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A Study on the Concept of "Uncertainty" in Ceramic Art

Seramik Sanatında "Belirsizlik" Kavramına İlişkin Bir İnceleme

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ABSTRACT
Uncertainty is a concept at the intersection of various disciplines, such as art, philosophy, and science. Although it often has a negative connotation, it is a force that stimulates creativity. It is an essential element that encourages creative thinking in human discovery and invention processes. The human mind has endeavored to make sense of the world with quantities and numerical expressions by seeking certainty instead of abstract and uncertain relationships. This tendency can be traced back to the origins of mathematics and geometry. Ancient Greece was central to the Presocratic thinkers' efforts to explain the basic components of the universe and events. In the 20th century, with the emergence of the philosophy of indeterminism, the concept of uncertainty brought up other concepts, such as chance, coincidence, and unpredictability in art. It paved the way for artists to address these concepts. In ceramic art, the production process inevitably involves uncertainties, which allows artists to integrate unpredictable elements and unexpected outcomes, particularly during the firing stage. In addition, it has been observed that the uncertainties created by the imitation skills of the ceramic material and the various decor methods that artists can apply to its surface and the uncertainties created by perception are frequently addressed. In this context, the concept of uncertainty is investigated in the triangle of science-philosophy-art, how it takes place in art is explained, and its role in both the production process and perception in ceramic art is analyzed.
Keywords: Ceramic Art, uncertainty, perception, chance, coincidence, indeterminism

ÖZ
Belirsizlik; sanat, felsefe ve bilim gibi çeşitli disiplinlerin kesişim noktasında bulunan bir kavramdır. Çoğunlukla olumsuz bir çağrışım yapsa da yaratıcılığı harekete geçiren bir güç niteliğindedir. İnsanın keşif ve icat süreçlerinde yaratıcı düşünceyi teşvik eden temel unsurlardan biridir. İnsanın zihni, soyut ve belirsiz ilişkiler yerine kesinlik arayışına yönelerek, dünyayı nicelikler ve sayısal ifadelerle anlamlandırma gayreti göstermiştir. Bu yönelimin matematik ve geometrinin kökenlerine dek uzandığı, Antik Yunan'da ise, Presokratik düşünürlerin evrenin temel bileşenleri ve olayları açıklama çabalarının merkezinde yer aldığı görülmektedir. 20. yüzyıla gelindiğinde, indeterminizm felsefesinin ortaya çıkışıyla birlikte belirsizlik kavramı sanatta; şans, rastlantı ve öngörülemezlik gibi diğer kavramları gündeme getirmiş ve bu kavramların sanatçılar tarafından ele alınmasının önünü açmıştır. Seramik malzeme özelinde bakıldığında, üretim sürecindeki kaçınılmaz belirsizlikler, seramik sanatçıları için öngörülemeyen unsurları ve pişirme sürecinde ortaya çıkabilecek beklenmedik sonuçları sanat pratiklerine dahil edebildikleri bir ortamı yaratmış olur. Bunun yanı sıra, seramik malzemenin taklit becerisi ve yüzeyine uygulanabilen çeşitli dekor yöntemleri ile algılamanın yarattığı belirsizliklerin de sıklıkla ele alındığı gözlemlenmiştir. Bu bağlamda, belirsizlik kavramı bilim-felsefe-sanat üçgeninde araştırılarak, sanatta nasıl yer edindiği açıklanmış ve seramik sanatı özelinde hem üretim sürecindeki hem de algılamadaki rolü üzerinde incelemeler yapılmıştır.
Anahtar Kelimeler: Seramik sanatı, belirsizlik, algılama, şans, rastlantı, indeterminizm

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Introduction

Uncertainty is defined as insufficient information to understand a situation or the absence of information that can solve the uncertainty (Rosen, Knäuper, & Sammut, 2006). Individuals may experience uncertainty if the situation encountered does not contain enough information, in other words, if it is new or contains too much information to confuse or if the existing information is contradictory (Budner, 1962). This definition emphasizes that the individual needs information to eliminate uncertainty.

Uncertainty, often associated with negative emotions in human psychology, also plays a crucial role in creative processes. Situations such as contradiction, indecision, and uncertainty are perceived as uncertainty by the human brain. Although it is perceived as an undesirable psychological effect on human beings in a negative sense at first glance, from the first moment of human existence, from the invention of fire to the discovery of continents, and today, from the discovery of unknown aspects of space to the development of quantum physics, it has led people to discover the non-existent with the sense of curiosity, it has aroused at every scientific break.

In art, the presence of uncertainty takes place both as an element that develops the artist's creativity in the production process and with the positive and negative effects that the viewer faces during perception. Of course, a work owes its existence to the artist and the viewer. Therefore, it is necessary to address the issue of uncertainty separately through these two elements. No matter how directly

the artist wants to express the message he wants to convey in his work, the information that the viewer understands and comprehends is limited to his ego. On the other hand, artists sometimes create their work in a way that makes it difficult for the viewer to perceive clearly and directly to benefit from the sense of mystery and curiosity created by uncertainty. This deliberate intervention in the viewer's perception creates uncertainty in perception as planned by the artist.

Within the scope of this research, the concept of uncertainty is analyzed from two different perspectives: uncertainty shaped based on coincidence and uncertainty resulting from perception. The inclusion of concepts such as chance, coincidence, probability, and improvisation in the production process, the outcome of which is unknown by referring to the future, falls under the subject of coincidental uncertainty. This uncertainty mostly takes place as the promise of the material in the art production process. The other point of view, perceptual uncertainty, refers to the uncertainty that arises during the perception of objects. Perceptual uncertainty can be caused by distortion in the perspective image of the object, as well as elements such as blur, camouflage, or movement that prevent the correct perception of the form of the object.

