Research Article

Encaustic with Pigments from Saudi Arabia: Artistic Proposal Using Sustainable Local Materials for Encaustic Painting

Susana FERNANDEZ BLANCO*

ORCID NO: 0000-0002-9316-6856

*Senior Lecturer, Dr., sblanco@pmu.edu.sa, Prince Mohammad Bin Fahd University, College of Architecture and Design, Dept. of Graphic Design.

Abstract

This innovative project in Saudi Arabia explored sustainability in artistic practice by creating artwork using natural resources in the country. The research was conducted to identify pigments that could be extracted from local plants and minerals, and a basic encaustic technique was used to experiment with these pigments. Handmade encaustic colours allowed for personalised artwork, resulting in two paintings showcasing the rich colour palette achievable using local resources.

The project contributed to expanding knowledge about Saudi Arabia's resources and inspired other artists to explore sustainable artistic practices. This project demonstrates the potential for artists to be catalysts for change, encouraging innovative and sustainable approaches to artistic practice while utilising local resources and knowledge.

Keywords: Saudi Arabia pigments, Middle East art, natural resources, sustainable art materials, encaustic

MUJAD Marmara University Journal of Art and Design
ISSN 2980-2822 Vol. 14 / No. 1 / June 2023
Research Article
Received: 28.04.2023
Accepted: 13.06.2023

MUJAD Marmara Üniversitesi Sanat ve Tasarım Dergisi
ISSN 2980-2822 Cilt:14 / Sayı:1 / Haziran 2023
Araştırma Makalesi
Gönderim Tarihi: 28.04.2023
Kabul Tarihi: 13.06.2023

Araştırma Makalesi

Suudi Arabistan'dan Pigmentlerle Ankostik: Ankostik Boyama için Sürdürülebilir Yerel Malzemelerin Kullanımı

Susana FERNANDEZ BLANCO*
ORCID NO: 0000-0002-9316-6856

*Öğr. Gör. Dr., sblanco@pmu.edu.sa, Prince Mohammad Bin Fahd Üniversitesi, Mimarlık ve Tasarım Fakültesi, Grafik Tasarım Bölümü.

Öz

Suudi Arabistan'daki bu yenilikçi proje, ülkedeki doğal kaynakları sanat eseri yaratımında kullanarak, sürdürülebilirliği sanatsal uygulamalar üzerinden araştırmaktadır. Yerel bitki ve minerallerden elde edilebilecek pigmentleri belirlemek için araştırma yapılmış ve bu pigmentleri denemek için temel bir ankostik teknik kullanılmıştır. El yapımı ankostik renkler kişiselleştirilmiş sanat eserlerine olanak sağlamış ve sonuçta yerel kaynaklar kullanılarak elde edilebilecek zengin renk paletini sergileyen iki resim ortaya çıkmıştır.

Proje, Suudi Arabistan'ın kaynakları hakkındaki bilginin artmasına katkıda bulunmuş ve diğer sanatçılara sürdürülebilir sanatsal uygulamaları keşfetmeleri için ilham vermiştir. Bu proje, sanatçıların değişim için katalizör olma potansiyelini göstermekte, yerel kaynakları ve bilgiyi kullanırken sanatsal uygulamalara yenilikçi ve sürdürülebilir yaklaşımları teşvik etmektedir.

Anahtar Kelimeler: Suudi Arabistan pigmentleri, Orta Doğu sanatı, doğal kaynaklar, sürdürülebilir sanat malzemeleri, ankostik

1. INTRODUCTION

This artistic proposal arises from the need to acquire art material from a foreign artist living in Saudi Arabia during the isolation due to COVID-19. The process served as technical and personal learning and helped the artist integrate with her local colleagues.

Saudi Arabia is a country in the process of opening that has yet to exploit its raw materials, except for oil derivatives. There is a project called "Vision 2030" to revitalise the country that tries to promote its culture and modernise. They are trying to move away from dependence on oil as the country's primary source of income and are opening to tourism and research on the sustainability of their resources. The Saudis are beginning to worry about the environment; some artists consider this issue a topic in their works.

