The Basic Plastic Elements and Material Knowledge in Sculpture Art Education

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Abstract: As in each art work’s formation process, it would not be wrong to state that the sculpture is a product emerging from human’s imagination and ideas as well. If approached from a classical point of view, the product may be qualified as an object art, which is three dimensional, tangible, occupying the space, enclosing the space or spreading into it, formed from the materials selected expediently by the artist. Knowledge of the form, which is one of the first steps of sculpture education, is possible through the formation of the material in a general sense. Each material, which has its own specific features, offers various formation possibilities. Therefore, recognizing the material with its diversity that can create a wealth of ideas and different aspects while the imagination is being materialized and transformed into a form constitutes an important determinant factor for the development of creativity during the art education process. The aim of this paper is to examine the effect of material knowledge and variety on plastic shaping elements in terms of its support in acquiring creativity and sensitivity in the process of sculpture and art education. This theoretical study will put forward the importance and necessity of the material knowledge when it is analysed from the perspective of the different effects of various basic plastic elements on sculpture. The study will also consider the subject in line with the new suggestions offered by the contemporary art.

Keywords: art education, sculpture, material, basic-designing elements.

Introduction

Sculpture, when approached through a classical point of view, is evaluated as a form art which is three-dimensional, touchable, occupant in space, space-inclusive or space-reaching where figure and content have been unified. Sculpture, which is also identified as shaping space or indented creation art in space, necessitates a figural organization compatible with material which is constructed.

Any work of art exists in company and effect of a determined substance or material. Considering art of sculpture in special terms, it is seen that the case material has been the most significant element which determines the effect being aimed. Out of which material a sculpture is going to be made is of vital importance for the sculptor in reflecting the power of thinking and expression being desired to be transformed completely because an artist transforms own thinking or imagination into a figure in real environment via real material in “sculpture”

In the book named “The Elements of Sculpture” George (2014,12) says that material is first because everything is made from something and each material contains unique characteristics. Also he adds that the sculptor must be aware of the numerous possibilities within a particular material and have knowledge of the tools and techniques needed to work with it. “Nothing the sculptor does to the material is neutral; every act contains meaning. Creating a sculpture is a three-way conversation between sculptor, material and viewer. Material is by necessity at the centre of that conversation and it is as much alive as the other two. However, the ultimate aesthetic challenge for the sculptor is to create form that transcends the material from which it is made. As the twentieth century progressed, the range of artistic materials increased exponentially and the exploration of these new materials greatly expanded the expressive potential of modern and contemporary sculpture. That being so, when we see a contemporary work for the first time, one logical question might be: Why did the sculptor choose this particular material?” (George, 2014, 12).

Sculpture and painting is mentioned as plastic arts as they have been constituted through plastic material. Here, when intending to say “plastic material”, it has been tried to mean shapable material or substance such as clay, plaster, metal, wooden, stone, polyester. All these materials that can be shaped as desired through certain techniques are called plastic materials. However, in three-dimensional works in particular, when the expansion of the scope and limits of art is taken into account anymore, it is not wrong to accept any kind of material as plastic material in accordance with the will of the artist. When associated with material, despite the untouchableness of painting art, it is seen that sculpture is in a form which is three-dimensional in the space and arousing the desire of touch (Yılmaz, 2006, 15).
So, the real material in sculpture is face to face with spectator in real environment. Existing platform of every art and possibilities entails different conditions. While the painting is realized on surface, the sculpture is seen to be in a three-dimensional form which has gained some volume. Artist M. Yılmaz (Yılmaz, 2006, 15-16) is making the comparison between the painting and sculpture: “we see depths on a flat canvas without real depth, objects put away from each other, colours in painting and we believe in the lie told by the artist. As for the sculpture, he says that volume is not an illusion but reality.” Depth in painting art is an illusion. Nevertheless, the depth and volume of sculpture is real and it takes place with spectator in the same atmosphere at the same time. For that reason, sculpture is identified as a “volume art” as well. However, while sculpture is constituted, the usage possibilities of many various materials bring along infinite variations in terms of figure as well.

