Figure 3.14 - Sketch of an individual house. Felt-tip pens

3. Adapters, by means of which linear graphics are modeled from ready-made elements - years-olds, special stencils and templates (Figure 3.15).

Figure 3.15 - Font Yearnet

All listed tools and materials can be used both individually and in combination.

3.3. Determination of the three-dimensional properties of a shape by a linear graph

Any image in an architectural chart is constructed using a line, a point and a tone.

The line is the most common, simple and versatile graphic tool. Using the line, you can represent not only the contour of the object. The sum of the graphic techniques allows you to identify the position of the object in space, its mass, dimensions, surface texture, etc. in the image. (Figure 3.16).

Figure 3.16 - Outline of the architectural landscape

Graphic linear messages are relatively arbitrary, so in some cases, professional training is needed to read them.

Point - means of transmission of chiaroscuro, determined by the texture of the material. The point is rarely used as the only graphic means, more often - in combination with the line for the transmission of the black and white and plastic characteristics of volumes, air prospects (Figure 3.17).

Figure 3.17 - Architectural landscape. Point technology

Tone is the light ratio of surfaces, which differs, above all, by achromaticity and is used to detect black and white characteristics, plastics, texture of the object and air perspective (Figure 3.18).

Figure 3.17 - Architectural fantasy. Ya. Chernikhov

Arranging the tone from straight line segments is a technique that is very common in pen works and the easiest for beginners.
Having well mastered the techniques of constructing a tone from simple lines, you need to learn how to get the desired shade of gray color, but also display the actual texture of the object (Figure 3.18).

Figure 3.18 - Fragment of the facade

There are many methods of toning: cross hatching, imposing tones with free lines, a combination of strokes and lines, special toning and others (Figure 3.19).

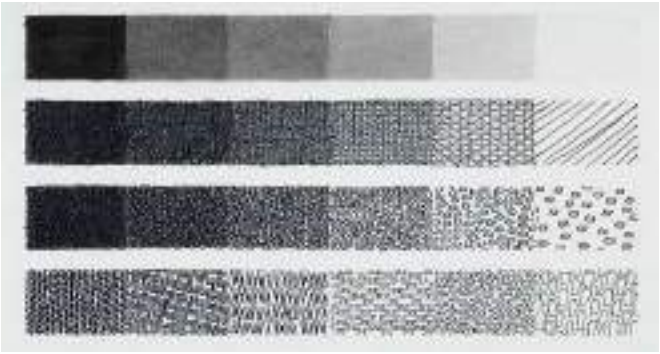

Figure 3.19 - Tone Scale Options

Valer (Fr. Value) - the relative amount of light or shadow on the discussed fragment of the picture, the intensity of the color or the saturation of the hue. Valer can be obtained from some specific patterns.

4 TONE GRAPHICS

4.1 Features of tonal graphics

Tone is the concept of the ratio of dark and light, contrast and nuance. The main property of a tone is its achromaticity, i.e. lack of pronounced color characteristics (Figure 4.1).

Figure 4.1 - Tonal graphics

The concept of "tone" is always inseparable from the concept of "surface". The tone can reflect the darkness or lightness of both the surface of the image and the surface of the object. The tone as well as the line can express various properties of the form. Unlike the line, the tone has a non-linear contrast, and a superficial contrast.

Technique using tone is called "tonal graphics".

Tonal graphics are techniques of the most convincing image of complex plastics, an effective way to identify air prospects, illumination.

In the process of mastering the techniques of tonal graphics, such qualities as spatial thinking, the ability to model a shape, plastic, the image of a building with tonal, black and white contrasts, the ability to use a brush, retouch, soft lead, charcoal, airbrush are formed.

The mastering of such technical devices as, such as carpet, glaze, watercolor painting, retouching with pencil, charcoal, felt-tip pen, requires a long learning of a number of skills. The image of the form in the tone allows you to convey its qualities such as size, weight, texture, texture, which is of great importance for the transmission of numerous characteristics of the architectural object (Figure 4.2).

Figure 4.2 - Architectural landscape

Instruments and adaptations used in the technique of tonal graphics are divided into three groups:

1. devices with which you can cover the surface of the image with dry retouching - soft pencils, carbon sticks, sanguine, felt-tip pens with drying felt (Figure 4.3);

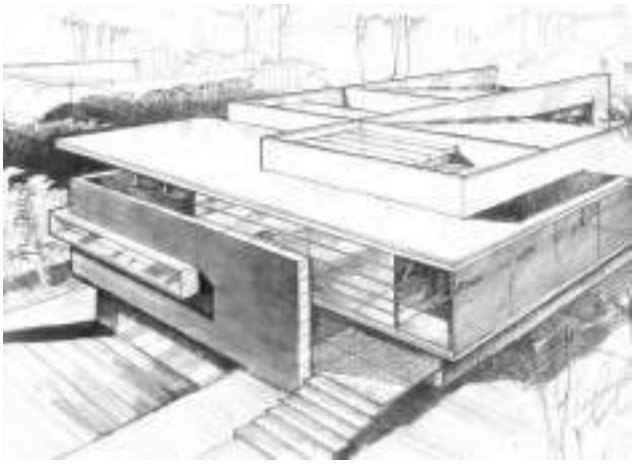

Figure 4.3 - For-sketch. Soft material

2. Devices, by means of which a wet surface of the image is obtained - a brush, a felt-tip pen, an airbrush (Figure 4.4);

Figure 4.4 - Fragment of the facade. Coloring with mascara

3. devices using which the tonal surface - lehraset, application films and sheets of paper, a collage is modeled by the application method (Fig. 4.5).

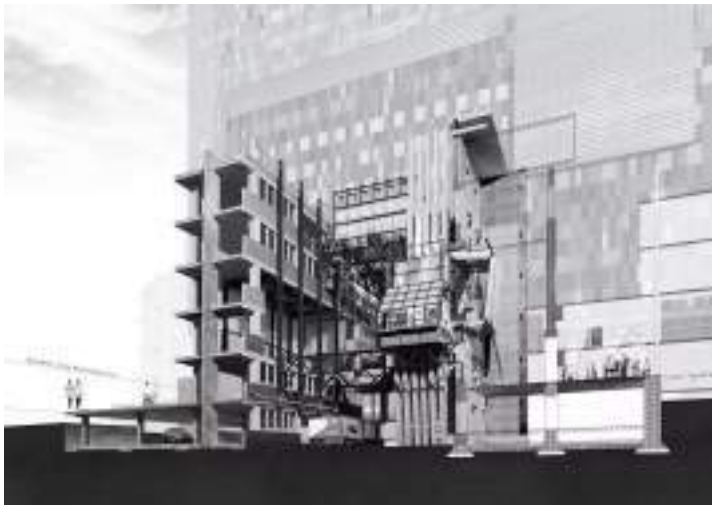

Figure 4.5 - Architectural fantasy. Collage

Paper is desirable with a large textured granular surface. These types of paper include paper for sketching, watercolor paper, torchon.

4.2 Cleaning technique

4.2.1 Tools and materials used in the technique of car wash

Brushes - a universal tool with which to perform tonal graphics in the technique of car wash, work with watercolor, gouache, tempera.

The most common round brushes of Russian production are marked with the following digital indices:

- thin brushes - for washing the image of small parts and small surfaces of the image - Nos. 8, 9, 10, 11;
- medium brushes - for washing the image of medium-sized and the area of details and surfaces of the image - №№ 15, 16, 17, 18;
- thick brushes - the most convenient for ink cleaning of the image by watercolor of large parts and surfaces of the image - №№ 20, 21, 22, 23, 24 (figure 4.6).

Figure 4.6 - Round brushes used in carcass cleaning

You should pay attention to the quality of the hair end of the round brushes. A good one can be considered a squirrel or a core brush, the cone of which, when wetted, has an even shape with a sharp end.

Mascara, used in architectural graphics, is called Chinese tile (or dry).

At present, tile ink, in the form of rectangular, multi-faceted and round tile-briquettes is produced in China, Japan, Korea and other countries of the East. Synthetic solutions of Chinese carcass are produced in some European countries and are sold in vials (Figure 4.7).

Figure 4.7 - Chinese mascara

Mascara, intended for refilling Rapidographers, is not suitable for carrying out technical tricks.

Quality Chinese mascara is made from a dry extract of glaucous glands of the sea-head-cuttlefish. Real ink from synthetic can be distinguished by the sharp smell of rosin.

To obtain a solution, the dry, dry mascara rubbed on the surface of a faience saucer or glass with the addition of a small amount of boiled water (Figure 4.8).