Studying the original pigments of Saudi Arabia provides a deeper understanding of the country's history and culture and the technique and process of creating its art.

A search for artists concerned about the environment and the investigation of new sustainable materials was carried out. No artist had ever heard of the encaustic technique and needed to learn how to make their paintings, but they were interested in learning and collaborating.

In Saudi Arabia, there is no university with a degree in Fine Arts; therefore, they need more technical knowledge to make their paintings.

After the failure in the search for local art materials throughout the country, the following objectives were set:

1. Demonstrate that artistic work can be made in Saudi Arabia using materials obtained in the country
2. Share the knowledge gained with local artists to encourage them to use sustainable materials

2. METHODOLOGY

Information about pigments in Saudi was collected from databases, the internet, and social networks searching for artists who could advise in the exploration of materials typical of the area to be able to make an encaustic painting.

It turned out that they had not even heard about this technique, but they were highly interested in learning it. An artist from the Asir area

called Jamela Matter was so curious about it, and she even took a plane from Abha to Al Khobar, interested in learning the encaustic technique.

This artist's family has beehives, and she uses the honey they produce in her art installations.

There is currently exhaustive research in collaboration with this artist to discover raw materials originating in Saudi Arabia and obtain local pigments to sell and export to other countries.

There is no Fine Arts university in Saudi Arabia, and there needs to be more knowledge of the techniques, but there are talented artists and a vibrant culture in the country. Artists have learned and developed their skills in various ways, such as through self-directed practice, participation in workshops and tutoring, and collaboration with other artists.

The articles from the Ministry of the Environment and others were particularly useful, but the help of local people and artists was the most valuable in this study.

The investigations and photographs carried out by Thierry Mauger and reflected in his book "Impressions of Arabia" also served as an inspiration to find what was sought. This author is a French anthropologist, writer, traveller, and photographer who lived in Saudi Arabia for over a decade, working on ethnographic photography.

3. OBTAINING AND PROCESSING MATERIALS

Damar resin, beeswax, and pigments are necessary to make encaustic paintings. This study only focused on the search for local pigments, and Damar resin and beeswax were obtained through online purchases of the R&F brand made in the United States.

An attempt was made to acquire beeswax from Arabia, but despite making much honey in the Abha area, the pure and bleached wax without honey could not be purchased. Currently, they do not carry out the beeswax extraction treatment for other uses in this country. Several beekeepers have shown interest in this study and are looking to start trading beeswax soon.

Plant-derived pigments are an excellent choice for artists looking for natural and authentic colours for their artwork. Some pigments were bought, but most were made manually.

The pigments that were obtained were the following:

3.1. Titanium White

It was purchased from a company established in 1991 in the Yanbu area. Yanbu is a city in Saudi Arabia known for its mineral processing and petrochemical industry.

Titanium ores are extracted from mines and processed to obtain a concentration of pure titanium oxide. To improve the purity of the finished product and remove impurities, titanium oxide concentrate is refined.

After purchase, it was kept in an airtight plastic container to keep out moisture and light.

3.2. Carbon Black

This pigment was obtained through the burning of Samar wood found in Dammam.

- Collection: The wood was burned controllably until it transformed into charcoal
- Grinding: The charcoal was ground using an electric mill until it was fine enough to use as a pigment
- Mixing: The ground charcoal was blended with water as a dispersion medium to form a uniform paste
- Filtration: The mixture was filtered to remove any impurities or big particles
- Drying: The liquid was dried on kitchen paper towels
- Storage: The black carbon pigment was stored in an airtight plastic container protected from light and humidity

3.3. Henna Green

It was bought at a market in Al Asha and originally from the Jeda area. Henna is a plant commonly used in cosmetics and temporary tattoos due to its intense green-brown pigment.

After purchase, it was kept in an airtight plastic container to keep out moisture and light.

3.4. Spinach Green

It was obtained from a farm in the Riyadh area.

