

EXPERIMENTAL PHOTOGRAPHY AND INVASION

MEHMET ULUÇ CEYLANI*, UĞUR GÜNAY YAVUZ**

ÖZ

Sürecin her döneminde var olan sanat, modern ve geleneksel sanat pratiğinden uzak farklı malzeme, teknik, kavram ve temalar gibi farklı içeriklere sahiptir. Deneysel çalışmalar bu içerikleri etkileyen ana faktörlerdir. Deneysel çalışmalar, her ne kadar bilimsel içerikler ile anılsa da bilimden ayrı olarak sanatın her alanında kendini göstermektedir. Fotoğraf da içinde bulunduğu şartlar altında deneysel olanaklara mümkün olan en üst seviyede adaptasyon sağlamıştır. Sınırsız olanaklarından dolayı deneysel fotoğrafı herhangi bir şekilde sınırlandırmak pek mümkün değildir. Günümüze kadar olan süreç içerisinde gelişen farklı tekniklerle anlamlandırmak daha doğru olacaktır. Bu tekniklerden biri olarak literatüre eklenen ve kısaca “bir şeyin içerisine dahil olmak ve o şeyin özelliklerini değiştirmek-bozmak” olarak tanımlanan “İnvazyon” tekniği bu çalışmanın konusunu oluşturmaktadır. Bu teknik, sanatın birçok alanında olduğu gibi fotoğrafın da deneysel çalışmalarında ön plana çıkmaktadır. Fotoğrafın yüzey üzerine kayıt edilişi esnasında invazif olarak müdahalelerin nasıl bir görsel dil oluşturduğunun ortaya konması amaçlanmaktadır. Bu çalışma ile fotoğrafik invazyon alanındaki literatür eksikliğinin giderilmesi hedeflenmektedir. Araştırma ile nitel araştırma yöntemi kullanılmış, alan yazın taraması ile elde edilen verilere ek olarak kimyasal, sayısal ve biyolojik olarak invazif çalışmalar betimsel analiz yöntemi ile yorumlanmıştır. Tüm bu veriler doğrultusunda, sanat alanına dahil olan invazyon tekniğinin fotoğraf için de yeni bir literatür, görsel ifade tekniği olarak deneysel fotoğrafın bünyesinde yer alabileceği sonucuna ulaşılmıştır.

Anahtar Kelimeler: İnvazyon, İnvazyon Sanatı, Fotoğraf, Deneysel Fotoğraf, Fotoğrafik İnvazyon.

* Öğretim Görevlisi, Akdeniz Üniversitesi, Güzel Sanatlar Fakültesi, Fotoğraf, uluceylani@gmail.com, <https://orcid.org/0000-0003-1379-3452>

** Doçent, Akdeniz Üniversitesi, Güzel Sanatlar Fakültesi, Fotoğraf, ugurgunay@gmail.com, <https://orcid.org/0000-0002-3111-8277>

*** Araştırmacılardan birinci yazar %60, ikinci yazar ise %40 oranında çalışmaya katkıda bulunmuşlardır. Çalışmada herhangi bir destek ve teşekkür beyanı veya çatışma beyanı yoktur.

EXPERIMENTAL PHOTOGRAPHY AND INVASION

MEHMET ULUÇ CEYLANI*, UĞUR GÜNAY YAVUZ**

ABSTRACT

Art that exists in every period of the process has different contents such as materials, techniques, concepts, themes that are far from modern and traditional art practice. Experimental works are the main factors affecting these contents. Although experimental works are mentioned with scientific content, they demonstrate themselves in every field of art, separate from science. Photography also adapted to the experimental possibilities at the highest level possible under the conditions. It is hardly possible to limit experimental photography due to its limitless possibilities. The "Invasion" technique, which is added to the literature as one of these techniques and is briefly defined as "being included in something and changing or spoiling the properties of that thing", is the subject of this study. This technique comes to the fore in experimental works of photography, as in many other fields of art. It is aimed to reveal how invasive interventions create a visual language during the recording of the photograph on the surface. With this study, it is aimed to eliminate the lack of literature in the field of photographic invasion. Qualitative research method was used in the research, in addition to the data obtained from the literature review, chemical, numerical and biologically invasive studies were interpreted with the descriptive analysis method. In line with all these data, it has been concluded that the invasion technique, which is included in the field of art, can also be included in the experimental photography as a new literature, visual expression technique for photography.