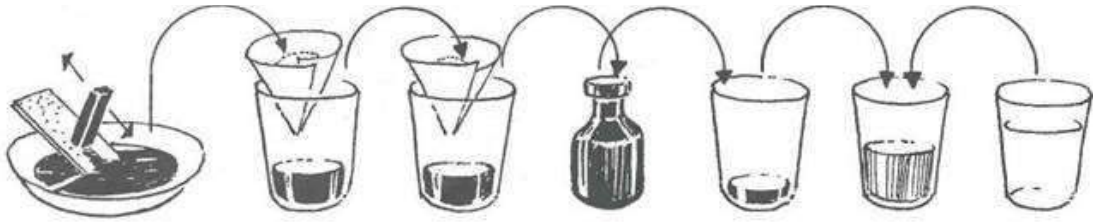

Figure 4.8 - Preparing the carcass for work

The resulting solution of deep black color must be filtered three times through gauze and cotton wool and stored in a clean glass vessel with ground glass stopper. To obtain a solution of varying intensity, dark mascara should be diluted with boiled water in clean vessels. After use, the carcass tile must be wiped dry. Otherwise, the ends of the briquette are cracked.

Paper used in the drawings using the technique of washing or watercolor painting, must be surely strong with the revealed texture and the maximum light surface.

Execution of washing requires a perfectly flat surface, for which the paper is stretched on the stretcher, followed by drying and smoothing the surface of the paper. Each layer of the ink solution moistens the paper, which after drying becomes smooth again and does not interfere with the application of the next layer.

The sequence of pulling the paper on the stretcher (Figure 4.9):
1. The paper is wetted on one side and left for a while;
2. The ends of the subframe are carefully lubricated with PVA glue;
3. Put the paper on the sub-frame with a wet side;
4. Slightly smoothing, fix the paper to the center of the sides of the subframe;
5. Angles are bent inward, and then fixed;
6. Lightly pulling the paper, fix it on the entire perimeter;
7. Wet the front side of the paper and leave until completely dry in a horizontal position;
8. After drying, the remains of paper are cut off;

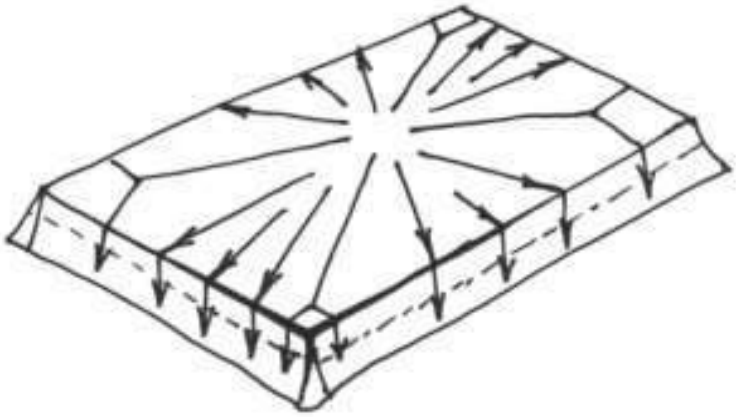

Figure 4.9 - Drawing of the stretching of paper on the stretcher

For car wash cleaning the working area of the table must be cleaned. On the table are left: a blank sheet of paper for applying test smears of carcasses, a vessel with clean water for washing the brushes and eliminating washing defects, a bottle of mashed ink, several vessels with different in strength tones, a piece of clean cloth and a brush. The subframe for washing is installed in an inclined position.

Before proceeding with the performance of the car wash, you should take a clean brush or a piece of soft foam and wash the surface of the paper with water to clean and moisten its surface before working with mascara. Any mote that has fallen on wet paper can spoil its surface, leaving a greasy or coloring trail.

4.2.2 Initial stage of washing

Immediately after drying paper is superimposed the first, very light in tone layer of carcass.

The surface of the paper begins to be covered from the upper left corner by the horizontal movement of the brush, which is richly moistened with the solution so that a small puff appears at the lower border of the mascara. Further, in a zigzag movement, the brushes flow down along the surface of the paper, maintaining the horizontal position of the drip over the entire width of the surface to be coated with the solution. Washing is performed only on the inclined surface of the paper, and the intensity of the solution flow is controlled by the speed of the brush and the slope (Figure 4.10).

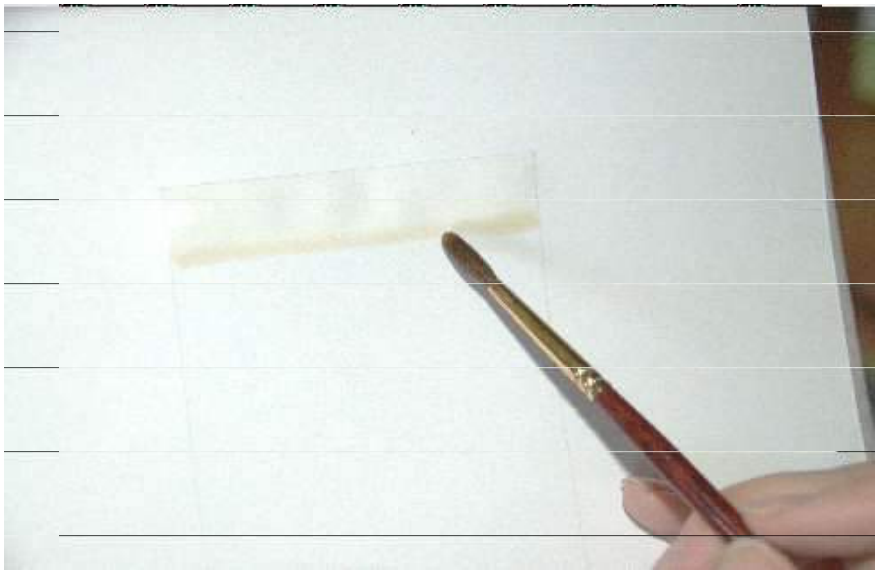

Figure 4.10 - Initial stage of car wash

When the required area is covered with ink, wrung out by the brush, the filament formed at the lower boundary of the surface covered by the solution is removed and the applied layer of the carcass dries out. The required tone strength is obtained by repeatedly applying the layers of the solution. In this way, an even wash surface is obtained, the depth of the tone of which depends on the strength and quantity of the solution.

4.2.3. Basic washing methods

The first way (washing) is the layered mascara.

In washing, one medium-intensity mascara solution is used.

The surface of the image is divided into the same horizontal strips 2-3 cm wide. Begin by washing from above, covering the entire surface of the paper, divided into strips, with an equal layer of solution with flow. In the lower edge of the surface to be coated with the solution, the flow is collected by a wrung out brush and the paper is allowed to dry. The next layer of the solution is put,

beginning with the upper edge of the second strip (bypassing the first strip) and finishing the washing as by removing the drips in the lower edge of the surface. Each next layer of washing is applied with the overlap of the upper strips, taking into account that the largest number of layers of the solution falls on the lower band (Figure 4.11).

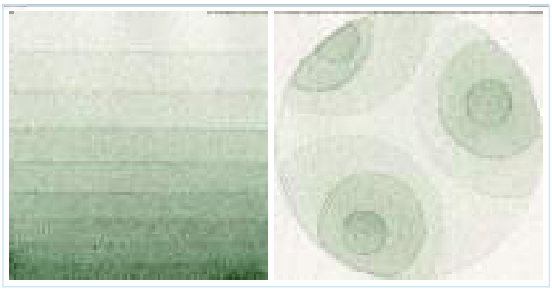

Figure 4.11 - Exercises performed in the technique of "layered stamping"

In the final result, a surface is obtained, which is successively darkened by layers from top to bottom.

The second method is washing (in a wet way) (Figure 4.12).

For washing, several solutions of lightness and strength are used. For work 3-5 different gradations of the solution are used.

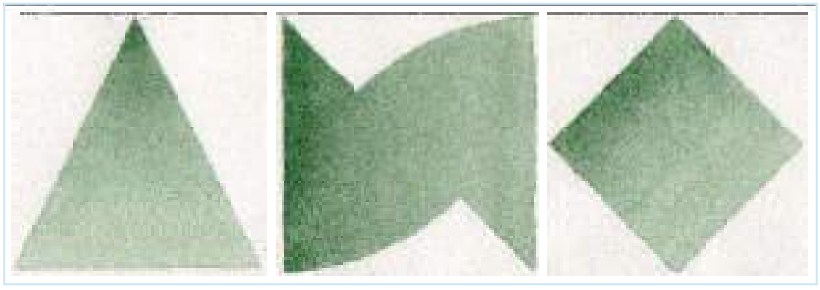

Figure 4.12 - Wiping exercises

The washing method consists in the fact that the wash surface is covered with a light solution with a flow, and gradually more and more dark tones of the solution are gradually added to the horizontally directed flow in succession.

The quality of this technique depends on the execution of a number of rules:

1. In order to obtain an intensive flow, it is advantageous to wet the brush with a solution, keeping the optimal slope of the subframe and the position of the brush inclined with respect to the paper plane;

2. Rinse and dry the wrist before lowering into a vessel with a darker solution;

3. Adding the darker tone of the solution to the flow, try not to touch the paper at the same time;4. Напитав кисть более темным тоном раствора a test

smear is made on a blank sheet of paper (a dirty film is removed from the brush cone);

5. Keep receptacles with solutions with closed lids;

6. Immediately remove the wrung out of the brush in the lower part of the image plane.

The third way is "raw".