- Preparation: The spinach leaves were washed and dried carefully
- Cooking: The spinach leaves were cooked in a bit of water for an hour to extract all their pigment well, and then, the liquid was strained and allowed to cool down

- Mixing: The spinach liquid was mixed with alcohol as a dispersion medium until a liquid pigment was obtained. Unfortunately, the alcohol that can be purchased in Arabia is made of isopropyl alcohol, and the result was unexpected. This is due to the restrictions regarding the sale of alcohol as it is a strict Muslim country
- Therefore, the previous preparation and cooking process was repeated, and pure vegetable glycerine was used as the dispersion medium.
- Filtration: The mixture was strained to remove impurities
- Drying: It was left to dry on absorbent kitchen paper
- Storage: The pigment was stored in an airtight container and stored in a cool, dark place

3.5. Red Spinach Green

It was purchased on a farm in Riyadh.

- Preparation: The red spinach leaves were washed and dried well
- Drying: They were dried in the sun for several days on a glass tray and covered with fine gauze so insects would not enter
- Grinding: When they were dehydrated, the dried leaves were ground in an electric coffee grinder until they were well crushed
- First Filtration: It was mixed with a bit of water, and the mixture was strained through a coffee filter to remove impurities
- Mixture: Pure vegetable glycerine was used as a dispersion medium, and the mixture was left to settle for 24 hours
- Second Filtration: The previous mixture was filtered with a coffee filter to remove impurities
- Drying: It was left to dry on absorbent kitchen paper
- Stored: Placed in an airtight plastic container and stored in a cool and dry place

3.6. Beetroot Red Bordeaux

It was obtained on a Qatif farm.

- Preparation: The beets were peeled and washed carefully. They were chopped to facilitate drying.
- Drying: They were dried in an electric oven
- Mixture: Pure vegetable glycerine was used as a dispersion medium
- Filtration: The previous mixture was filtered with a coffee filter to remove impurities
- Drying: It was left to dry on absorbent kitchen paper

- Stored: Placed in an airtight plastic container and stored in a cool and dry place

Figure 1. Beetroot red Bordeaux pigment.

Source: *(F. Blanco, S. 2022)*

3.7. Purple-red cabbage

It was obtained from a farm in Al Asha.

The exact process used for green spinach was carried out.

3.8. Arabic Coffee Ochre

Arabic coffee bought in Dammam. This coffee is much paler than what is customary in the West.

Arabic coffee has been a traditional drink for centuries, enjoyed in the Middle Eastern region, including Saudi Arabia. It is prepared from freshly roasted and ground coffee beans and boiled in a copper kettle called "Dalla". Arabic coffee is usually served in small cups and drunk slowly, enjoying its flavour and aroma.

Arabic coffee is an essential part of the culture and social traditions of the region and is considered a sign of hospitality and friendship. It is often shared with friends and family on special occasions.

In addition to its social role, Arabic coffee has spiritual significance in some religious traditions in the region. For example, in the Islamic tradition, coffee is considered a gift from God and is associated with kindness and generosity.

In summary, Arabic coffee is a highly valued traditional drink in the Middle East, with cultural, social, and spiritual importance.

- Preparation: An Arabic coffee was selected and ground until a fine powder was obtained
- Cooking: The coffee powder was in a container and covered with water. It was brought to a boil, and then the heat was reduced to

a minimum for three hours until the dark brown water could be seen

- Drying: The liquid was drained and left to dry in the sun for several days on a flat glass tray and covered with fine gauze so insects would not enter
- Ground: The surface of the glass tray was scraped to obtain the resulting powder and ground to a fine powder