Within the scope of the research, the relationship between the concept of "uncertainty" and humans and science was explained. Then, information about random uncertainty was given. Concepts such as chance and probability underlying random uncertainty are explained in connection with the indeterminism philosophy. Afterward, perspective uncertainty, which constitutes perceptual uncertainty in ceramic art, the uncertainty created by the form-decor relationship, and kinetic uncertainty are discussed in terms of ceramic material.

Methods

In this study, qualitative research methods were used. Data were obtained by scanning the literature on art, science, and philosophy related to the subject. In light of these data, the ceramic works of contemporary ceramic artists Rafa Pérez, Sam Bakewell, Cecil Kemperink, Robert Dawson, İsmet Yüksel, Paul Mathieu, and Yasuo Hayashi were included and analyzed.

Uncertainty in the Relation of Art, Science and Philosophy

The relationship of uncertainty with humans and science dates back to ancient times. Human beings have tried to analyze the uncertainties of nature from the first moment they interacted with their environment. The endeavor to solve the mysteries of life, extinction, the earth, and natural phenomena constituted the first steps of today's science. The existence of a sense of curiosity, the first and most important condition for doing science, is a product of man's struggle with the uncertainties in nature. Human thought has made great efforts to achieve certainty, that is, to impose some quantities and measurement systems expressed in numbers on the world and to put the whole world into a network of measurements called "dimensions" (Moles, 2018). In doing so, he used his body and limbs, the most familiar thing for him then, as tools. For length, there are steps, elbows (cubits), feet, and even fingers (inches). For volume, there is the palm and the lap. To measure is to compare a measure common to all human beings with something from the outside world. It emerged because of the effort to concretize the quantity of the external world through the most familiar form, the body, by eliminating the uncertainty of relative and abstract concepts such as "multiplicity", "scarcity" or "greatness", and "smallness". The history of measurement shows us that the passion for precision at a level to eliminate uncertainty in humans stems from the endeavor to achieve certainty (Moles, 2018).

Uncertainty is associated with the concepts of chance, coincidence, and probability. To better understand indeterminism, the philosophical view in which these concepts gain importance, the idea of determinism, which is its semantic opposite, must first be discussed.

The human endeavor to struggle with the uncertainties of the universe and the search for an archetype, which started in Ancient Greece, formed the philosophy of determinism, which lies at the basis of modern science. Determinism is a philosophical view that argues that all events occur entirely for pre-existing reasons. It argues that everything in the universe happens in a causal connection; all events are dependent on and conditioned by their causes. According to the deterministic understanding, every result in the universe is the cause of an event. Nature is subject to causal laws, and nothing in the universe is causeless (Cevizci, 2013). Nothing comes from nothing. In other words, nothing can arise unconditionally and irregularly.

The philosophy of determinism is against uncertainty. It claims that everything is determined according to laws by something else outside itself (Greist-Bousquet & R. Schiffman, 1981). Determinism says that every event or action is predictable in advance or retrospectively. "Although the basis of this idea goes back to Ancient Greece, it can be said that it became more prominent and effective with the development of sciences with the Renaissance period. In this period, especially in studies on mathematics, geometry, astronomy and physics, it was tried to reveal that there is a deterministic understanding in the universe (Taşkın, 2020, p. 372)." The deterministic science model of Isaac Newton, one of the essential representatives of deterministic thought, was put forward in the 1500s and was replaced by indeterminism in science with the 'Uncertainty principle' introduced by the German physicist Werner Heisenberg in 1927, about 300 years later.

The uncertainty principle put forward by Werner Heisenberg is one of the critical milestones that explains the uncertain nature of the universe from the perspective of the common denominator of science and philosophy. The understanding of indeterminism, which lies at the basis of the uncertainty principle, is the view that everything in the universe is not determined and that there is randomness and uncertainty in the world. It argues that some events occur causelessly, that events cannot be explained by general laws or principles, and that they cannot be predicted due to elements such as randomness and uncertainty in the universe (Cevizci, 2013). The concept of indeterminism is closely related to chance and unpredictability in artistic processes. In science, especially in quantum theory, indeterminism is the belief that no event is certain and everything is random.

The concepts brought up by indeterminism have affected people's perspectives on life and their lives in every field. The uncertainty principle and other developments in natural sciences, which started with Heisenberg, soon spread to the art practice of the period. Although uncertainty as a creative force in art has a deep-rooted history dating back about 500 years, it showed its main impact in the 19th century. The concept of uncertainty has been represented in art in several different ways. It is possible to explain this basically under two separate headings. These are the uncertainty arising in perception and the uncertainty created by chance and randomness in the production process. In these aspects, uncertainty has been accepted as an active collaborator in the production process of art (Grishin, 2008).

Random uncertainty is a situation where it is impossible to know exactly due to the lack of certainty and the existence of more than one possible outcome of an event whose outcome is expected in the future. At this point, it intersects with chance and probability.

British artist and writer John Danvers said the following about uncertainty based on chance and coincidence;

> "Uncertainty is characteristic of many aspects of life and art. We cannot determine how a person will live, which of the opportunities presented to them they will realize. Nor can we determine their relationship to our own lives. Weather, natural phenomena, illnesses, accidents, appearances, moods, conflicts and pleasures all involve a high level of uncertainty and contribute to the uncertainty of our own existence. We must live with uncertainty, instability and inconsistencies. It is not possible to determine how a person will react to a work of art, what kind of feelings and thoughts it will evoke, or how a person will make sense of and interpret a poem, let alone a painting (Danvers, 2006, p. 315)."