Used to darken any part of the drawing, to represent water, clouds, dark ground surfaces (Figure 4.13).

Figure 4.13 - Exercises performed in a raw way

For execution of washing "on wet" the surface of the drawing is moistened. Squeezed against the edge of the vessel with a brush with a relatively dark solution is carried over moistened paper in places that need to be darkened. The boundaries of the dark areas are slightly shaded. When using this method of washing, it must be remembered that the work should only pass through a moistened surface.

The fourth way is "Retouching".

Retouching is characteristic not only for work in the washing technique, but also for technical techniques using pencils with soft lead, coal, sanguine.

The essence of such a graphic technique consists in stratification of strokes drawn by lead, charcoal, sanguine or semi-dry brush strokes. By thinning or thickening the tone of the surface, the areas of the image are brightened or darkened.

In the car wash, the technique of small smears with a semi-dry brush is significantly different in that the work is done by wet material. The brush is moistened with a mascara solution, the tone of which is much lighter than the one that is required as a result of working on paper. The excess solution is squeezed off the edge of the vessel or with a clean cloth until the tip of the brush, when in contact with the paper, begins to give a semi-dry brush strokes.

Smears (but not drops) are applied to the paper one by one, while ensuring that there are gaps between them and the rows of strokes do not merge. Smears

fill the part of the image that needs to be darkened. After drying of the first layer of smears, the following layers are applied, with the calculation of filling with subsequent masks of light gaps in the previous layer. The greater the depth of tone to be obtained by retouching, the more dashed layers should be put on the surface of the paper.

With the help of retouching, stains are corrected, sharp transitions in poor-quality washing, especially in those cases when poor quality of paper does not allow using the graphical techniques of staining (Figure 4.14).

Figure 4.14 - Exercises on the topic "Types of cleaning"

Figure 4.15 - Training work in the technique of car wash

Washing is often used in conjunction with the technique of monochrome coloring with watercolor (Figure 4.15).

5 COLOR GRAPHICS

5.1 Features of color graphics

Color in the architectural chart has a different meaning than in painting, in applied graphics. The use of color is expedient if it is an active component of the architectural image, a means of revealing plastics and architectural forms. Color graphics are effective in cases where the color reflects the objective characteristics of architectural composition, environment, illumination, object environment, etc.

Color graphics - a method of conveying the color of an architectural form, receiving an image in the color of the environment surrounding the architectural object.

Color graphics in design are more often used at the final stage of project search in the performance of demonstration drawings, because it gives more informative, complete and reliable information about the future object. For many modern architects, an active combination of color graphics techniques with black and white graphics is characteristic. For these purposes, a wide range of visual techniques is used, which combines wet and dry graphics technology, collage and laterset.

The tools and devices used in color graphics do not generally differ from those used in the tone chart. The only difference is that the graph uses color pencils, felt-tip pens and rapidograms with color dressing, color ink, watercolors, sets of gouache and tempera paints, colored letraset and colored applicative films, uses an airbrush with colored dressing of various compositions.

5.2 Watercolor painting

In the vast majority of cases, watercolor is used as a material in washing or technical painting of a drawing in combination with or without Chinese ink.

It should be remembered that the use of watercolor paints in color as. it is advisable where required:

1. toning the carcass with the help of solutions of colored watercolor; color washing, performed by solutions of watercolor paints;

2. painting watercolor details or a whole image of architectural objects and landscapes.

Methods of technical painting of architectural drawings in monochrome watercolor practically do not differ from similar methods of washing away by washing (Figure 5.1).

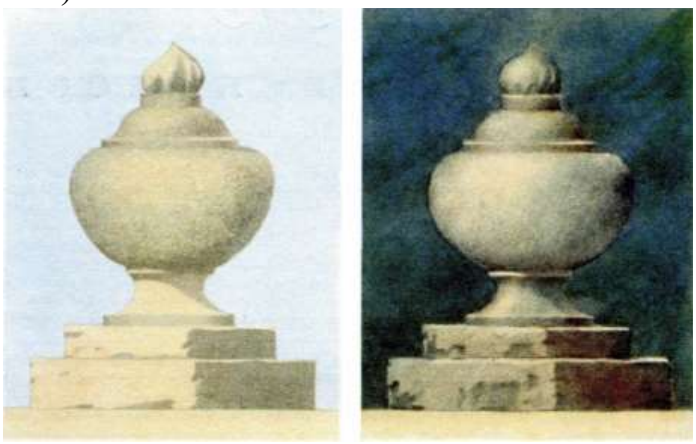

Figure 5.1 - Watercolor painting technique

Watercolor painting requires that certain conditions be met:

1. It is necessary to apply watercolors of the close in color relationships to the tones of warm (brown) or cold (bluish) Chinese carcass.

The following different color combinations are possible:

- black + umber + ocher golden - warm shades
- black + umbra + neutral - cold shades

2. For the work, the intensive tone of the watercolor is diluted with water in several vessels with solutions of different strengths;

3. The layering of the watercolor solutions on each other (glaze) is extremely cautious - after the complete drying of each previous layer, barely touching the brush of the paper (a strong pressure on the brush leads to flushing of the previous layer and the formation of spots);

4. Watercolor does not have the properties of Chinese carcass, it is easily washed off the paper after drying and does not have the same transparency with Chinese ink. From this it follows that when watering with watercolors, it is necessary to limit oneself to a smaller number of layers of the solution;

5. Where the graphic design of the image should be particularly transparent, a watercolor painting method "over wet" should be used;

6. The possibility of combining car wash with watercolor painting.

When applying the watercolor painting technique is not recommended:

1. To make painting, dyeing a brush directly in a bath with a paint;

2. Apply in the architectural chart colors of contrasting color relationships;

3. Use intensive solutions in painting with the dropping out of coloring ink;

4. To apply in work "deaf" watercolor paints with an opaque covering layer;

5. Use a watercolor brush with a hard pile or a bristly, uneven wrist cone.

5.3 Felt-tip pens and markers

The felt pen is widely used for the execution of linear graphics with fill, bar graph. Features of the technical application of markers consist in the fact that two types of markers are chosen for work in an architectural chart:

1. Felt-tip pens with a thin felt, having the same purpose as the Rapidograph and labeling the felt thicknesses of 0.1, 0.2, 0.3 mm and so on. (for plotting linear images;

2. Felt-tip pens with medium-thickness felt 0.5, 0.7, 1.0, 2.0 mm in diameter and so on. (for stroke and fill sections and plans) (Figure 5.2).

Figure 5.2 - Sketches made by felt-tip pens

The work done with a felt-tip pen differs from the graphic works performed by the Rapidographer with the coarse character of the linear image and the picturesque stroke pattern of the embedded surfaces. Graphic style of such images is complemented by a detailed elaboration of such parts of the image as shadows, window openings, details of the surroundings, for which markers with medium and large diameter felt are used (Fig. 5.3, 5.4).

Figure 5.3 - Sketch of landscape design

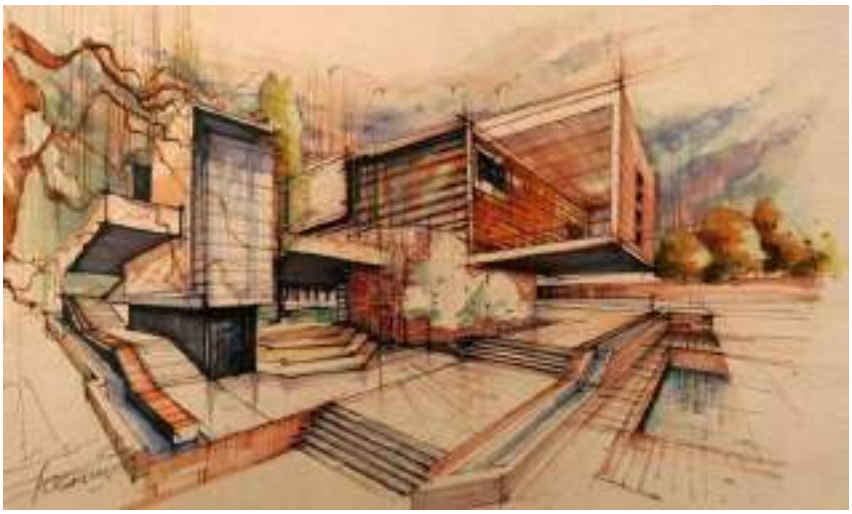

Figure 5.4 - Individual house sketch

The use of markers is advisable in those cases when, for one reason or another, it is necessary to obtain a slightly sloppy draft.

A felt-tip pen can be used on any paper, but lines and hatching with felt on a pencil, millimeter, smooth paper are very good.

5.4 Gouache and tempera painting

For painting gouache and tempera, you need to know the properties of the coating colors. With the application of gouache and tempera on the surface of

the image, a dense, opaque layer of paint is obtained, through which paper does not appear through.