The aim of the paper is to discuss the effect of material knowledge and variety on plastic shaping elements in terms of its support in acquiring creativity and sensitivity in the process of sculpture and art education.

**Methodology**

It is analysed the important processes of art education, the importance of figure knowledge and form knowledge, material knowledge - stone, bronze, clay, plaster (emptiness-fullness, mass-volume and horizontal-vertical components) which are significant steps in sculpturing education process. The scientific theoretical discussion is based on the works of popular and well-known artists Ilhan Koman (1961), Jacquez Lipchitz (1915), Anish Kapoor (2004; 2005; 2006), Alexander Archipenko (1915), Henry Moore (1939), Henrique Oliveira (2009), Patrick Doudherty (2004), Constantin Brancusi (1923; 1928). The theory and practice of an art fundamentals are analysed of the works of O.G. Ocvirk, R.E. Stinson, P.R. Wigg, R.O. Bone, D.L. Cayton (2015) and the diversity of elements of sculpturing of H. George (2014) works. Methods of the research: theoretical study, analysis of scientific literature and reflection of author’ personal experience are used.

**Results and discussion**

**The Effect of Material in Basic Plastic Elements**

The formation of figure knowledge, which is one of the first steps of sculpture in educational process, passes through grasping basic plastic elements and shaping of material in general sense. Any kind of material bearing special features presents many various and different figural possibilities. So, knowing material along with its multitude during educational process provides support to the embodiment of imagination. This situation, at the same time, constitutes an important effect in the development of creation process as it is going to present the richness of ideas in transformation of imagination into figure.

The constitution of form knowledge thought to have been first step in sculpture education calls for the shaping of material. In this case, it’s possible to talk about a pattern between material knowledge and basic plastic elements. Every material creates different visual results on basic plastic elements constituting sculpture stemming from its special construction and character.

In this process, the usage of basic plastic elements shape respectively according to the nature of every material. A vital tie exists between plastic shaping possibilities and creativity through abundance/richness of material knowledge.

To know material is one of the most significant experiences of a person who wants to know the art of sculpture. So, the planning of material knowledge in a system has been one of the most crucial necessities.

It should be taken into consideration that different materials generate different effects and shaping or plastic elements of sculpture which can be identified through emptiness-fullness, mass-volume and horizontal-vertical components will provide different possibilities and effects in any material.

“Technique and method depend on the material being used. In other words, any material (stone, bronze, clay, plaster) necessitates its own technique and method. A sculptor has to know the nature of the material he/she uses. We cannot create any figure that flashes into our mind so randomly. How far are the possibilities of stone, or bronze or plaster? Besides these, there are some other points as well. Some sculptures, let’s say, can be made both from bronze, stone and wooden; these have some samples, too.
However, even though the composition is the same, the effect in all is different from each other. Its reason stems from the own nature of material" (Yılmaz, 2006, 51).

Besides it should be considered what İlhan Koman (Koman, 1961) who is one of the most important Turkish sculptors said on the matter of the material: “From 1956 to 1965 I used principally iron in making sculpture. Why iron? It was simply because I had ways and means to work in this medium. … For me the 1950’s were what I call "my Iron Age". My objective in sculpture was then beauty, although in the process I struck the iron with violence to shape it and forge it into forms to exalt its hardness and malleability. The outcome was to me aesthetically satisfying” (Haydaroglu, Torre, 2005, 64) (Figure 1).

![Figure 1. İlhan Koman, Ogre, 1961, iron (Koman, 1961).](image)

**Components of Sculpture and Material Shaping**

Components of sculpture can be lined up such as mass-volume, emptiness-fullness, texture, surface, ambience, movement, section, passes. These components gain special character according to their structure/feature. For example, the effect created by metal and mass-emptiness and texture relation of stone as material exhibit different expressions from each other.