With this discourse, Danvers conveys that uncertainty is present in art as it is in every moment of life. He says that during the interpretation of a work, the art viewer is confronted with uncertainty. The uncertainty Danvers refers to is the principle that perception changes from person to person. From this point of view, the following proposition can be made. A work always creates a different perception, emotions, and interpretation for everyone. Therefore, perception is different for each person and is ambiguous, just like the uniqueness of each person.

When Leonardo da Vinci questioned the training required for a painter, he listed at length the skills of anatomical representation, knowledge of perspective, mathematics, color, optics, and all the other components necessary to master the art form. However, in one of his surviving notebooks, in an exciting passage entitled "A way of stimulating and awakening the mind to various inventions", he describes how his imagination is stimulated when he carefully observes and assimilates details that most people ignore (Grishin, 2008):

> "...I will not refrain from introducing a new method of evaluation, which, although it may seem trivial and almost ridiculous, is of great use in stimulating the mind to various inventions. If you look at any wall that seems to be stained with various stains or stained by the combination of different types of stones, you are about to invent a scene. In this scene you will be able to see similarities of different landscapes decorated with mountains. Rivers, rocks, trees, plains, wide valleys and various hill groups. You will be able to see various fights, figures and strange expressions in fast motion. Faces, strange costumes, and an infinite number of things that you can then reduce to well-designed forms. Such walls and mixtures of different stones are like the sound of bells, in the ringing of which you can discover every name and word you can imagine (Maccurdy, 1938, p. 250)."

As can be understood from the passage, Leonardo da Vinci emphasized the function of the ambiguous stains he saw on the wall in triggering his creativity. The uncertainty that da Vinci mentions is the uncertainty of shape. It can be said that undefined forms such as stains or silhouettes transcend the boundaries of the world of objects in the human mind and as a result, creativity is nurtured.

The method mentioned by Leonardo da Vinci appears about 300 years later in the works of the British artist Alexander Cozens as a deliberate creative force based on uncertainty. In his 1785 book "A New Method of Assisting the Invention in Drawing Original Compositions of Landscape", Alexander Cozens suggested that an artist could create random landscape scenes by coloring crumpled paper. Cozens developed a style in which he applied ink on the crumpled parts of the paper, and before the paint was dry, he intervened in the inked areas with a different piece of paper to create random stains (Image 1.) (Cramer, 1997).

Image 1.
Alexander Cozens, Plate 6, Ink on Paper, 1785

Although Alexander Cozens created his stained compositions by chance, he associated them with various natural landscapes. Cozens' emulation of nature with the method he developed shows that he is a representative of mimetic art rather than abstraction.

The radical developments in the relationship between science and philosophy after 1927, when the German physicist Werner Heisenberg introduced the uncertainty principle, were reflected in the artistic views of the period. Hans (Jean) Arp's theory of the "law of chance", which emerged at this time, expresses that chance is wholly liberated by detaching it from the context of nature and that the artist can produce with his subconscious. Arp developed the law of chance about 150 years after Cozens. In the early 20th century, uncertainty and the so-called 'law of chance' played a leading role in several art movements, including Dada and then surrealism. In his book "Dada, Art and Anti-Art", Hans Richter described how the law of chance was developed by Hans Arp in the following words:

> "There is an anecdote that has no real claim to be seen as the story of the "beginning" or "invention" of the use of chance. The role played by Hans Arp could have been (or was?) played by Janco, Serner or Tzara. Dissatisfied with a drawing he had been working on for some time, Arp finally tore it up and left the pieces on the floor of his studio in the Zeltweg. After a while he noticed the pattern formed by the same pieces of paper on the floor and was very impressed. This pattern had the expressive power he was after. How meaningful! How meaningful! The fortuitous movements of his hand and the flying pieces of paper had achieved what he could not achieve with all his efforts, expression. He accepted this challenge of chance as a decision of fate and carefully glued the pieces of paper determined by chance onto a blank sheet of paper. ... Was it the artist's subconscious or some force outside of it that had spoken? Was a mysterious collaborator at work, a force one could trust? Was it part of himself, or was it a combination of factors over which no one had any control? ... This experience has taught us that we are not so firmly attached to the knowable world as people would like us to believe. We felt that we had come into contact with something different, something that surrounded us and penetrated us. The remarkable thing was that we had not lost our individuality (Image 2.) (Richter, 1997, p. 51)."