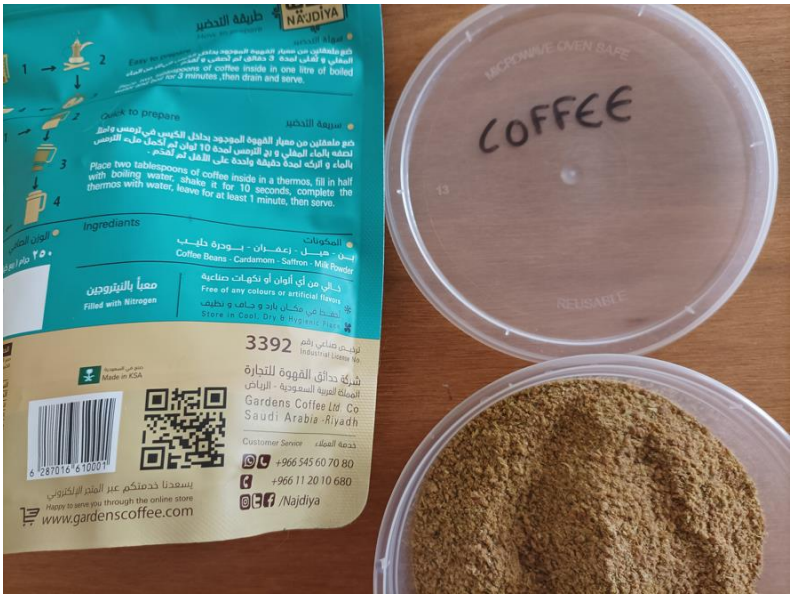

Figure 2. Ochre obtained from Arabic coffee.

Source: *(F. Blanco, S. 2022)*

3.9. Marigold yellow

They were collected in a private house in Qatif.

- Picking: Flowers from a garden were picked and then cleaned well to make sure there were no green leaves left
- Extraction: These steps were performed to extract the pigment:
  - The flowers were crushed to form a paste
  - Acetone was added as an organic solvent and stirred
  - The mixture was strained, and the liquid containing the pigment was collected
- Filtration: The mixture was filtered to remove any impurities or particles that were too large
- Drying: The liquid could dry on kitchen blotting paper
- Storage: The pigment was stored in a closed plastic container and protected from light and humidity

3.10. Carrot's orange

It was obtained on a Qatif farm.

The exact process used for beets was carried out.

Figure 3. Orange pigment from carrots.

Source: *(F. Blanco, S. 2022)*

3.11. Iron oxide Red

It was obtained from remains of rusty iron abandoned in one street in Al Khobar.

- Preparation: An attempt was made to select good-quality irons of the same type. Efforts were also made to ensure they did not have traces of paint and other impurities. Larger particles were separated and discarded.
- Ground: The powder was crushed and sieved to achieve a uniform size

3.12. Minerals Purple, Blue, and Magenta

Some mineral pigments were obtained from a market in Al Ahsa, originally from Adan in southern Arabia.

According to the seller of these minerals, they are typically used to modify the colours of dyes made with Henna. Therefore, they were for cosmetic use.

The jars' labels indicated that they were blue, green, and red, but the result was not those colours. Blue became purple, green became blue, and red was more magenta.

- Preparation: The minerals obtained were introduced into a container with a bit of water as a dispersion medium until they were completely dissolved.
- Application: This diluted mixture was used directly to paint, adding it to the encaustic medium, and, with the heat of the mix itself, the remaining water evaporated.

In Figure 4, it can be seen how the bottle indicated that it was blue, but the result was purple when dunked in water. The original colour of the mineral was yellow, but it was impossible to ascertain which mineral it was.

Figure 5 shows how the label indicated it was green, but the result was dark blue when wetted with water. The original colour of the mineral was green, but it was impossible to determine what mineral it was.

In Figure 6, the label indicated that it was red, but the result was magenta when wetted with water. The original colour of the mineral was green, and it was impossible to determine what mineral it was. Perhaps the colour that most closely corresponded to the label indications was green.

Figure 4. Purple pigment from mineral.

Figure 5. Blue pigment from mineral.

Figure 6. Magenta pigment from mineral.

Source: *(F. Blanco, S. 2022)*

Environmental and safety regulations were considered to produce pigments manually throughout the process.

Obtaining natural pigments can be exciting and satisfying, but it requires careful attention and adequate knowledge to ensure a safe and effective outcome.