Mass out of components in question is solid physical substance or material that creates the weight and density of sculpture. Materials such as clay, metal, stone that are going constitute the form of sculpture compose the massic structure. Out of these material, stone, which is shaped by dressing and carving in classical sense, is the heaviest one amongst and demands a craftsmanship that entails strength. As for the material such as clay, ceramic or wax, they are flexible and in a form which is easily shapable. But volume is the figure-gained case out of these materials and its three-dimensional area determined with the limits of the object.

“Mass and volume exist with each other in relation. A brick has some mass in its own volume. In general, while positive areas create larger massic effect, the effect of empty spaces is less. Both mass and volume state three-dimensional presence or figure of sculpture” (Ocvirk, Stinson, 2015, 35).

An artist striving for sculpture forms his work with a figural richness at volumetric dimension and infinite usage possibilities of material. Due to its physical dimension unifying with material, sculpture as a form is the totality of volume and mass existing among contours where indentations and protrusions are included. This work occupant in space is composed of the connection of partially or entirely closed negative areas depicting flat of curled movement according to the character of material. As in surface arts, we confront texture, light and colour as elements determining and shaping contrasts characterized as plastic value in sculpture as well. On the whole, contrasts increasing with light-shadow effect even correspondingly are important factors in creating a more effective form.

“When limits are identified clearly, shapes are understood more easily whereas badly-identified edges lead to a complex and monotonic process at large. Form edges are the guides of eye going round on
three-dimensional surface and they create the desire of experiencing the whole work. Yet, the appearing shape depends on the position of spectator. A small change in the line of vision may change the perception of shape and contours as well. The main contour or silhouette of a three-dimensional work is the outer edges seen from single position. Minor contours are shape edges or surfaces passing through or over main contours. Some three-dimensional contours are built by neglecting secondary contour. Contours might have been targeted, so they can imply a connection with the edges of other shapes existing in another place of composition (Figure 2, 3). This in particular is valid for the arrangement of a few different elements in a-tectonic works. By this way, eye movements are encouraged toward a definite direction by connecting similar contours of far shapes. When other shapes are close enough to this focus point, the eye tries to connect or perceive these in a group relation by going forward and backward” (Ocvirk, Stinson, 2015, 146).

![Figure 2. Jacquez Lipchitz, Man with a Guitar, 1915, limestone (Lipchitz, 1915).](image)

![Figure 3. Anish Kapoor, Cloud Gate, 2006, stainless steel (Kapoor, 2006).](image)

Form, which is the most significant element of sculpture, turns into a data with its visuality existing in three dimensions. It forms a border with its surfaces in the environment it exists. The first one of designing elements, the most crucial one and outer view of everything is composed of form. In spite of this, figure is more mobile according to form. According to educator and artist Paul Klee (1879 -1940) figure is equal to animate entity but form is inanimate. Form is an existence limiting space with its surfaces for a certain function and covering a volume in this space. As for figure, it is an instantaneous pose or the position it has. While individual perception is effective in figure, form is a reality organized with its own laws in space. So, the form richness and variety of nature is a strong source of inspiration for the artist (Kaptan, 2004, 81-88).

The usage of aforementioned forms during designing of three-dimensional art works reveals a situation that should be thought together with the character of material as well. For instance, texture and forms composed by stone in nature is different from the ones formed by wooden. The shaping possibilities and techniques to be presented by these show differences as well. So, these are considered in designing sculpture.

Emptiness and fullness or mass and volume are from other shaping elements. For instance, emptiness out of these is a structure composing contrast despite massic structure of form. Emptiness at the same time is an element serving to reveal movement where weight decreases in the perception of mass. Thus, the figure emerging covers togetherness of negative and positive structures.