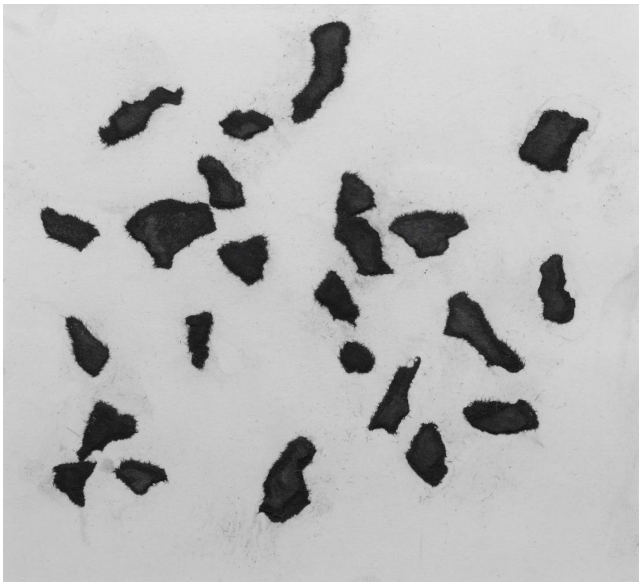

Image 2.
Hans (Jean) Arp, According to the Laws of Chance, Paper, 1933

In his book "Arp on Arp: Poems, Essays, Memories", Arp said the following about the law of chance: ''The law of chance, which encompasses all other laws and transcends our understanding (as the first cause from which all life arises), can only be experienced in complete surrender to the unconscious" (Arp, 1972, p. 246)." With his concept of the "unconscious", Arp recalls the important German psychologist of his time, Sigmund Freud. Soon after, the artists associated with Dada during the First World War began to use chance as a principle for creativity, and they realized that they were grappling with the same problem at the same time as psychologists, philosophers, and scientists. This is why they referred to Carl Jung, Paul Kammerer, Werner Heisenberg, and Sigmund Freud as fellow travelers. Luck was often equated with Freud's idea of the unconscious, leading to the creation of new art-making techniques such as collage, photomontage, and ready-made. Liberating art from certainty and predictability, Dada artists and surrealists fed on the tension between certainty and uncertainty (Richter, 1997).

From the 20th century onwards, especially in abstract expressionism, conceptual art, and performance art, uncertainty is emphasized with chance and coincidence. Uncertainty as a liberating force emerged with the idea of surrendering to chance and enabled artists to develop their personal methods of expression essentially. American experimental art representative John Cage is known for his use of uncertainty in painting and music. As an artist who questioned and changed the traditional understanding of music, Cage broke the traditional molds in music through the concept of uncertainty and gave listeners a different experience. Cage's works are far from a specific rhythm, tone, or melody structure used in traditional music. In his works, he bases the factors that determine the structure of music on random factors, coincidences, and uncertainty. In one of Cage's most famous works, '4'33', no musical instrument is played, and silence is heard. However, this silence draws attention to the ambient sounds around the audience, allowing the audience to perceive non-musical sounds as music.

By using uncertainty in his art, Cage emphasizes the spontaneity and naturalness of art. The indeterminacy of the work means that the artist has no control over exactly how the work will turn out during the production process. In Cage's art, this lack of control is manifested by the fact that musical structures depend on random factors.

The Inevitable Element in the Nature of Ceramics: Coincidental Uncertainty

The multiplicity of variables that inevitably exist in the production process transforms clay, the raw material of ceramics, into an "uncertain" material while providing artists with the opportunity to address the factor of coincidence and chance through the material. At this point, it should be noted that the shaping and firing methods of ceramic material are full of uncertainties. Ceramics is a material that has its own uncertainties, especially with the presence of the kiln atmosphere and uncontrollable deformations in the kiln, and therefore, random results occur in the production process. The inclusion of the words spoken by the material in the process of form production, in other words, the establishment of the cooperation between the artist and the material in creation, reveals a design understanding in which the artist, who wants to take complete control, understands what the material says and submits to its rules rather than fighting with it. This appears as partial randomness in production. Although the artist completes the mental production, what the material will say is unknown. It has the last word, and it is not known what it says until the work comes out of the oven. From this point of view, it is clear that the material itself is "uncertain".

Hasan Başkırkan, an artist and academician who uses ceramic materials, expressed the following opinion about the accidental effects of alternative firing techniques such as raku, sagar, and pit firing specific to ceramics in the production of ceramic art forms:

> "Today's ceramic artists, on the other hand, apply reduction firing by using "Smoky Firing Techniques" in an artistic sense, by directly confronting the ceramic with combustible material, fire, flame and smoke... The results are full of surprises that cannot be predetermined... The factors that lead ceramic artists towards smoky firing techniques are factors such as the excitement in the nature of fire, random, naturally occurring patterns and the simplicity of the process (Başkırkan, 2010, pp. iii-4)."

In addition to the uncertainty that arises about the firing methods of ceramics mentioned by Başkırkan, it is also necessary to mention the uncertainty brought about by the limitation in the shaping stage. Ceramics has features that limit the artist in the production process with its elements such as size, wall thickness, internal cavity, etc. For artists who have a strong communication with the material, this limitation can turn into a means of expression. The British artist Sam Bakewell, who produces art forms with his interventions on the limits of the material in contemporary art, treats ceramics as a power that allows the material to speak its word rather than using it as a material that conveys the artist's expression. It is possible to observe this approach of Bakewell in his series titled "Reader".

Sam Bakewell's "Reader" series, the result of a haphazard and arbitrary production process, consists of large, fired clay blocks that the artist began in 2010 and has continued to produce indefinitely (Images 3 and 4). Seemingly simple in appearance, each block contains a mass of clay mixed with specific colors as a standalone tool for thought. During the production process, Bakewell improvises and folds large quantities of clay into solid clay masses before his mind begins to imagine. The hollow clay mass, which he refers to as a 'dead space', which is contrary to the nature of the ceramic material, creates uncertain reactions in the form during drying and firing. The hollow clay mass cracks, deforms, and starts to think by itself (https://contemporaryartsociety.org, 2023).

Image 3.
Sam Bakewell, Reader, Ceramic, 2010

Image 4.
Sam Bakewell, Reader (Detail), Ceramic, 2010

The work of Spanish artist Rafa Pérez parallels Sam Bakewell›s treatment of the material. Pérez bases his artistic practice on the unpredictable deformations experienced during the firing process as an active participant in the formation of the final form (Image 5.).