Keywords: Invasion, Invasion Art, Photography, Experimental Photography, Photographic Invasion.

* Lecturer, Akdeniz University, Fine Arts Faculty, Photography, uluceylani@gmail.com, <https://orcid.org/0000-0003-1379-3452>

** Associate Professor, Akdeniz University, Fine Arts Faculty, Photography, ugurunay@gmail.com, <https://orcid.org/0000-0002-3111-8277>

1. INTRODUCTION

The invention of photography, which was announced to humanity at the French Academy of Sciences on August 19th, 1839, was achieved as a result of the studies and trials of many people in order to ensure it has the ability to reflect, fix and reprint the image on the surface, which took many years. Science and art have always been mutually interacting and contributing to each other, and Einstein's "Dostoyevsky gave me more than Gauss," words (Cited by Yaykın, 2010, p. 86) express this relationship effectively. Born from science and nourished by art, photography revealed the invisible. It enabled the recording and documentation of a wide variety of natural phenomena, from X-ray photographs to the distant faint light of the universe, for later analysis. On the other hand, it aestheticized the same technology and blended the image with art.

The industrial revolution is known as a period when technology, experimental studies and development peaked. The emergence of photography coincided with the heart of this period. This timing, along with technological developments, has led to the continuous change and development of the production of the image. Photography, which progresses from the chemistry of the dark room to the design process of the camera obscura and then to the algorithms of computer programs, presented pioneer and experimental expression styles to the world of art thanks to the unexpected or accidental results achieved as a result of scientific and artistic studies, both technological and conceptual, as well as occasional experimental studies. Photography itself, together with its structure suitable for experimental technical possibilities, reflects the egos of photographers, their free thought structures, attitudes, unlimited creation processes, etc. the very diverse forms of representation revealed as a result of almost unlimited resources.

One of these forms of representation and at the same time the subject of this study is the "Invasion" technique. Invasion, which has gradually started to take place in every field of art, is briefly defined as "changing or spoiling the properties of something". Based on this definition, in the study, in which qualitative research method was used, invasive studies selected from the samples determined in addition to the data obtained through the literature review were interpreted with the descriptive analysis method. With this study, it is aimed to reveal the applicability of the invasion technique to photography and to reveal the visual language and expression created by this invasive application. In the research, the works of various artists produced chemically, digitally and biologically, and the invasive structures observed in these works were taken as samples.

Experimental photography works presented together with all these developments formed the exact equivalent of the artist's freedom. Photography, which went beyond just a documenting tool or capturing the moment function in the process, personalized art and as a visual art style,

added the photographer's touches both during and after the shooting, enabling transfer of art to another dimension.

2. EXPERIMENTAL PHOTOGRAPH

Photography was invented as a result of different disciplines revealing various information-data in different periods and then experiencing all these information-data. In other words, some experimental studies were required to reach these results.

Experiment is defined as presenting a scientific fact (TDK). Another definition is the replacement of formations with existing conditions (Roubier, 1958, p. 251). Experiments and their absolute results are the most important findings for the development of humanity.

All constructions made based on/with experimentation are labelled "experimental". Experimental studies are a valid method for all branches of art as well as science. Subsequently, in current understanding of art, it can be described as changing, reproducing or creating a new idea, expression, thought, criticism, which was not applied, untested, and unspecified before, by blending it with different methods or concepts. It is an artistic expression style in the context of the artists' freedom of expressing themselves, of artistic expression.