For working with gouache and tempera, large and flat brushes made of soft hair are used, proteins and a column. Bristle brushes and flutes are used less often - when painting large surfaces of an image or when working on a rough substrate - cardboard, board, plywood, etc.

Application of a coloring layer with a tampon is used in cases when gouache or tempera is applied to the surface of loose paper, cardboard, wooden panels, plywood, hardboard, plastic. This painting technique is indispensable when working with font stencils. The paint solution must be necessarily creamy.

The application of coating colors in color graphics is advisable where necessary: the painting of individual image details, which, according to the author's intention, should differ in density, texture, color surface; painting of the images of the object, the material and the plastic form of which are more easily and expressively reflected by colored graphics using gouache or tempera; painting of architectural details, the dense color scheme of which contrastingly reveals the architectural object executed in another graphic technique; painting details or the entire image in a clauser, a flat chart, where the main means of identifying the composition is the color (Figure 5.5).

Figure 5.5 - Font composition made with gouache

5.5 Coloring using airbrush

Paint with an airbrush requires a certain amount of skill. This graphic technique, widely used in design applied graphics, is paid very little attention to the pages of special works devoted to the issues of architectural graphics.

The technique of modeling shapes using an airbrush is widely used in architectural, design and applied graphics. The essence of this technique is that with the help of an airbrush (a device acting on the principle of a pulverizer), one can obtain a jet of a finely dispersed coloring solution. A solution of carcass, watercolor, gouache or tempera colors is poured into the balloon attached to the bottom of the spraying device, etc. Density and intensity of the solution is consistent with the diameter of the outlet of the atomizing device and the powerful manual or mechanical compressor unit (Figure 5.6).

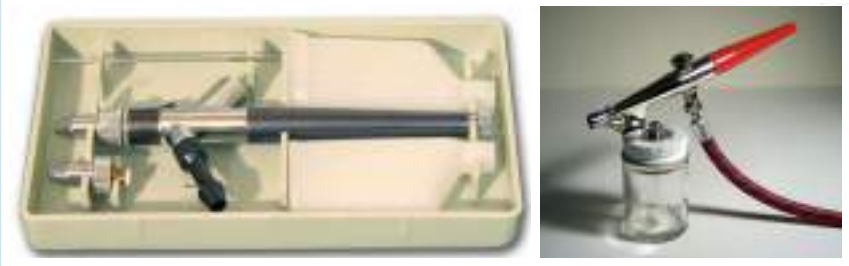

Figure 5.6 - Airbrush

If the solution is thick (saturated with coarse particles of the coloring material), the nebulizer may become clogged or give a jet with large droplets. if the solution is liquid, then more layers of paint will be required.

One of the most significant features of the modeling technique with the help of an airbrush is the ability to draw and cut out masks. Masks are stencils made of paper, cardboard or synthetic films that cover parts of the image that are not currently coated with the coloring material. As individual parts of the image are covered with layers of coloring spray, alternate in the shape and size of the mask. With the help of a spray of a dye solution it is possible to execute "stretching" of a tonal covering of image planes, i.e. simulate transitions from light to dark, highlighting or darkening of individual sections of the paper surface (Figure 5.7).

Meanwhile, at the present time, the specialists of the designers, artists have developed an effective technique for using the airbrush in painting with the use of color solutions. In general, this art is based, first of all, on the observance of a number of rules, the knowledge of technology of shape modeling with the help of an airbrush.

Figure 5.7 - The work done by an airbrush with elements of a collage

When performing graphics using an airbrush, it is recommended:

1. Work on paper stretched on a stretcher or glued on a plate with a sub-base of thick cardboard or hardboard;
2. To cut out masks from thick paper, cardboard or thick synthetic film with fixing masks on the paper surface or to each other with adhesive tape or adhesive plaster;
3. Before spraying the solution onto the image plane, you should make a test spray on the side on a clean sheet of paper;
4. Before re-applying the layer of the dye solution, wait for the complete drying of the previous spray layer;
5. The surface of the paper before the spray is primed with a liquid transparent layer of PVA or polyvinyl acetate glue with a foam rubber or a soft brush;
6. In order to keep the inner planes of masks from sticking to the paper, they are sprinkled with talc or tooth powder;
7. Before painting with the airbrush, the contours of the image should be traced with a pale pencil line.

5.6 Application, letaset, collage

With the help of techniques of applique, letaset, collage, you can quickly model the tonal and color coverage of the image (Figure 5.8).

Figure 5.8 - Collage

To perform an image using the technique of dispatch, application, collage, you need the following:

1. Perform a linear image of the object in a pencil chart;
2. Remove the tracing paper with an exact linear copy of the executed image;
3. To choose the technique of modeling the tonal relations of the executed object, to translate the contours of the details from the tracing paper;
4. Precisely cut out the contours of the planes of each of the image details simulated in the tone;
5. Consistently translate the tonal cover onto the image from the leatherette film (or fix the details of applicative materials, details of the photo collage);
6. If necessary, use a sharp razor or a model knife to adjust the edges of the films that are not accurate to the contours of the image.

When cutting out the contours of applicative parts, it should be taken into account that the edge of the planes, cut from a thick material, will give a shadow to the image.

A large texture, the relief texture of applicative materials coarsens the image, confusing its scale.

The application details are pasted using a thin layer of PVA or rubber glue (Figure 5.9).

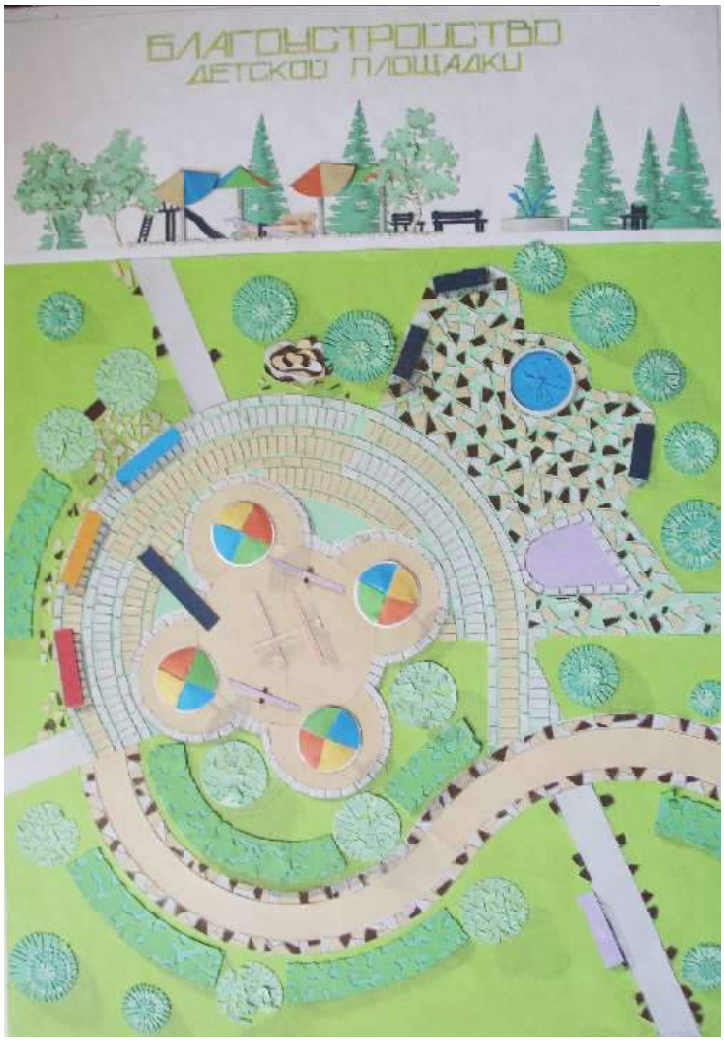

Figure 5.9 - Application

It is not advisable to use vulgar, open colors of coloring solutions; roughly imitate the texture and texture of the material; cover the paper sheet with large color surfaces without tears.

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6 DESIGN GRAPHICS

6.1 Architectural drawing

6.1.1 General information about the drawing

Drawing is an image executed in accordance with the rules of descriptive geometry and drawing tools.

The orthogonal drawing (which is also known as the "parallel projection method") in architectural graphics is the most common form of reporting information about an architectural object that allows not only reliably transmit geometric parameters of a form in the image, but also by scale transformations to correlate its image with the true dimensions of the object .

6.1.2 Drawing sequence

The correct sequence of drawings allows you to rationally organize the work, avoid unnecessary actions, correctly and aesthetically transfer graphic information.

Drawings performed in a linear technique are first drawn in a pencil (Figure 6.1).