Although the deformations we see in Pérez's works are unpredictable, they result from the deliberate preference of the artist, who knows the technology of the material, for elements that may be considered mistakes for some. Pérez's forms are produced by adjusting the clay mixtures and kiln regime by the deformation. Pérez continually tests the materials until he is satisfied, determining the best combination. He thus creates a partially controlled randomness. In the text of his exhibition at Lucy Lacoste Gallery in the US in 2019, Pérez explains his relationship with the deformation of firing in the kiln in the following words: "I'm trying to establish a balanced relationship with the fire. What I mean is that the fire should work on its own, like me, but in the end, we should be a team (https://www.lacostekeane.com, 2023)." These words summarize Pérez's understanding of art.

Image 5.
Rafa Pérez, Untitled, Ceramic, 2011

On the other hand, Rafa Pérez explains the method he uses in the production process, which produces random results, as follows:

> "As always, my work is about surprising myself and the viewer. I use white porcelain fired at high temperatures and black (low-grade) clay, which react differently to the same forces during the firing process. The black clay expands and explodes, creating an unnatural volcanic landscape. What comes out of the fire is not just luck or a happy accident. Because I direct it. I create the cuts and layers on the clay and they interact in the kiln. From the beginning there is an order demanded by the material. It is an order that obeys the rules of nature and the rules of man. Therefore, the element of surprise is always present. What happens in the kiln is unpredictable (https://www.lacostekeane.com, 2023)."

As Pérez emphasizes, the ceramic material is full of surprises from the very beginning of the production process to the last moment when the lid of the kiln is opened. Artists who have mastered the language and technology of the material can combat the problems that may arise during the production process. Some artists, on the other hand, consider ceramic defects as aesthetic elements instead of struggling with them. Pérez is one of the artists who adopt this view.

Collaboration of Ceramic Material with the Artist: Perceptual Uncertainty

As the Prussian writer Carl von Clausewitz said, "Although our mind always craves for clarity and certainty, our nature often finds uncertainty fascinating (Clausewitz, 2007, p. 27)." The underlying reality of this idea is that the sense of curiosity caused by uncertainty and the multiple options that arise from the dilemma are attractive to humans. While the versatility of ceramic material creates a wide range of uses for artists, its imitation skills and decor methods that enable meaningful relationships between form and surface turn ceramics into one of the ideal materials for creating uncertainty based on perception. However, elements such as movement and perspective, which are indispensable elements of art, also enable the creation of perceptual uncertainty.

Artifacts that do not have a fixed form and whose final form can be altered through movement harbor ambiguities. Dutch artist Cecil Kemperink's works usually begin with a single ceramic ring. The artist connects the first ring to the new rings he shapes and continues this process until a large ceramic chain emerges. The artist interprets ceramic, which is known as a static material, as kinetic through the free movement of the interconnected rings, and at

the same time creates interesting sounds specific to ceramics. Interacting directly with the artifacts, the artist designed "Big Rhythm" in such a way that even the most basic involuntary function of the body, such as the simple act of breathing, responds with movement (Image 6.) (Jones, 2022).

Image 6.
Cecil Kemperink, Big Rhythm, Ceramic, 2013

This movement in Kemperink's work changes the form and acoustic sounds, transforming the work into a multidimensional form. Movement is an important part of the expressive power of the work and shows how vital the rings that make up the form are and how each movement affects each ring. The ceramic material, on the other hand, makes the form very tactile and makes it perceived as vulnerable, as if it will break at any moment.

It would be wrong to generalize that the existence of the concept of kinetics in art depends on the movement of an object. The existence of kinetics is also accepted in objects that appear to be moving to the viewer, even if they are fixed and stationary. British artist Robert Dawson's porcelain work titled Spin creates a very misleading visual by presenting this effect to the viewer. (Image 7).

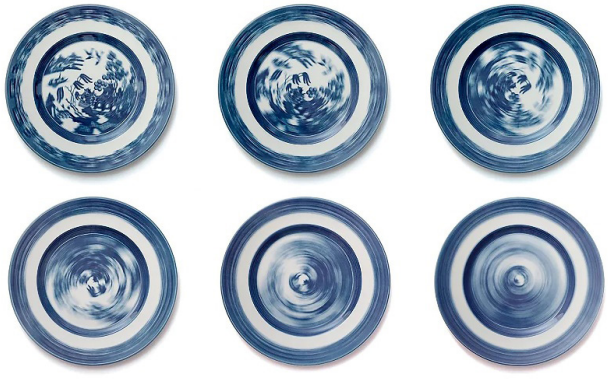

Image 7.
Robert Dawson, Spin, Porcelain, 2010

In his work Spin, consisting of six porcelain plates, Dawson transferred the willow motif, a pattern frequently used on blue and white plates, to the plates after blurring and visually distorting it in the computer environment as if it were under the effect of rotation. The fact that the stationary plates appear as if they are rotating causes the impact of speed and movement to gradually blur the motifs on the plates and finally turn them into entirely undefined and indistinct motifs. Thus, although the plates are stationary, the motion effect created by the blurred motifs causes the motifs on the form surface to become increasingly meaningless and perceptual uncertainty in the form.

On the other hand, the lack of information in the objects or the state of being "blurred", which can be defined as implicit information that prevents perception, also creates uncertainty. Such blurred images manipulate the viewer's sense of sight with a blurred image. The brain, which is exposed to this effect, struggles with uncertainty and tries to define the image with some assumptions based on past experiences. As the blur in the image decreases, the visual information becomes more apparent, the uncertainty gradually decreases, and the perception is finalized.