One of the numerous experiments was resulted in recording of the image on the surface, which opened new and unlimited horizons for art and was described as a revolution in terms of science. This action, called photography, guided a radical change in the field of culture and art, as well as science, reality, and documentary approach, and continued on its way with solid foundations.

Photography requires different forms of expression beyond both the daily life and the appearance of the natural. At the time of its invention, experimental photography was perceived as a tool of scientific expression based only on optical and chemical rules. Experimental photography that started with the aim of researching beyond what has been achieved or different results emerges as experiments that can be achieved with different developments and results. In the subsequent process, it entered into a rapid development as an innovative language and creative art discovery. At this point, one of the first names that come to mind regarding experimental photography in Türkiye, Ahmet Öner Gezgin, who is an academic as well as an artist, defined experimental photography as "In short, I can say that it is nothing but an 'explosion' of subjectivity and individuality, which includes all kinds of innovations and experiments in the field of photography." (Gezgin, 1997, p. 4).

Photography, which emerged in the period known as the industrial revolution between the 18th and 19th centuries, benefited from all kinds of data and resources of this revolution in the most efficient way possible. The beginning of the period when photography developed experimentally is also dated to this period. The approach known today as the photogram

technique, was used in 1834 by William Henry Fox Talbot who used to trace botanical specimens precisely. Talbot placed a pressed leaf or plant on a sensitized piece of paper, covered it with a glass sheet, and placed it in the sun. The paper darkened wherever the light impinged, but the areas where the plant blocked the light remained white. Talbot labelled this experimental work, that is, his new discovery, “photogenic drawing art”. His procedure and works took place in the literature as the first example of experimental photography (Daniel, 2004). And after this date, studies, applications based on studies, experiments and searches of photographers on achieving clearer images, shorter exposure times or different aesthetic concerns continue to this day.

It is accepted that experimental photography pushes the limits of photography with an approach beyond an understanding that is a reflection of the classical photographic attitude. Ahmet Öner Gezgin argues that due to this structure, it is always one step ahead of the documentary photography and that it is a pioneer in the expression and development of photography (Gezgin, 1997, p. 4). Thus, the meaning of the term “avant-garde”, which is generally used for all art with experimental studies, is “Pioneer” (Kornrumpf, 2008).

Gezgin mentions that documentary photography aims at the realization of interdisciplinary communication that pushes the boundaries of photography and artistic language based on thought, which finds the “superficial visuality” or “denotational” photographic indicators insufficient in its approach to art and that there is a continuous relationship between theory and practice (www.ahmetonergezgin.com.tr).

3. INVASION

It is a word derived from the Latin “invasió” meaning “attack-seize” which was adopted in French and English as “invasion” (micmap.org). Its predominant use in English means that an army, a plant, an unpleasant thing or an agent occupies and affects a place. It also corresponds to occupation as a noun (Cambridge Dictionary). It is also adopted in Turkish as invazyon. In the process until now, it has been used in the literature as a medical term, “the spread of the agent to tissues and formations” (Sağlık Sözlüğü). Invasion as quoted by Aslıhan Atabek on a similar subject: “As a medical term, invasion means an intervention that disrupts body integrity. Accordingly, all surgical operations are seen as invasive procedures. Unlike surgery or operation, invasion is an intervention that disrupts the integrity of the body” (Atabek, 2016, p. 75). In short, it could be defined as being involved in something and changing or spoiling the properties of that thing. The entity or concept that performs the action to change-disrupt is described as “invasive”.

Invasion, which is used in many areas today, also started to show itself in artistic expression forms. In addition to its direct meaning of occupation, it manifests itself in almost every field of art in order to create visuals and to reveal new forms of expression and representation by changing-distorting the way of expression conceptually or technically, (Lunday, 2015). In a

sense, invasion expressed for art can be perceived as an aggressive aesthetic expression of change or degradation. As Merve Yıldırım also states in her works, invasion used in the field of arts can be described as:

Compositions that can be integrated with many random and new meanings created by the image of any animate or inanimate object or a work of art or the image of an artwork achieved by interventional and invasive, conscious deformation of its structure and form (Yıldırım, 2020, p. 190).