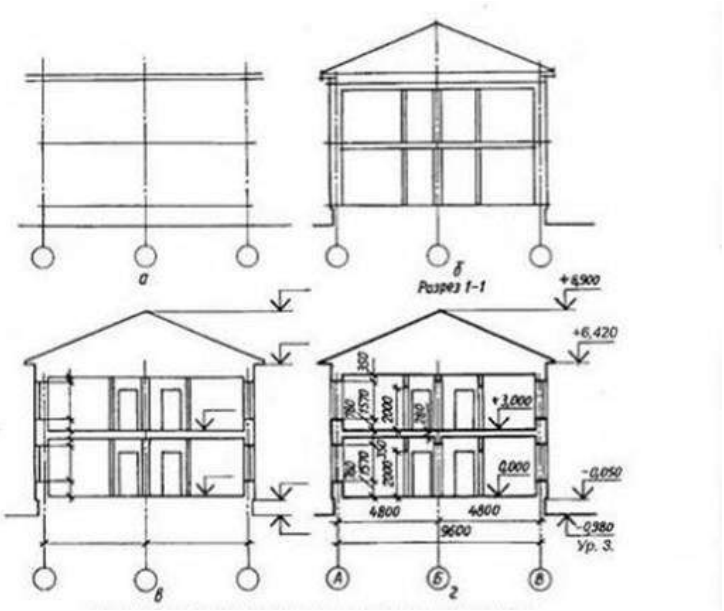

Figure 6.1 - Drawing sequence

Already at this stage of the work, it is necessary to differentiate (in different parts, steps, stages) pencil lines along the thickness and strength of the tone. More impressive are the drawings made with mascara. Carrying out the projections of the drawings in the carpet stroke, it is necessary to think in advance of the gradation of the lines along the thickness and strength of the tone.

Lines are divided into three groups: basic, auxiliary (axial, dimensional), and lines of sections.

The main principle of execution of any drawing - from the general to the particular.

6.1.3 Types of orthogonal drawings

Drawing of the plan is a conventional orthogonal image of a section of a building intersected horizontally by a transparent secant plane (at the level 1/3 of the height of the depicted floor or at a level of 1 m) when viewed from the top down (plan) or from the bottom up (plafond) (Figure 6.3).

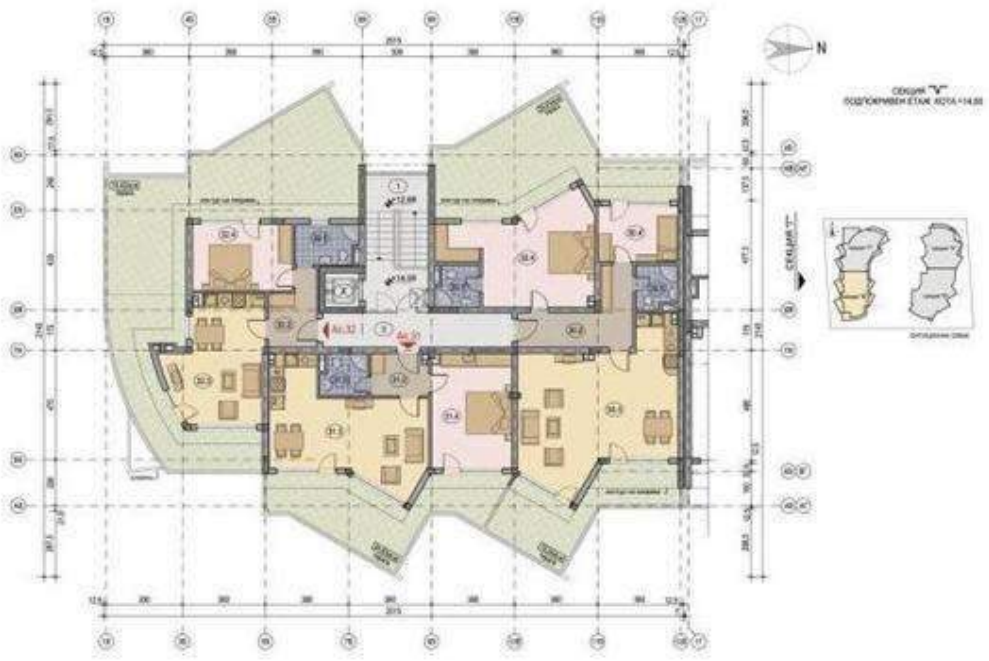

Figure 6.3 - Drawing of the plan of an apartment house

The conditional plane dissects the building in such a way that not only the cross-sections of load-bearing structures and partitions are shown in the drawing images of the plan, but also sections along windows, doors, ventilation ducts and mines, plumbing panels, etc.

The boundaries of the dissection of the arrays of structural elements are outlined by thick, split lines with a possible flooding of the plane of the section with black ink or tone. Visible, but not dissected in terms of structural elements and equipment - stairs, furniture, plumbing, flooring or ceiling relief (in plafonds) are surrounded by thin lines.

Plans of buildings are drawn on a scale of 1: 200, 1: 100, 1:50, 1:25

Cut drawing is a front orthogonal image of the section, obtained by a section drawn through the most characteristic rooms of the building (Figure 6.4).

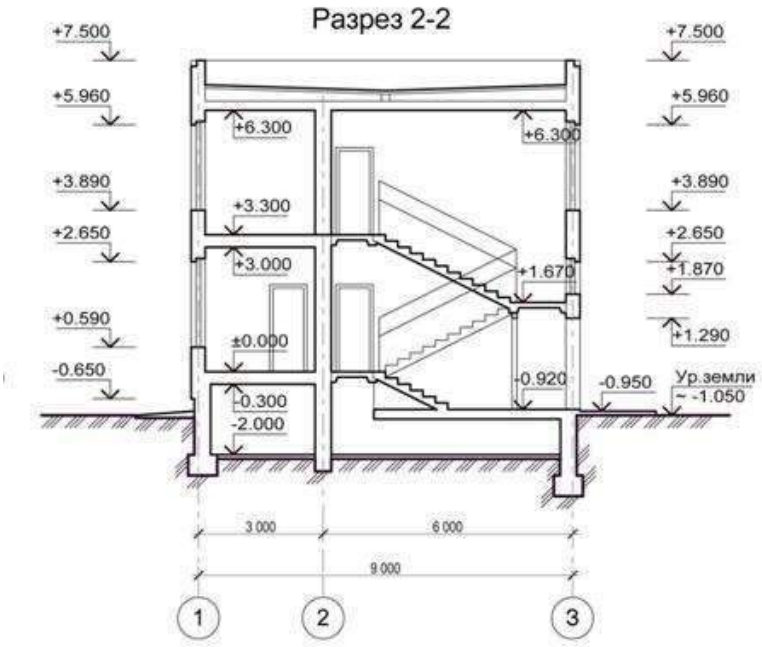

Figure 6.4 - Drawing of a building section

In the visual field of the dissected rooms, the cross-section along the arrays of structures is surrounded by a thick line or shown by casting. Thin lines trace all the elements of the building, the details of equipment that do not fall into the plane of the cut. Another option is possible when the details of the natural or urban environment are graphically shown outside the section of the building.

It must be remembered that the cutting plane passes necessarily through window, doorways, gaps between bearing supports, etc. To dissect a building along an array of load-bearing structural elements, bypassing the openings is incorrect. Drawings of architectural sections are depicted on a scale of 1: 200, 1: 100, 1:50, 1:25.

Drawing of the facade is a front orthogonal image of the projections of the facades of buildings. Usually the drawing of the main facade of the structure is universally meant, if other facades are depicted, they are accompanied by an explanation - "side facade", "rear facade", or "northern facade", "southern facade", etc. (Figure 6.5).

Figure 6.5 - Drawing of the building facade

Information for the construction of facades is contained in the plans and sections of the projected building. A complex, plastically rich form of building facades is depicted either in the technique of linear graphics using shading, or in a tonal or color chart.

A master plan drawing is a conditional orthogonal image of a building or complex of buildings and structures when viewed from top to bottom (Figure 6.6).

Figure 6.6 - Drawing of the master plan of the manor

In the general plan, orthogonal images of sections of buildings on basement floors (plans) or projections of structures with the outline of its roofing (roof drawing) are shown. The building or complexes of buildings are graphically depicted on the terrain with a designation of relief contours, transport communications, car parks, details of landscaping, arrays of ornamental or natural greenery, individual trees, etc. To identify the compositional features of the building or its combination with the landscape, it

is possible to apply tonal or color graphics to reveal shadows and the shape of buildings, the relief of the earth, etc. Master plans are implemented in scales of 1: 5000, 1: 2000, 1: 1000, 1: 500, 1: 200.

Drawing of an architectural detail is a conditional orthogonal image of projections of architectural details, as elements of architectural plastics of facades, interiors, structural elements of a building (Figure 6.7).

