empathy, makes them thoughtful and encourages individual development of many types of skill – not just artistic ones. It is so sad to read that: ‘...the development of the computer has had a major impact on the methods used to design and create technical drawings, making manual draughting almost obsolete and opening up new possibilities of form using organic shapes and complex geometry. Today the vast majority of drawings are created using CAD software...’ (1). One would hope that there is still space for imagination and the pleasure that one may receive through the individual dialogue that occurs during drawing between an artist, the topic and his work...

Footnotes:

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