Today, it is included in representation in many fields, from music to painting, from photography to sculpture, both technically and in terms of content. It is possible to give the example of French Street artist Invader¹ who usually works in masks and mostly undercover at night. The artist models his work on the rough pixelation of 8-bit video games of the 1970s-1980s. Based on his work, he describes himself as a “public domain hacker who spreads the mosaic virus” (www.harbourcity.com). With the 8-bit pixelized images he placed in Harbor City, the most important shopping center of Hong Kong, he infiltrates the dazzling visuals of the city and exhibits an expansionist order (Image 1).



Image1. Invader, Harbour City-Hong Kong, 2018.

Source: <https://www.harbourcity.com.hk/en/article/welcome-the-art-invasion/> Date of access : 24.01.2021

Although the meaning of the word invasion is perceived as a kind of vandalism or anti-social structure with its invasive feature, it actually focuses on the aesthetics of the act of disrupting artistically. It is possible to see examples of its effective use in today's art in festivals such as Invasion Street Art Festival -Arte Urbano- organized in Spain together with the works of

¹ Invader: It is the pseudonym of the artist, which is synonymous with “invasive” in English, and defined as “entity or concept that performs the action to change or disrupt”, which we define as invazif “invasive” in Turkish.

Cordier and Strindberg when the past is examined. Similarly, this situation, which is encountered in every field of art, is also valid for photography.

4. PHOTOGRAPHIC INVASION

One way of photographic invasion demonstrates itself in the form of visual elements added to a photograph taken by the artists themselves or someone else. At this point, photography becomes a new design element, and Aslihan Atabek comments that it is possible to see this new work as “re-ensouling and editing soulless or meaningless photographs” (Atabek, 2016, p.76). And it is possible to give an example of this approach to the works of many other photographers, such as Lucas Levitan. The most common type of work done in this way is by adding vector (illustration) content to photos that are bitmap-based visuals with pixels.

Based on the fact that basically everything starts with light for photography, studies and other experimental applications were carried out on the surface and layers. Considering the period when photography was invented, they are the images created as a result of experimental studies with various surfaces such as zinc plate, paper, gelatin layers and glass, and chemical layers that allow them to be recorded on. In other words, photography has shown different developments as a result of the changes in its surface, benefiting from artistic and scientific developments. Photography's ability to adapt to all kinds of changes, differentiations and developments in a short time is an indication that it will gain a forward momentum in terms of development/change for the future. With the advanced technology, sensors gave direction to photographic studies as new surfaces accompanied by new layers in pixels. Today, the control method of unlimited light has started to show itself in many different areas. Another example of these different approaches is the biological-based “bacteriograph” method of creating images with live bacteria. New forms of expression or representation, which are applied to the surface and its layers, created by influencing the photographic structure, in a way by capturing/changing that layered structure, are considered to be photographic invasion.

4.1. Chemical Photographic Invasion

In the period during the emergence of photography and subsequently, numerous experiments were carried out on the chemical layers on the surface reacts to light and their changes. August Strindberg can be presented as the pioneer of these experimental studies that are still continuing in our time. The most striking of his works are the images he called “celestograph” he made in 1894 (Image 2). These images were created without a lens and any camera. The sensitized layers formed on the plates were obtained by directly exposing them to the light of the stars in the night sky. In this process, moisture and various particles in the air penetrated the layers on the surface, that is, they affected the image that would appear invasively as chemical defects. The image created by this chemical invasion is considered as a direct

impression of the universe through light, which is integrated with Strindberg's religious and mystical belief (Granath, 2005).