Image 8.
Robert Dawson, Willow Pattern with Uncertainty, Porcelain, 2003

In "Willow Pattern with Uncertainty" in Image 8, Robert Dawson creates uncertainty by partially blurring the traditional blue willow motif on the plate, deliberately sabotaging the viewer's ability to see. Dawson has uniquely dragged the originally functional plates toward an increasingly bizarre form.

On the other hand, the extraordinary imitation ability of ceramics, its ability to emulate a wide variety of materials and objects, has led to the idea of reproducing objects with ceramics, enabling its use as a means of expression in contemporary art ceramics. The works of the Italian artists Bertozzi & Casoni, who are among the essential representatives of contemporary art ceramics, consisting of objects produced with a surprising realism with ceramic materials and techniques, cause astonishment for the viewers in the context of the relationship between the objects represented and the material (Image 9.). The viewer who sees Bertozzi&-Casoni's ceramics must cope with a sense of uncertainty while searching for an answer to the question, "Is this real?". The sense of uncertainty caused by the ability to imitate the ceramic material is the result of the limited data provided by visual perception. The uncertainty in question ends with the perception of the ceramic object, which is extraordinarily like the original, with the tactile sense. As soon as the viewer touches these objects with his/her hand, they will perceive the unique properties of the ceramic material, and the uncertainty will disappear. In short, the Trompe l'oeil technique, defined as visual illusion, creates a sense of uncertainty by making it difficult for the viewer to distinguish between reality and illusion.

Image 9.
Bertozzi & Casoni, Uova, 2005

On the other hand, the American artist Paul Mathieu, an essential representative of the trompe l'oeil technique, combines original porcelain plates with drawn images to create an image he calls "continuous emptiness". The void and mass are camouflaged with three-dimensional images drawn on two-dimensional surfaces or painted two-dimensional images. The problems of representing realistic two- and three-dimensional drawings on flat and curved surfaces have always been a concern for trompe l'oeil artists. Mathieu uses plates as supports, while mugs and teapots are used to express the three-dimensional form. Thus, form and volume are shown as a whole in ceramics. The unity is created by the decor elements applied in succession on each layer, evoking a collage (Images 10 and 11).

According to Aygün Dinçer Kırca; Mathieu "handled the teapot like a drawing and at the same time used it as a canvas for images, figures and other elements. Mathieu used layered bowls falling on top of each other and painted the full image under each work. Since the bowls are on top of each other, the painting has become more sculptural and three-dimensional (Kırca, 2016, pp. 67-76)."

Image 10.
Paul Mathieu, The Will to Forget, Porcelain, 1992

Image 11.
Paul Mathieu, The Fold on Difference, Porcelain, 1989

The perceptual uncertainty applied by Paul Mathieu by camouflaging the forms emerges in İsmet Yüksel and Yasuo Hayashi's works with unrealistic perspectives and space creations applied to the surface of the form. Russian writer Pavel Florenski emphasizes that perspective is used as an illusion in art (Florenski, 2021). Many artists representing modern art have tried to abstract the represented world by deliberately distorting the perception of space and spatial relationships created by perspective. From this point of view, perspective has been both a technique that provides direct transmission and a language that indirectly creates uncertainty for artists who know its rules well.

Turkish artist İsmet Yüksel has used his connections with technology and science to create a new and powerful language of artistic expression. The relationships of geometric shapes and the virtual perspectives created by these shapes in Yüksel's ceramic works are his most preferred form of expression. The surfaces of his forms are meticulously constructed with repetitions of geometric shapes. Yüksel's ceramic works should be viewed from a distance and watched for a long time in order to grasp the details. The viewer can perceive three-dimensional illusions in an impressive way when he/she can catch the right angle while wandering among the misleading and ambiguous spaces created by Yüksel on the surface of his ceramic forms. At first glance, he will perceive a form that does not actually exist with the illusion of three-dimensional appearance, and by looking at the work again and again, he will perceive that everything is a game by analysing the three-dimensional forms that do not actually exist (Aşan Yüksel, 2019). This confusion and contradictory perspective games created by Yüksel emphasise perceptual uncertainty (Image 12).

Yasuo Hayashi's works also create perceptual uncertainty by manipulating the viewer's visual perception with abstract geometric forms. His work "No Sound C" (Image 13.), at first glance, appears to be a cube that creates the perception that there are many empty spaces or walls positioned at different angles. Hayashi has created perceptual uncertainty by deliberately distorting the perception of the form he has created through the decor he has applied to the form and created with a perspective that is too distorted to exist in reality. The grey tonal values he prefers in the decor create light-shadow areas and strengthen the sense of space and front-back relationship on the form. The imbalance in the form-decor relationship, which he defines as a search for

the fourth dimension, emphasizes the transition from the rational world to the irrational world while at the same time referring to the sentence "Art is born only in the irrational world" written in his sketchbook.

Image 12.
İsmet Yüksel, Irregular Steps (and Details), Stoneware, 2015

Image 13.
Yasuo Hayashi, No Sound C, Ceramic, 1992

The fact that colors and tonal values on the form create effects on people's perception process allows these two elements to be preferred by artists as a means of expression. The form of the artwork or the qualities of a particular form can be manipulated by using color and tone value, and the perceptions of the viewers can be changed by this method. With this effect, it is possible to create perceptual uncertainty in the work. Yasuo Hayashi has done precisely this. Although the works in Image 14 and Image 15 are perceived as rectangular prisms in terms of their forms, the color and tone values in their decors are perceived differently. At this point, although the horizontal grey stripes on Focus create a flat surface effect, the white edge lines of the form emphasize the mass effect, leaving the viewer in a dilemma. This contradiction arises as a result of perceptual uncertainty.