Negative area or space being shaped penetrates into solid material, so a three-dimensional area is formed that looks like being kept inside or expanding outward. These open shapes may surround solid masses and may extend amongst separately. Prominent innovative sculptors of the twentieth century Alexander Archipenko (Archipenko, 1915) and Henry Moore (Moore, 1939) have pioneered in the use of empty sculptures (Figure 4, 5). Emptiness has presented new spatial extensions for these artists and their followers. Using emptiness has brought inner surfaces into the open, opened a route toward backside of
sculpture and decreased overweight. Empty shapes should be thought as the inner pieces of form. Enclosed empty shapes are very important in linear sculptures and they become dominant in width, thickness and weight of material describing these for the most part. Three-dimensional shapes as well as two-dimensional equivalents play an important role so as to create pressure and stress within the parts of work as well. Relative superiority of shapes forming main structure can be changed with dimension, colour, value, visual detail or contrasts in textural stress. A shape can be dominant by differentiating other shapes surrounding it as the dominance degree is determined by contrast degree. Having less variety makes them harmonic more easily (Ocvirk, Stinson, 2015, 147).

![Alexander Archipenko, Woman Combing Her Hair, 1915, bronze](image1)

![Henry Moore, Reclining Figure, 1939, wood](image2)

Artists want to reproduce the effects of light moving over objects, figures and forms related to the topic they choose. This situation brings along the problem of value use in the process of constructing the work. Light and shadow patterns vary according to the shape of object and how it is illuminated. While spherical surface exhibits the transition from light to dark as equally graded, intersecting surfaces will demonstrate more sharp contrast values. Every basic form has its own light and shadow patterns. These light and dark areas working for the perception of depth and volume are called as plastic value (Ocvirk, Stinson, 2015, 155).

While making three dimensional shaping, it is possible to catch rich dark colours, shiny white colours and greys in various tones in any material. However, some materials provide more natural possibilities when compared with others in terms of developing value variety.

“Despite the fact that artists working with three-dimensional figures do not have to create a mass illusion through light and dark surfaces, they are certainly aware of the relation between lighting and dimensionality. While the artist moulds three-dimensional shapes physically, their contrast lights and shadows are produced on figures. The presence of light occurs when the surface area is exposed to a light source. In contrast to that, when a surface removes its face away from light source, dark or shadowy areas appear. Every basic form gives different response to light. Lightly inclined surfaces reveal a laminar flowing value gradation. On the other hand, a sudden value change occurs on sharp edge. Any light angular change on two adjacent surfaces results in a light contrast value. More sharp angular change means more contrast. That a three-dimensional work prevents light transition of any block ends in shadow. This includes intense textured areas as well. However, the shadow area composed by the texture itself may create a more dark-looking texture when compared with soft transition. Light-shadow patterns change together with the position of spectator, work or source of light. If a work has a shape change to a large extent or concentric transitions, shadow patterns will identify this work independently from the position of light source with a great possibility. For many three-dimensional works, light source is fixed relatively and light shadows alter only while spectator is moving. However, owing to the change of light source with the movement of object, kinetic sculpture creates continual changes in light and shadow relation. Many sculptors are busy with forming these kinds of relations. … Value changes in three-dimensional work can be obtained through paint as well. To see shadow patterns falling onto an object painted with light values instead of dark colour values is easier. Light values give best results on pieces dependent on secondary contours; darker values are more successful in stressing big contours or
silhouettes. Strong contrasts between image and background creates a silhouette describing thin linear three-dimensional structure in addition. … For an artist who works three-dimensionally, a good source of light and value interval formed by the artist are significant tools of composition. Light and shadow helps to identify dimensionality and spatial arrangement of a work, increases the effect of designing pattern and supports to sentimental, psychological and dramatic expression of the artist” (Ocvirk, Stinson, 2015, 165).

Texture, one of the most significant plastic effect creating components in sculpture, is not an illusion on platform in painting or by drawing but a real surface experienced with sense of touch. The real texture in three-dimensional arts is a natural piece of work. It is seen that natural and autogenous textures of materials such as wooden, stone, clay or metal are consciously included in work. Textures concurrently give visual stress to surfaces limiting volume and extent and provide some certain figures come to the forefront by creating sharp and strong contrasts.