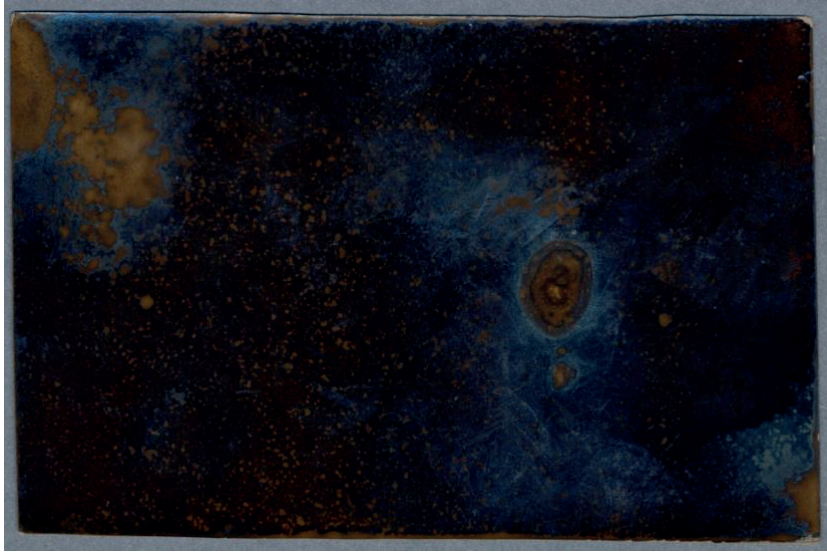


Image 2: August Strindberg, Celestographs, 1894.

Source: <https://davidcompany.com/art-science-and-speculation-august-strindbergs-photographics/> Date of access: 25.01.2021

Later, this method was developed by Pierre Cordier in 1956 and was called the “chemigrams” method. Chemigrams was created with the words “chemistry-grammar” and it means writing with chemistry (Böcekler, 2020, p. 579). It is a photography method without camera, which is the visual result of chemical reactions on the photographic emulsion, that is which is based on light, photographic chemistry and the surface (Higgins, 2005, p. 8). Cordier states that his chemigram “combines the physics of the painting (varnish, oil, wax) and the chemistry of the photograph (photosensitive emulsion, developer, and stabilizer) under full light, without the use of a camera or magnifier” (Cordier, 2007). Essentially, the process includes images created by the invasion of different factors such as wax, varnish or oil on/into the chemical sensitizer on the surface without using a camera, as in the case of Strindberg. As a result, these are visual representation methods that are formed as a result of the deterioration by external factors of the structure of the chemicals forming the image (Image 3).

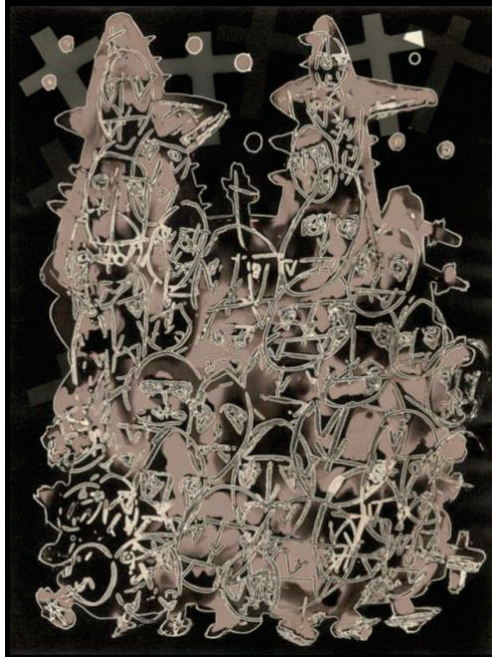


Image 3: Cordier, La Revolution Hongroise, 1956.

Source: <http://www.pierre-recordier.com/20.html> Date of access: 26.01.2021

Invasion, which ensured recording on the surface in the analog-chemical period that is accepted as the beginning of photography, offers new experimental approaches to today's art of photography changing in parallel with technology.

4.2. Digital Photographic Invasion

In the twentieth century, photography changed its chemical and analog-based structure consisting of light-sensitive materials such as amorphous selenium, zinc oxide and silver halides in the Twentieth century and evolved into digital-based pixels consisting of "1"s and "0"s. Similarly, it was transferred from atom-based structures such as paper, metal sheet, gelatin, which are recorded as surfaces, to data-based sensors and similar media via digital pixels. The definition of photography and the "recording of the image (light) on the surface", on which it is based, has not changed since the first day it was invented and cannot be changed. Essentially, every development that changes and is described as a revolution takes place on the surface and media where the photograph is recorded.