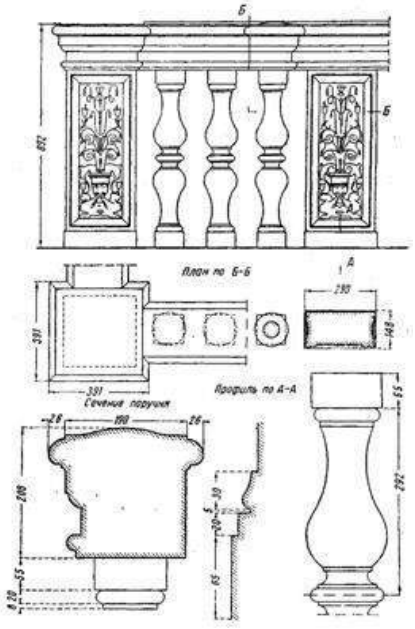

Figure 6.7 - Drawing of an architectural detail

A drawing image of an architectural detail is especially characteristic of a display of texture, texture, finishing material (stone, concrete, metal, wood, etc.).

The architectural detail is depicted in the drawings on a scale of 1:25, 1:10, 1: 5, 1: 2, 1: 1.

6.2 Demonstration drawing

6.2.1 Purpose of the demonstration drawing

The purpose of demonstration (illustrative) drawings - as clearly as possible to reveal the author's intention, graphically identify the spatial artistic idea concluded in the project (Figure 6.8).

Figure 6.8 - Demonstration drawings of an individual house

In the illustrative drawings, the planning and space-spatial solution of the future structure, the structures and materials used for this design, their texture, color, the relationship of the structure to the surrounding natural and architectural environment should be reflected with the greatest concreteness.

6.2.2 Stages of work on the project's demonstration drawing

Proceeding from this, the main qualities of such drawings should be clarity, artistic expressiveness. These drawings should in themselves represent aesthetic value.

The first stage is the layout of the drawings that make up the project, the pencil marking of the location of the projections of the drawings on the sheet in the general masses.

The second stage is the work on the detailed drawing of the orthogonal projections of the structure and simultaneous work on the axonometric or perspective projection in the pencil.

The third stage is the stroke of the finished pencil drawing, the construction of shadows, the identification of the black and white plastic of the structure.

The IVth stage is the final refinement of the artistic expressiveness of the project, with the use of tonal or color graphics, revealing the texture of the used finishing materials. The entourage drawing is executed, the necessary font and digital inscriptions are applied.

6.2.3 Axonometric drawing

The method of axonometric projection (with another "axon" - axis and "metreo" - I measure) is an image of the object, parallel projected onto the image plane at a certain angle to it (Figure 6.9).

Figure 6.9 - Axonometric image of an apartment interior

Depending on how the projection is located, it can be frontal and angular. On the front axonometry, one of the faces of the depicted object is parallel to the axonometric plane of the projection and is drawn without distortion. In angular axonometry, all vertical faces of the object are distorted: squares turn into rhombuses, rectangles into parallelograms, circles into ellipses.

6.2.4 Perspective drawing

Perspective projection allows modeling the architectural form, proceeding from the conditions of three-dimensionality. There are 3 main types of architectural perspective: the appearance of the structure, interior and ensemble of structures.

The perspective is built on the basis of a complete set of orthogonal projections of the object.

The process of constructing the perspective consists of several successive operations: choosing a point of view, the picture plane, the main point of the picture, determining the point of descent, the horizon line.

Depending on the choice of point of view, the perspective is frontal and angular (with one or two points of convergence).

Frontal composition from one point of descent is often used in constructing the perspectives of interiors and symmetrical, deep compositions (Figure 6.10).

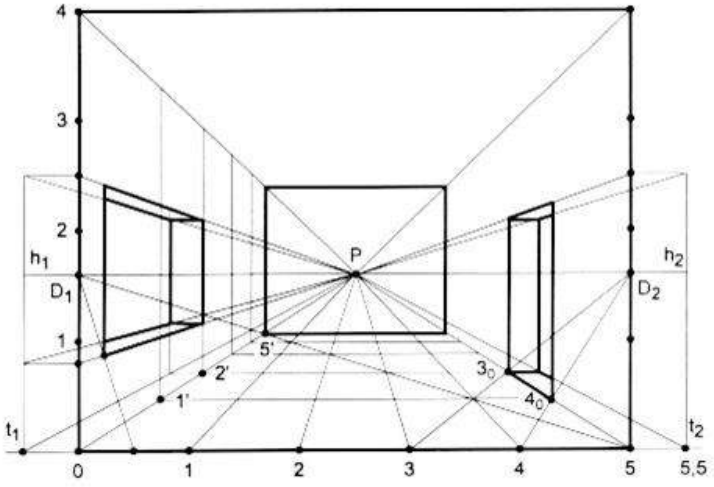

Figure 6.10 - Building a frontal perspective

The angular perspective with two points of descent very well emphasizes the plastic and composite structure of the facade of the structure (Figure 6.11).

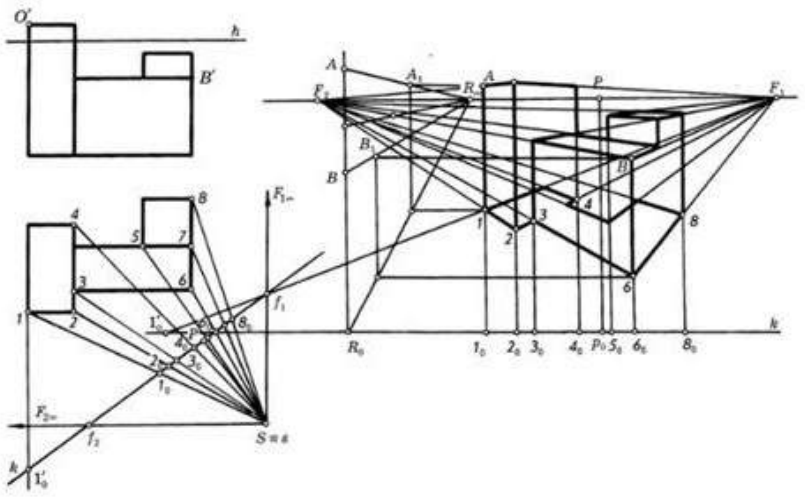

Figure 6.11 - Construction of angular perspective

The choice of distance from the viewer to the picture plane (to which the perspective image is projected) also has a noticeable effect on the character of the perspective: the larger this distance, the more static the image.

The choice of the level of the horizon line can be reduced to three situations (Figure 6.12):

- at eye level of a person standing;
- below this level;
- from the "bird's flight".

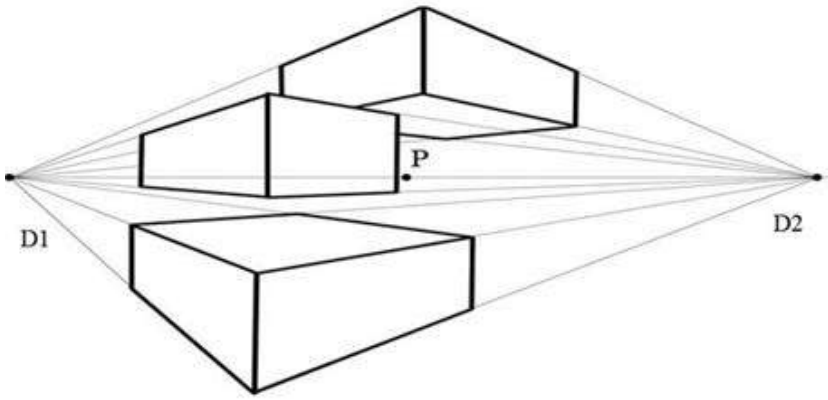

Figure 6.12 - Choosing a horizon line in the construction of a perspective

6.2.5 Architectural drawing. Entourage. Staffing

Architectural drawings are all graphic works of the architect, including those not directly related to design, which is performed by hand with the help of a pencil, a coal, a sanguine, a pen, a brush, a rapidograph and a marker.

The specificity of the architectural drawing is that in various design situations, it is required to show the environment - the natural (entourage) (figure 6.13) or the objective (staffing) (Figure 6.14) environment in which the architectural object exists.