“While working on three-dimensional materials, textures enrich a surface, identify the material and strengthen the content and expression. Texture surfaces show variety from rough surface of rusty metal or bark to smoothness of glass or polished marble. Some certain surfaces exist in the nature of certain materials and these inner textures are respected traditionally. In general, artists use some certain textures so as to characterize special qualities of topic. For example, while elegant softness of a fish calls for a polished shiny surface, it is necessary to use harsh and rough textures for violence or an event like disaster. Yet, artists try to astonish spectators through different acts from time to time as well. … In contrast to visual illusion, real textures experienced by sense of touch are from basic elements taken into consideration by artists who work three-dimensionally. The works of these artists are created through special natural tactile qualities of the material being used. Henrique Oliveira (Oliveira, 2009) uses worn-out wooden by forming wavy, cave-similar and almost an extraordinary texture (Figure 6). Other artists like Patrick Doudherty (Doudherty, 2004) get clues from nature and builds sticks, branches and trashes in the form of ecological giant sculptures (Figure 7). … The use of real texture plays a role in a newly technique called as assemblage and in blurring the limits between two-dimensional and three-dimensional work. Assemblage developing out of previous experiences along with collage is constituted by connecting foundling or special made various two-dimensional or three-dimensional objects. Although assemblage looks like collage, the difference between the two is that assemblage brings greater and bulky elements together. In addition, assemblage works are presented differently. In common, these works are exhibited on the ground while standing on its own area. However, assemblage objects are out of the ordinary on a large scale even when hung. Assembled objects naturally have real textures single-handedly. Even if we think about imitated texture only as a graphic device, sculptors often will recreate congenital textures of the agent. For instance, they can imitate outer qualities of other textures such as hair, fabric, leather similarly by changing the surface of the chosen material through certain techniques and methods. Processing material in this way may deceive our senses as if we are experiencing another material between whiles. Through careful processing of surface and a suitable retouch, other natural and artificial materials such as clay, wooden, metal may seem quite natural and may falsify our eyes in the strictest sense of the word. Abstract texture and invented texture are suitable for plastic artists as well. Both types of textures may enrich a certain area and may change the value of an area by tricks of light and shadow on textual surface. Careful observation and skill is certainly necessary for obtaining composition unity and a realistic texture. However, more subjective or unnatural texture adding into a composition entails creativity evenly. Whether it includes two-dimensional or three-dimensional material or a composition out of these ones, texture is a natural part of every surface and it is as crucial as other elements on composition and expression” (Ocvirk, Stinson, 2015, 178-180).

Special feature of any material creates characteristic effects on the figural and visual structure of sculpture. Artists resort to forming same figure through different materials in order to search for these effects. It is possible to observe the best samples of this in Constantin Brancusi’s (Brancusi, 1923; 1928) works. “Bird in Space” series reflect different effects both on marble and bronze of a sculpture (Figure 8, 9). Here, it is easily seen how massic weight of marble will become lighter via the effect of form and gain dynamism with the effect of bronze.
Figure 6. Henrique Oliveira, *Tapumes* (fencing/boarding/enclosure), 2009, wood (Oliveira, 2009).

Figure 7. Patrick Doudherty, *Putting Two and Two Together*, 2004, maple and willow saplings (Doudherty, 2004).

Figure 8. Constantin Brancusi, *Bird in Space*, 1923, marble (Brancusi, 1923).

Figure 9. Constantin Brancusi, *Bird in Space*, 1928, polished bronze (Brancusi, 1928).

**Conclusions**

In the light of the art works examples given, it is emerged that the different materials offer very rich creative possibilities/resources to the artists. In this case, the importance of the material knowledge and variety on plastic shaping process in terms of its support in acquiring creativity and sensitivity in sculpture and art education becomes apparent.

Grasping techniques through shaping possibilities of clay, wooden, stone and metal that can be identified as classical basic material related to sculpture in educational process will constitute a ground in personal creativity process of student and will support to form his/her personal style. Creating new plastic languages from the materials out of these ones and gaining the skill of self-learning-searching process by the student should be the result targeted in the next step.

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