Experimental invasive methods applied in the chemical and analog period of photography were created from images represented by impressing the chemical structure applied on the surface with different chemical structures. In the images represented digitally, data and pixels were carried out in the same way with invasive methods. Thus, invasion created new photographic representations by affecting each pixel and causing differentiation on the visual whole. Consequently, while experimental invasion was not changed in theory, its technique was changed in practice.

Glitch Art can be presented as the basis of these experimental works created with pixels. Glitch Art, which is described as the art of glitches, can be expressed with various methods such as datamoshing, databending, and circuitbending as new media forms in the process (Menkman, 2011). It is created through similar methods called pixel sorting, pixel drifter and pixel bending. It is the process of invasively spreading of images into databases, changing the data (pixels) of a file² in a certain format using software³ designed to edit files of different formats,. Dmitry Krotevich's PixelDrifter (PxD) can be presented as the pioneer of software developed based on the logic of Glitch Art, which tries to explain to the audience that the imperfect is also of aesthetic importance. PxD and similar software are active as one group of pixels capturing, changing or impressing another pixel group. In other words, Krotevich describes pixel invasion, glitch or degradation as a discipline that is incorporated into the creation of a photograph (Image 4).

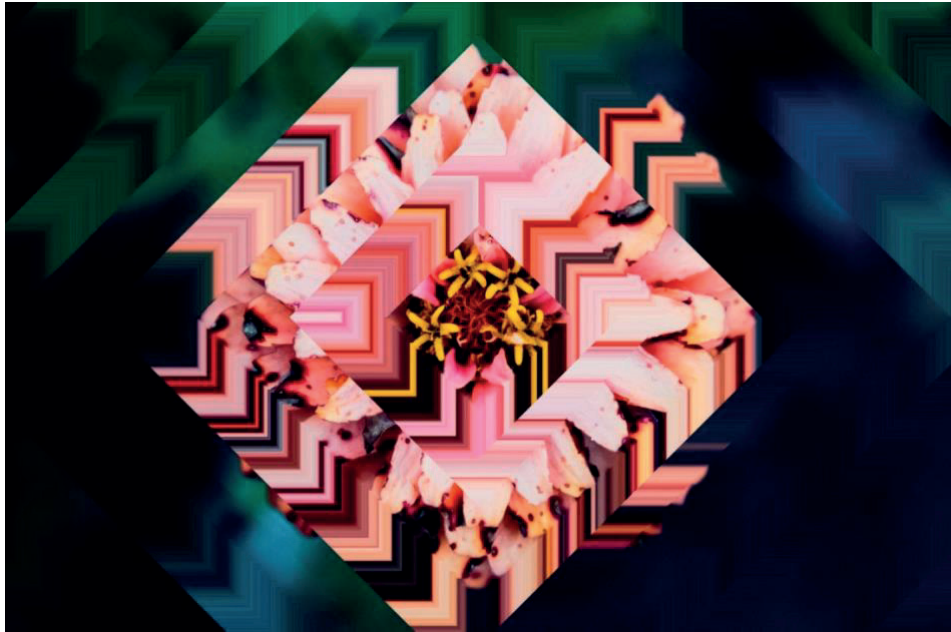


Image 4: Sabato Visconti, Databending, 2016 ve Pixel sorting, 2014.

Source: <https://www.sabatobox.com/> Date of access, 01.02.2021

4.3. Biological Photographic Invasion

Experimental studies and their unexpected results constantly develop and change the structure of art. Another example of these works without borders is "Bio Art", which includes bacteria, viruses and similar micro-organisms in art. The relationship between biology and art is defined as art made with living materials (Azamet, Karahan, 2019, p. 1457). Bio art can be described as a direction in contemporary art that manipulates art by including life in the process. Different approaches can be used while determining this direction. Generally, while

² Image formats such as jpeg, bmp, gif, mov.