4. CARRYING OUT THE ARTWORK

The basic encaustic painting technique comprises pigment, beeswax, and damar resin. It is a process that essentially consists of mixing these three elements and applying them hot to a surface.

Adding Damar resin to the mixture of beeswax and pigment improves the durability and resistance of the encaustic paint, making it ideal for long-term applications.

The first step is to mix Damar resin and beeswax to have a neutral encaustic medium. When painting, this medium is combined with the desired pigments to use in the artwork.

These were the steps for making an encaustic painting:

4.1. Surface Preparation

Small tests were carried out with the pigments obtained on wooden supports purchased from a Jarir store in Al Khobar.

The larger ones were custom-made by a carpenter at a decor shop and art gallery called Desert Designs in Al Khobar.

The surface was cleaned to make it smooth and free of dust. The surface was lightly sanded and cleaned to remove any residue before starting.

The first layer was made with a white Gesso to provide greater luminosity to the encaustic colours that would be added later so that the wood on the surface did not absorb them. This Gesso was made with plaster bought in Al Khobar, titanium white pigment obtained in Yanbu, and white carpenter's glue (poor quality polyvinyl acetate, but sufficient for this practice).

After hydrating the white pigment for two days, it was mixed with plaster and carpenter's white glue in proportions of 25%, 50%, and 25%, respectively.

Desert sand was used to give texture, and the base drawings were made with the charcoal obtained after burning Samar wood, as seen in the following illustration.

After applying the Gesso, the white carpenter's glue integrated this sand into the surface. It should be noted that the surface should not be worked immediately after embedding the material and should wait for it to harden as it comes off easily when applying heat.

Figure 7. Drawing with charcoal.

Source: *(F. Blanco, S. 2022)*

4.2. Preparation of the encaustic medium

As stated, the basic hot-applied encaustic paint mixes the encaustic medium with pigment.

The encaustic medium was made by placing granulated white beeswax and Damar resin in a heat-resistant container and putting the mixture in a bain-marie cooking process.

The proportions were: Damar resin (11%) and beeswax (89%).

After everything was well integrated, it was transferred to 30 ml silicone moulds.

Once the mixture had cooled, they were stored for later use in a cardboard box.

In the following illustration, the blocks of the encaustic medium can be seen before being heated.

Figure 8. Blocks of the encaustic medium before being heated.

Source: *(F. Blanco, S. 2022)*

4.3. Mixing the encaustic medium with the pigment

An electric grill was used to start painting with encaustic and keep the colours warm.

Heat-resistant aluminium trays were arranged on this rack, and a previously prepared block of the encaustic medium was inserted into each one. The temperature never exceeded 80 degrees Celsius to prevent burning.

When the encaustic medium was melted, the different pigments were added with a 1 to 1, that is, one part of the encaustic medium for one part of the pigment.

The proportion of pigment and medium varied depending on the pigment and the transparency of the colour that was to be achieved. With less proportion of pigment, more transparent colours were achieved.

The following illustration shows the encaustic medium mixed with the pigments. The three colours on the right of the image look different because they are purple, blue, and magenta, obtained with mineral pigments. It took longer for the pigment to integrate with the medium because the water had to evaporate first.