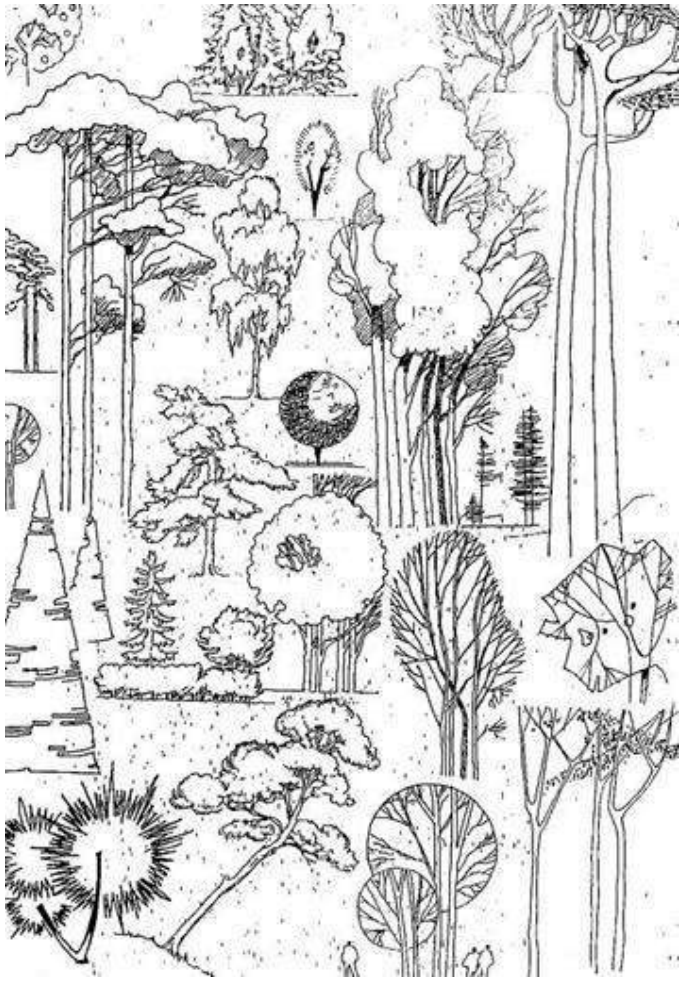

Figure 6.13 - Entourage

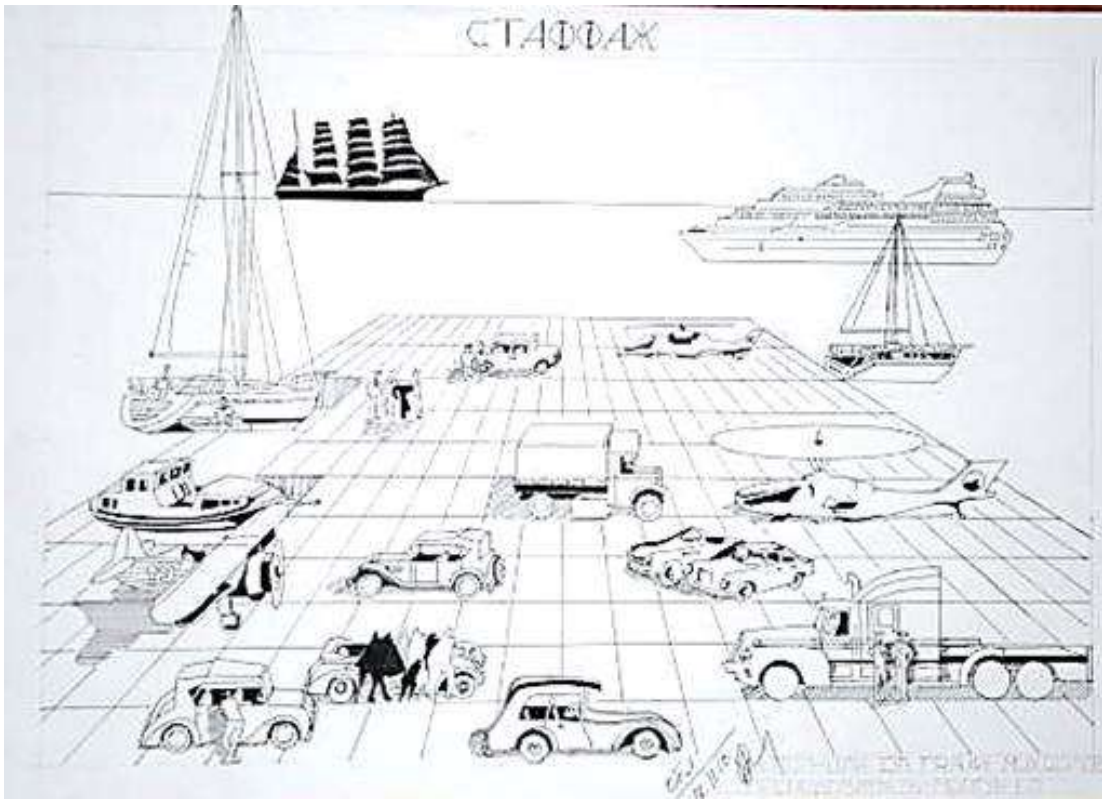

Figure 6.14 - Staffing

Architectural entourage and staffing are stylized images of the natural and objective environment. Complementing the projection of the figure with a figure of the person, the architect emphasizes the scale of the drawing.

In the composition of the drawing, the architectural object should be perceived easily and clearly. The main significance of the projection of the architectural object makes us pay special attention to the intensity of filling the drawing, the number and manner of the image of the details of entourage and staffing. Entourage and the details of staffing fulfill their main task - they help to visually master the idea of architectural design.

At different stages of architectural creativity, various kinds of graphic techniques, methods of searching for the idea of a structure, its development and the final graphic representation are used in their ideas and methods.

7 MACETHERONIA

7.1 Significance and features of prototyping in architectural design

In educational design, the production of layouts promotes the development of spatial imagination, it helps to provide three-dimensional representation of planar images of orthogonal drawings. The main purpose of the model is to reveal the structural and proportional properties of the proposed structure.
Both in practical and in educational design layouts are divided into workers and demonstration.
To create a good layout you need a high-quality selection of materials and tools used. The main materials for layouts are simple-to-use paper such as "PAPER", thin cardboard, as well as watercolor paper. To work with paper and cardboard, the following tools are required (figure 7.1):
1. Bread knife or cutter, with a retractable blade;
2. Circular knife for cutting circles and arcs;
3. Scissors with straight ends;
4. Glue (PVA, "Moment", "Rubber");
5. Special board of plywood, plastic or hardboard;
6. Rulers are preferably metal;
7. Colored paper.

Figure 7.1 - Tools for prototyping

Cardboard and paper are comfortable and easy to handle. To make any curved surface, it is necessary to pass through a shaft or some cylindrical object or divide by vertical lines into equal strips with a protruding knife. In order for the ribs to be sharp it is necessary to make incisions on the side where the outer edge will be formed. The best way to glue is to glue together (on the edge). There is also a simpler version of gluing - gluing one form to the other with the flaps of the edges of the paper.

For greater expressiveness, prototyping often uses color. To glue colored paper to the surface of the sheet "Whatman" or cardboard rubber glue is used.

7.2 The plane and types of its plastic development

Plastic surface is one of the leading factors in the formation of the artistic image and takes an active part in the disclosure of its ideological and artistic content and style. Surfaces and types of plastic development of planar compositions are extremely diverse. Among them, we can distinguish the types of divisions in the form of protruding and sinking furrows, various outlines, reliefs, profiles, ornaments and planes. Members of the relief can be: horizontal, vertical, inclined, protruding, recessed, rectilinear, broken, curved and mixed. The concept of plastic surface design includes the development of the earth's surface (figure 7.2).

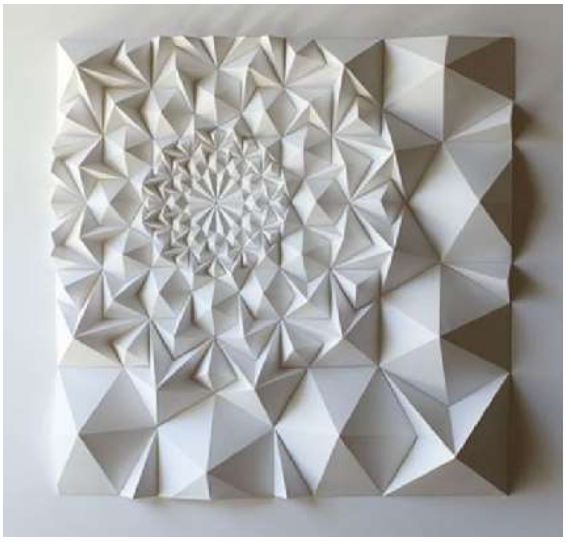

Figure 7.2 - Transformation of the plane into the relief

Plane with elements bent by 900, are transitional to the transformation of the plane into volume. The general solution of the surface in this form of the composition consists of a series of planes successively arranged one behind the other. Such surfaces are called wings (Figure 7.3).

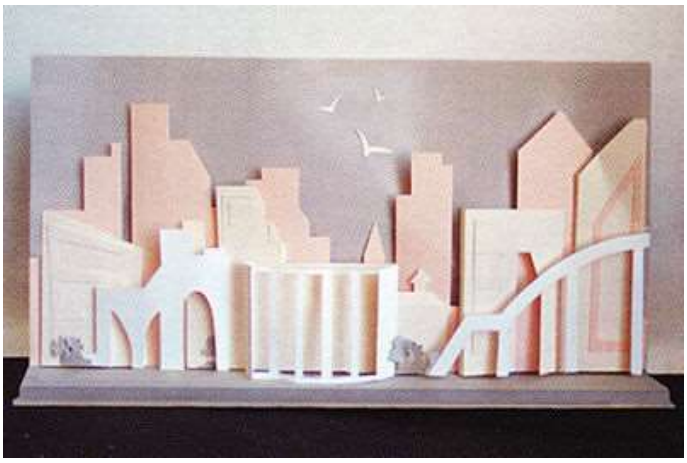

Figure 7.3 - Rocking surfaces

Spatial shaping, which uses all methods of transformation of a paper sheet by sequentially bending the constituent elements and converting them into a volume without the use of glue. When classifying all types of transformed planes, three types of models can be distinguished: 1) different types of spirals; 2) variant with extended surface elements; 3) origami - the art of folding different figures and geometric bodies from one sheet of paper without the use of glue (Figure 7.4, 7.5).