Image 14.
Yasuo Hayashi, Focus, Stoneware, 1988

Image 15.
Yasuo Hayashi, Oblique Square Pillar, Ceramic, 1982

Results

The concept of uncertainty is one of the basic concepts that humans have to overcome to make the world meaningful. Humans have tried to make nature understandable by struggling with the uncertainties of nature since the prehistoric period. In this phase, which can be considered as the beginning of science and technological development, human beings have fed on the sense of curiosity aroused by uncertainty. From this point of view, uncertainty, which comes to mind in a negative sense at first thought, has shown that it also has a positive function as a source of creativity and discovery for human beings. In this respect, it has also enabled artists to develop different forms of creative expression.

The fact that ceramics is full of surprises from the very beginning of the shaping stage to the last moment when the oven door is opened after firing shows how 'uncertain' the material is. The fact that there are certain limitations that artists working with ceramic materials have to face and that the material itself is full of uncertainties has turned into a form of expression for some artists. By analyzing the works of these artists, it has been determined that ceramics are highly suitable for the production of random and experimental works for artists who know the technology of ceramics.

The surface-form relationship is another issue that creates perceptual uncertainty in ceramic art. Perceptual uncertainty can also be made through decor methods applied to the surface of the forms. Each of the artists who adopted this method created uncertainty in their works with different expression styles, such as camouflage, blur, and perspective. It has been observed that the surface decors of these works make it difficult to read the form. The perceptual uncertainty created by the surface-form relationship offers the viewer a complex aesthetic experience while at the same time directing the viewer to wander around the work. The high plastic ability of ceramics and the fact that it is also a good imitation material have enabled contemporary artists to produce hyperrealistic forms. The dilemma that imitative works create in the viewer is another type of perceptual uncertainty.

Movement is another crucial factor that creates perceptual uncertainty in ceramic art. Although ceramic artifacts are generally considered to be static, some artists have produced forms with units to capture movement. Some other artists have created the impression that the forms are in motion by showing the familiar patterns they apply on the form as if they are under the effect of movement and rotation. It has been determined that the blur created by the moving pattern affects the perceptual experience of the viewer, making it difficult to read the object and thus creating perceptual uncertainty.

In conclusion, it can be stated that the concept of uncertainty is an essential concept in ceramic art that provides freedom of expression for artists and enriches the viewer experience by increasing the interaction of viewers with artworks. One of the main messages of this study is that uncertainty is not only a problem to be overcome but also an important resource that can be used for the creative power needed to create new opportunities and discoveries. Today's rapid technological developments bring to the forefront art practices in which creative coding and artificial intelligence play a leading role as alternative production methods in art. With the introduction of the computer-aided creation process, it is thought that the subject of uncertainty can be handled as a form of technological expression and may provide new possibilities for the future.

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Image 4.

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Image 5.

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Image 13.

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Image 14.

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Yapılandırılmış Özet

Bu çalışma, seramik sanatında belirsizlik kavramını ele almaktadır. Belirsizlik, sahip olunan bilginin yetersizliği veya mevcut bilgilerin çelişkili olması durumunda ortaya çıkan bir durum olarak tanımlanır ve sanatta da önemli bir rol oynar. Sanatçının yaratıcılığını tetikleyen ve izleyicinin algısını şekillendiren belirsizlik, insan psikolojisinde genellikle olumsuz duygularla ilişkilendirilir. İnsan beyni, çelişki, kararsızlık ve muğlaklık gibi durumları belirsizlik olarak algılasa da aynı zamanda tarih boyunca insanın merak duygusunu tetikleyerek keşif ve icatlara yol açmıştır. Ateşin icadından kıtaların keşfine, uzayın bilinmeyen yönlerinin araştırılmasından, kuantum fiziğinin gelişimine kadar pek çok bilimsel kırılma anında belirsizliğin rolü büyüktür.

Bu çalışmanın amacı, algısal belirsizlik durumunun sonucunda zihinde oluşan çelişkili psikolojik durumun sanatta nasıl yer edindiği, seramik malzeme ile nasıl değerlendirilebileceğinin araştırılması ve ortaya koyulmasıdır. Bu amaç doğrultusunda, seramik sanatında belirsizlik kavramının hem sanatçıların yaratım sürecinde hem de izleyicinin algısında oynadığı çok boyutlu rolü detaylıca incelenmiştir. Belirsizlik, sanatçının yaratıcılığını harekete geçiren bir unsur olmasının yanı sıra izleyici için de eserin anlamını, ifadesini ve estetik deneyimini zenginleştiren bir faktördür. Bu bağlamda, seramik sanatındaki belirsizlik unsurlarının işleyiş biçimleri ve bu unsurların sanatsal pratiğe katkıları ortaya konmaya çalışılmıştır. Sanatçılar, rastlantısal veya bilinçli olarak uyguladıkları belirsizlik öğeleriyle, seramik eserlerde izleyicinin farklı anlamlandırmalar yapabileceği bir dil yaratmayı amaçlarlar. Dolayısıyla, seramik sanatında belirsizlik, üretim sürecindeki yaratıcılığı teşvik eden bir güç olarak incelenmiş ve aynı zamanda algılama sürecinde izleyiciye sunduğu anlam çeşitliliği açısından değerlendirilmiştir. Diğer yandan algısal belirsizlik durumunu ortaya çıkaran geometri ve psikoloji alanlarının sanat ile kurduğu bağ sorgulanarak, sanat-bilim ilişkisi bağlamında yeni bakış açıları yaratılmaya çalışılarak literatüre katkı sağlanması amaçlamıştır.