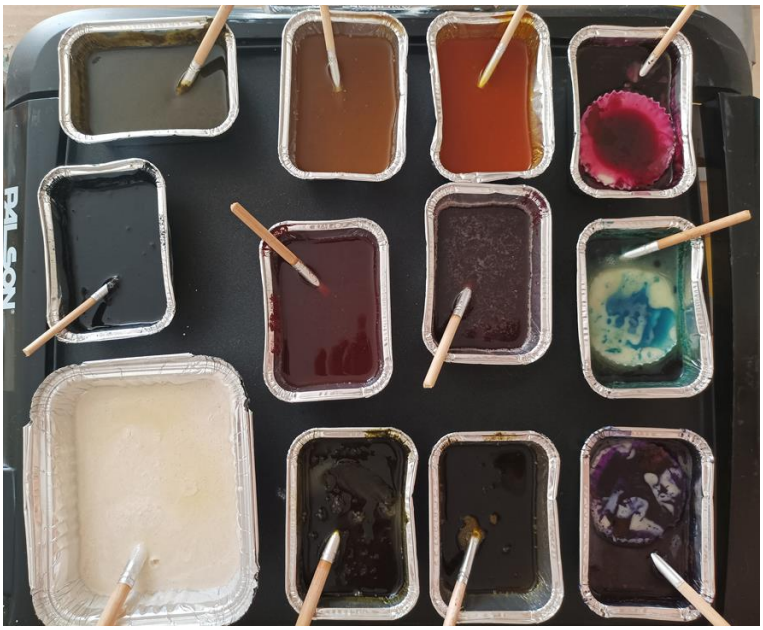

Figure 9. Encaustic medium mixed with the pigments.

Source: *(F. Blanco, S. 2022)*

4.4. Application and melting

While working, the technique requires a constant heat source to melt the encaustic colours. An electric grill was used to keep all the colours melted during the painting process.

The hot mixture was applied to the surface with a brush and spatulas of various sizes. It had to work very quickly because the mixture cooled down in seconds.

Once the wax layer was applied to the surface, heat tools were used to melt the mixture and cause it to penetrate the surface. This process also helped remove any bubbles or impurities. The tools used were a hot air gun and a blowtorch.

The surface could cool between coats, and coats with the unpigmented encaustic medium were also alternated to create glazes.

The distance between the heat source and the surface must be carefully controlled because it can burn the paint. Different effects can be achieved depending on the force of the hot air used and the distance to

the support. Multiple layers of colour can be mixed from the paint surface by insisting on applying heat to the same point. The ways to paint with this technique are endless.

4.5. Finishing

After the painting was finished, it took several weeks to make sure the paint was hard enough to burnish.

The paint dries in seconds once it cools down, but the inner layers still remain soft. The total drying time of an encaustic painting can vary depending on the technique, the beeswax used, and the environmental conditions of temperature and humidity. Encaustic paint generally hardens on cooling but can remain sensitive to heat and friction for several weeks after application.

The encaustic painting was burnished with a cotton swab. The surface of the painting was rubbed with a chamois to create a smooth glossy finish. This process increased the depth of colour and clarity of the encaustic painting, improving its appearance and protecting it from dust and dirt.

The hot-applied encaustic painting technique requires much practice to master, but excellent results can be achieved over time.

The pigments mixed very well with the encaustic medium, but some colours shifted slightly after cooling the paint and became darker.

Precautions were taken to preserve the encaustic painting to maintain its long-term integrity and quality.

The painting was protected from direct sunlight and sources of excessive heat, as this can cause the melting of the wax and the loss of the quality of the painting. It is ideal for storing it in a cool, dry environment with a stable temperature and relative humidity. Still, it was impossible, and the painting was perfectly preserved.

The painting was protected from scratches and scrapes by hanging it on a wall instead of storing it with other paintings.

The paint is cleaned occasionally using the chamois as when it was polished at the beginning. This is a gentle method that does not damage the surface.

4.6. Theme

It was decided to make Arab-themed paintings as it was the most appropriate at that time.

The first work is "Sandstorm", inspired by sandstorms in Saudi Arabia (Figure 10). The support dimensions in centimetres are 40 (W) x 30 (H) x 3 (D).

It looks like the sky mixes with the desert sand, and the air does not allow breathing.

A dramatic perspective with a remarkably high horizon was chosen to provide an impressive view of the storm and its effects on the surrounding landscape and the viewer.

The contrast of colours is striking between the stormy sky and the bleak landscape.

The sandstorm's movement and texture were added using loose brush strokes and glazing techniques. This brought life and realism to the storm, making it look like it was constantly in motion.

White reflections were included on the horizon to add depth and dimension to the storm.

The absence of characters in the scene is designed to dehumanise and show the storm’s harshness, making it more powerful and emotional.