³ After Effects, Photoshop, Gimp and similar programs.

it emerges as directing biological factors to certain shapes and behaviors, that is, changing organisms within their own species or presenting new features, as another approach, it emerges as an unusual use of biological factors, that is, their use against another biological factor/object. Theoretically, if biological factors in bio art works are taken into account in terms of their potential for proliferation, as a result biological invasion is inevitable.

Artists have often used wood, marble, metal, paint and even pixels in art to represent life. Subsequently, they included bacteria, cell lines, micro-organisms, that is, life itself, into this representation, and as a result, they made art more impressive, destructive and even dangerous than ever before. As in many fields of art, experiments in the biological field are conducted in photography. South Korean artist Seung-Hwan Oh can be cited as one of the photographically effective examples of this experimental biological invasion (Image 5).

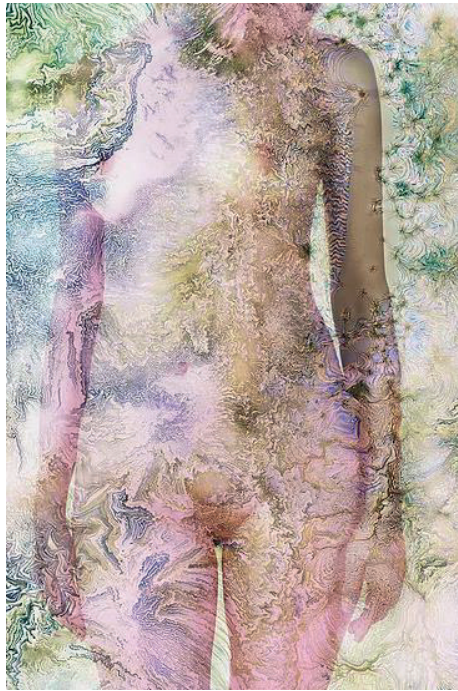


Image 5: Seung-Hwan OH, Impermanence, 2017.

Source: <https://www.seunghwan-oh.com/thereinventionoflove> Date of access: 10.02.2021.

In his work called Impermanence, the artist achieves extraordinary portraits by allowing bacteria to spread on the negative film, that is, to eat and invade the sensitizer on the film and then expose the film as such (Burget, 2014).

In his work, Seung-Hwan Oh focuses on microbial growth on film as a way to explore the limits of photography, where the visible is lost and what we usually accept as an image is eaten and attacked by a microbe. In his works, which is inspired from the first emergence and spread of life, he states that he tries to show the discontinuity of matter with the material limits of photography (www.seunghwan-oh.com). Thus, life itself such as micro-organisms, bacteria, molds and fungi has been included instead of traditional materials and tools of art. Thanks to

the invasive spread of life forms that exist in nature but cannot be seen, art has visibly become scientific, ironic, and sometimes dystopian. What is aimed as a result of this biological invasion study is the new image that emerges through invasive disappearance.

5. RESULT

Art had to constantly improve itself and gain new forms in the dynamic process of its development. Photography, which is a branch of visual arts, has also been at the forefront in this process. From the first day of its invention to the 21st century, photography has used and continues to use all traditional or contemporary methods and tools by adapting them to its own internal dynamics.

Immediately after its invention, photography found itself in the focus of many discussions and was not accepted as an art form. When photography tried to be included in the world of art, it was considered by many as a visual that was accessible to and could be produced by everyone, thus could not be accepted as a work of art. In addition, the mission attributed to photography in the same period was to reveal its object as it is, to document history, to be used as evidence, and it was only accepted as an aid to science and art. In addition to this general opinion, the use of photography in this way does not require any skill. Essentially, the process that started with the photograph, which was manipulated by Henry Peach Robinson (*Fading Away*, 1857) shortly after its invention, has made it clear in our day that photography is not just about “exposure”. While demonstrating this attitude, he also developed artistically all the potential he had to produce or create the image.