Çalışmada nitel araştırma yöntemleri kullanılmıştır. Seramik sanatında belirsizlik kavramını anlamaya yönelik olarak sanat, bilim ve felsefe literatürü kapsamlı şekilde taranmış; tarihsel, teorik ve sanatsal bağlamlarda veriler toplanmıştır. Bu veriler ışığında çağdaş seramik sanatçılarının eserlerinden örnekler incelenmiş ve analiz edilmiştir. Rafa Pérez, Sam Bakewell, Cecil Kemperink, Robert Dawson, Paul Mathieu, İsmet Yüksel ve Yasuo Hayashi gibi sanatçıların seramik çalışmalarında belirsizlik olgusunun hangi sanatsal yöntemlerle ele alındığı, bu yöntemin izleyici algısı üzerindeki etkileriyle birlikte detaylandırılmıştır. Bu sanatçılar, üretim sürecinde ya da izleyici deneyiminde belirsizliği bilinçli bir şekilde eserlerine yansıtarak sanatta belirsizliğin estetik değerini öne çıkarmışlardır.

Belirsizlik kavramı, sanatçılar tarafından çeşitli şekillerde ele alınmıştır. Özellikle 20. yüzyıldan itibaren soyut dışavurumculuk, kavramsal sanat ve performans sanatında belirsizlik önemli bir tema haline gelmiştir. Sanatçılar, eserlerinde belirsizliği kullanarak geleneksel sanat anlayışlarını sorgulamış ve yenilikçi yaklaşımlar geliştirmişlerdir. Sanatta belirsizlik durumu hem sanatçının yaratım sürecinde hem de izleyicinin eseri algılamasında önemli bir yer tutar. Sanatçılar, belirsizliği yaratıcı süreçlerinde bir araç olarak kullanarak, izleyicinin eseri algılama biçimini etkilerler. Bunula birlikte üretim sürecindeki rastlantısallık da belirsizlik yaratarak sanatçılar için bir ifade biçimine dönüşmektedir. Bu bağlamda, seramik sanatında belirsizlik kavramı, "rastlantısal belirsizlik" ve "algısal belirsizlik" olarak iki farklı açıdan incelenmiştir. Rastlantısal belirsizlik, sanatçının kontrolünün dışında gelişen olaylar sonucu ortaya çıkmaktadır. Seramik malzemenin şekillendirilmesi, kurutulması ve pişirilmesi aşamalarında çeşitli fiziksel reaksiyonların etkisiyle beklenmedik sonuçlar meydana gelebilir. Bu süreçte, malzemenin kendiliğinden gelişen değişimleri ve fırında gerçekleşen deformasyonlar, sanatçının öngöremediği ancak eserinde kullanmayı tercih ettiği bir ifade biçimine dönüşebilir. Rafa Pérez, seramik pişirme sürecinde oluşan deformasyonları ve beklenmedik biçimsel değişimleri bir anlatı aracı olarak kullanırken, Sam Bakewell ise seramik yüzeyinde oluşan çatlaklar ve kırılmalar gibi birçok unsuru sanatının bir parçası haline getirmiştir. Malzemenin dilinde var olan bu tür belirsizlikler, sanatçının yaratıcı süreçlerinde yenilikçi ifade biçimleri geliştirmesine olanak tanımaktadır. Bu yönüyle rastlantısal belirsizlik indeterminizm felsefesi ile ilişkilendirilmiş ve rastlantının sanattaki yeri üzerine düşüncelerle desteklenmiştir.

Algısal belirsizlik ise izleyicinin eseri algılarken deneyimlediği, görsel veya dokunsal çelişkiler sonucu oluşan belirsizlik durumlarını kapsamaktadır. Sanatçılar, seramik formların yüzeyinde oluşturdukları desen, renk ve perspektif oyunları ile izleyicinin algısını manipüle ederler. Algısal belirsizlik, nesnenin formunun doğru şekilde algılanmasına engel olan bulanıklık, kamuflaj veya hareket gibi unsurları da içerebilir. Bu unsurlar izleyicinin esere olan ilgisini artırırken farklı şekilde yorumlamasını da sağlamaktadır. Örneğin, Robert Dawson, "Spin" adlı eserinde sabit duran seramik tabakların üzerindeki desenleri dönüyor izlenimi verecek şekilde düzenleyerek izleyiciye hareket yanılsaması sunar. Bunun yanı sıra, İsmet Yüksel'in eserlerinde de geometrik desenler ve üç boyutlu yanılsamalarla izleyicinin göz algısında yanıltıcı bir etki yaratılır. Algısal belirsizlik, izleyicinin zihinsel çelişkiler yaşamasına neden olarak eserin çok katmanlı yorumlanmasına zemin hazırlar ve sanatı izleyici için daha etkileşimli bir deneyime dönüştürür.

Sonuç olarak, belirsizlik, seramik sanatının dinamik ve gelişime açık yapısını besleyerek hem sanatçılar hem de izleyiciler için yaratıcı süreçleri zenginleştiren bir araç olarak işlev görmektedir. Bu çalışmada ele alınan örnekler, belirsizlik kavramının seramik sanatında hem sanatsal yaratıcılığı hem de izleyici deneyimini nasıl etkilediğini göstermektedir. Belirsizlik, sanatı sabit bir biçim veya anlamdan çıkararak, her izleyici için farklı deneyim ve yorumlara açık hale getirir. Bu bağlamda, seramik sanatında belirsizliğin sanatsal ifadeye katkı sağlayan bir estetik değer taşıdığı ve yaratıcılığı besleyen bir unsur olduğu sonucuna varılmıştır.