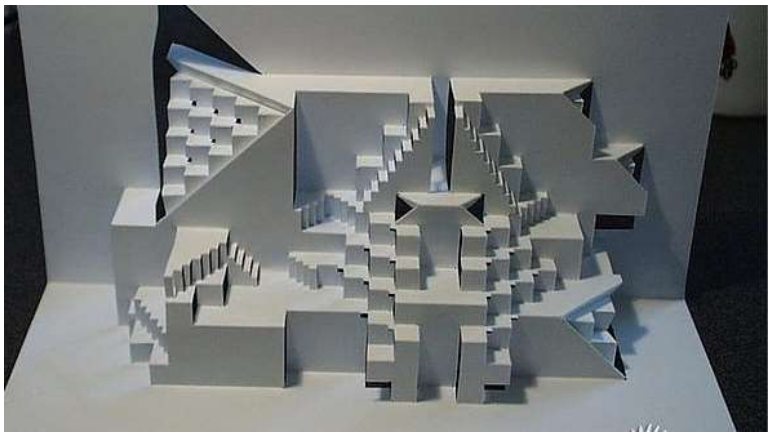

Figure 7.4 - Converting a plane to a volume

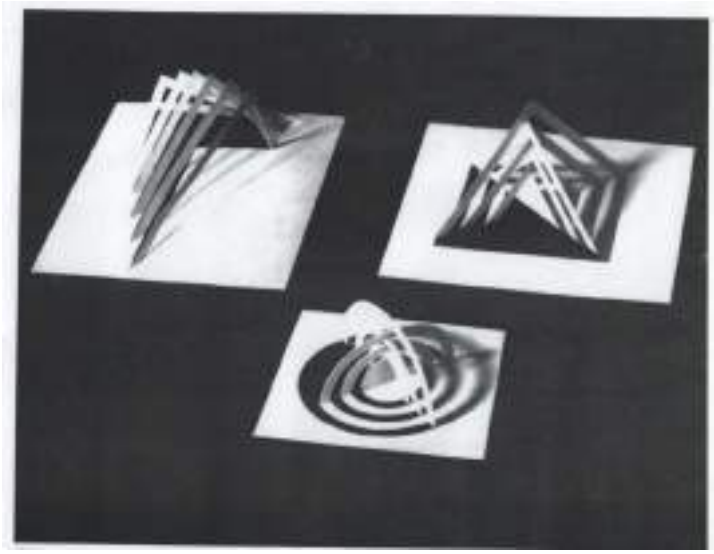

Figure 7.5 - Converting a plane to a volume

The plane is also used as the forming elements in the three-dimensional dimension. Stylistics of this composition can be the most diverse: from modern, using curved surfaces of arbitrary shape, to strict geometry, characteristic constructivism; Straight and circular lines are used in the construction of planes. Planar elements can intersect at different angles. Even more interesting compositions can be created by a combination of solid and hollow planar elements.

7. 3 Space-space forms

For the three-dimensional shape, the relative equality of the dimensions in three coordinates is characteristic. On the basis of the nature of the outlines of surfaces, three-dimensional bodies are divided into four groups: 1) bodies formed by planes having perpendicular edges; 2) bodies formed by inclined planes; 3) bodies of rotation and shape formed by curvilinear surfaces; 4) complex stereometric figures having rectilinear and curvilinear surfaces.

For the production of any geometric body in the layout, it is necessary to plot its scanning on paper or cardboard (Figure 7.6).

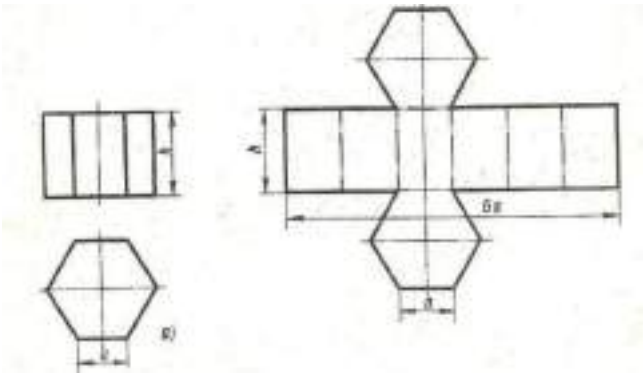

Figure 7.6 - Development of a hexagonal prism

In order to assemble the resulting sweep at a sufficient density of paper, the edges can be glued to the back with each other or with insufficient experience - gluing the lapels of the edges at each face of the figure. There are also variants of more complex plastic designs of polyhedra, in which the plastic solution of the surfaces of faces is performed using the notches, slits and bends, with the plastic of the surface from weak to deep relief. Hollow geometric bodies can have an internal structure, which can be represented by planes of various shapes and shapes.

The cylinder and the cone are the simplest bodies of revolution, in which the shaping of the lateral surface of the curvilinear shape can be done in two ways: 1) use rolling through the shaft; 2) the lateral scanning surface is divided by vertical lines in 3-5 mm, after which it is cut from the outside by a protruding knife and folded along a curve (Fig. 7.7).

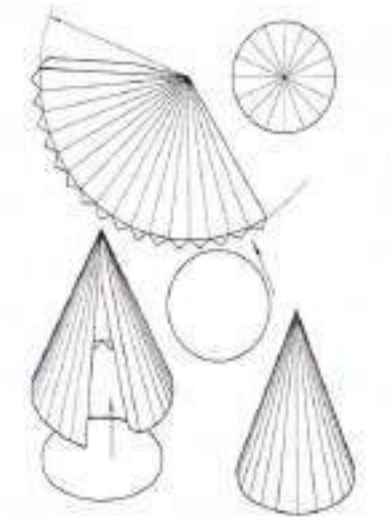

Figure 7.7 - Layout of the cone

Surfaces of some geometric bodies of curvilinear form can not be deployed in one plane, for example a sphere. The method of mutually perpendicular secant planes is used to make the balloon mock-up. The surface of the ball is dissected by vertical and horizontal mutually intersecting planes, which in the section are circles of different diameter with notches to connect the circles into a single model (Figure 7.8).

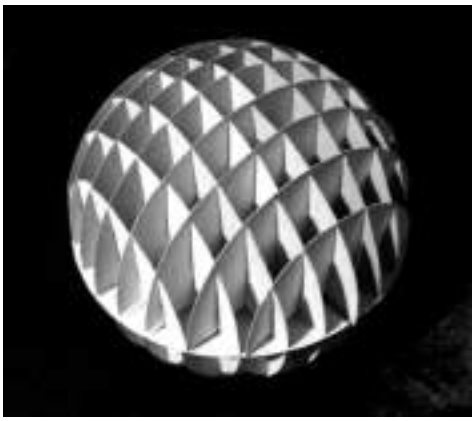

Figure 7.8 - The balloon layout

In the manufacture of complex compositions by inserting one body into another, a stage of the preliminary design of the form is necessary, on which the lines of the frames are determined. The best way to glue in the places of the frames - "to the butt". When designing complex shapes, simultaneous use of dense, hollow, and hollow bodies (rod structures) is possible.

Conclusion

Architectural graphics are associated with a number of extremely topical for architectural problems. Currently, most of the architects-designers realize their intentions with its help. Graphics remains one of the most effective ways to develop creative skills in teaching, graphic techniques are the basis of the principles on which to build the mechanics of digital images.

Most specialists in the field of architectural design, the theory of architecture and architectural pedagogy recognize the importance of research and awareness of the tools of architectural graphics as an effective means of improving the quality of design, quality and effectiveness of teaching in an architectural school. It is for these reasons that in recent years many domestic and foreign monographs have been published and published, thesis studies successfully completed, the content of which is related to a variety of issues of architectural graphics. However, in this literature, a number of issues revealing important aspects of the historical development of architectural graphics have not been reflected. This information is necessary for the architect, the student of the architectural school to correctly understand the role of graphics in the design process, the value of the graphic image in a vast stream of professional information. Comprehensive knowledge of the subject "Architectural graphics", understanding the nature of its occurrence inevitably enhance the culture of a specialist, affect the quality of his creative search. Ultimately, the quality of architecture depends on the complex of this knowledge, the effectiveness of architectural education.

Over the centuries the development of architectural activities, drawing, sketch and architectural drawing have passed a long and complex path of transformation in the methods of drawing and presentation of visual information, in the technique and style of its implementation. Naturally, simultaneously with the formation of pictorial methods of drawing, sketching and drawing, more and more sophisticated tools were invented for their implementation.

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