Similarly, artists have made interventions on photographic material with avant-garde experimental works made within the possibilities presented in each period. Such interventions revealed the understanding of invasion. New formats are constantly being applied with these new experimental-invasive studies developing in the field of photography and by providing full adaptation to the process against technology. However, what is presented with photographic invasion is to create consciously unpredictable visuals. In a way, it is against one of the most basic rules of the classical documentary photography understanding by disabling the camera that reveals the images or placing something that does not exist in the dark room or through image processing programs such as Photoshop. It is to liberate photography from fixed patterns, keep it out of fashion, free it from standardization or from being a commercial image, or even from the sanction of cameras, to explore all photographic possibilities.

At the same time, as stated in the study, photographic invasion, which is revealed in every period of photography, appears as the pioneering movement of all kinds of approaches in the image. As a result, experimental invasion, which is based on studies, removes the boundaries of representation with these studies that have reached the present day with method and conceptualism.

REFERENCES

- Atabek, A. (2016). Yeni Medyada İllüstrasyon ve Fotoğrafik İnvazyon: Lucas Levitan. *The Turkish Online Journal of Design, Art and Communication*, Cilt: 6, Sayı 2.
- Azamet, A., ve Karahan, Ç. İ. (2019). 21. Yüzyılda Biyosanat. *İdil Sanat ve Dil Dergisi*, 63.
- Böcekler, B. (2020). Kamerasız Fotoğrafın Kısa Tarihçesi ve Kamerasız Fotoğraf Teknikleriyle Üretim Yapan Çağdaş Fotoğrafçılar. *Art-e Sanat Dergisi*, 13(26), 576-594.
- Burget, G. (2014). *Live bacteria for years to create unique portraits*. PetaPixel.
- Cambridge Dictionary.
<https://dictionary.cambridge.org/tr/s%C3%B6zl%C3%BCk/ingilizce/invasion> Date of access: 20.01.2021.
- Cordier, P. (2007). *The Chemigram*, Antwerpen: Belgique Published.
- Daniel, M. (2004). *William Henry Fox Talbot (1800–1877) and the Invention of Photography*. Metropolitan Museum of Art, Photography Department. Metmuseum Publishing.
- Gezgin, A.Ö. (1997). İFSAK, *Fotoğraf ve Sinema Dergisi*, Mayıs 1997; Sayı: 100, İstanbul.
- Granath, O. (2005). *August strindberg: painter, photographer, writer*. London: Tate Publishing.
- Higgins, M. (2015). Chemical Potential: The Darkroom Upside Down Exploring the Chemigram.
<https://www.ahmetonergezgin.com.tr/deneysel-fotografi-2-ogrenci-calismalari-sergisi-uzerine/> Date of acces: 1.10.2022
- Kornrumpf, H. J. (2008). *Langenscheidt Fransızca -Türkçe Sözlük*, İstanbul: Altın Kitaplar Yayınları.
- Lunday, E. (2015). *Modern Art Invasion: Picasso, Duchamp, And The 1913 Armory Show That Scandalized America*. Lyons Press.
- Menkman, R. (2011). Glitch studies manifesto. Video vortex reader II: Moving images beyond YouTube, 336-347.
- Micmap. <http://micmap.org/dicfro/search/gaffiot/invasio> Date of acces: 20.01.2021.
- Roubier, J. (1958). *Fotoğraf ve sinema sanatı*, İstanbul: Hamle Matbaası.
- Sağlık Sözlüğü. <https://saglik.sozlugu.org/invasion/> Date of access: 20.01.2021
- Yaykın M. (2010). *Sanat, teknoloji, bilim ve fotoğraf*, İstanbul: Kalkedon Yayınları.
- Yıldırım, M. (2020). İnvazyon ve Sanal Gerçeklik. *ODÜ Sosyal Bilimler Araştırmaları Dergisi (Odüsobiad)*, 10 (1).