The encaustic technique perfectly represents the typical sandstorms of the Saudi Arabian desert. Plant pigments and sand from Arabia helped convey the natural force surrounding this extraordinary act of nature.

Figure 10. Basic hot encaustic. “Sandstorm”, 40x30cm.

F. Blanco, S., Al Khobar, Saudi Arabia. 2022.

Source: *(F. Blanco, S. 2022)*

MUJAD / Cilt:14 Sayı:1 / Haziran 2023
Fernandez Blanco, S., / Encaustic with Pigments from Saudi Arabia / ss. 38-56 /
DOI: http://dx.doi.org/10.29228/sanat.13

The second one is entitled "Twisted Arches" and consisted of the representation of a balustrade of an Arab cistern. The support dimensions in centimetres are 90 (W) x 60 (H) x 4 (D).

A unique perspective was created from an oblique angle. This added visual interest and depth to the scene.

It has a dramatic lighting of contrasts between the shadows and the illuminated areas. Warm and dark lights were used to create a mysterious and atmospheric environment.

The texture was made on the columns and the balustrade using the spatula. Glazes were used to create an effect of depth in the space that surrounded them. Loose, expressive brushstrokes were used to create a moving effect at the base of the brushstrokes.

Reflections on the ground simulating the water in the well were added to add depth and dimension to the scene.

Figure 11. Basic hot encaustic. "Twisted Arches", 90x60 cm.

F. Blanco, S., Al Khobar, Saudi Arabia. 2022.

Source: *(F. Blanco, S. 2022)*

5. FINDINGS AND CONCLUSION

The objectives were achieved after the realisation of two works of encaustic painting with pigments obtained in Saudi Arabia.

Making homemade pigments and painting encaustic pictures has been an enriching and satisfying experience.

Using natural pigments instead of artificial colourants, they experimented with a broader range of colours and unique shades that varied depending on the pigment source.

Making homemade pigments and the encaustic technique is slower and more laborious than using commercial products, but this increased the satisfaction and sense of achievement when seeing the result.

Using local pigments for the encaustic technique makes the result unique and different from paintings created with commercial products. It allows artists to work with colours specific to their region or culture. Most of the pigments may not be available commercially in Saudi Arabia, and they can create a distinct look and feel in the artwork. Additionally, the encaustic technique involves using a beeswax medium, which makes sense of depth and texture in the artwork that may not be achievable with other painting techniques. These factors increased the artwork's artistic and personal value, becoming a one-of-a-kind piece deeply connected to its creator and environment.

The results have been disseminated to other artists in the country, and there are collaborations with them on various projects to obtain natural resources and share the techniques used. This collaboration among artists was critical. By sharing research findings and techniques with other artists, individuals can learn from one another and advance the body of knowledge in their field. Collaboration among artists provides opportunities for the cross-fertilisation of ideas and techniques, leading to increased creativity and innovation. The research is helping establish a sense of community among practitioners. This sense of community is essential for sharing knowledge and resources, promoting mentorship and support, and setting shared goals and objectives, which are critical for the field's development.

There is a growing interest in Saudi Arabia to achieve a more sustainable habitat in various environments, not only among artists but among people of the new generations. This interest is also motivated by the actions carried out by the Saudi government within the "Saudi Green Initiative" program. They have implemented plans and regulations to reduce their carbon footprint, promote renewable energy, increase energy efficiency, and protect the environment. To strengthen the economy and raise the standard of living of the populace, the nation is also funding green development and sustainable technology initiatives. For illustration, it creates wind and solar farms to produce renewable energy and lessen reliance on oil while encouraging sustainable agriculture and biodiversity preservation.

In conclusion, Saudi Arabia's interest in sustainability demonstrates a crucial commitment to preserving the environment and creating a more sustainable future.

This study leaves a vast space for research, artistic experimentation, and collaboration between artists and researchers involved with the environment who are committed to a better future for Saudi Arabia.

The research results may have important implications for understanding Saudi Arabian history and culture and conserving and restoring artworks using these pigments.

Young Saudi Arabian artists work in various media, including painting, sculpture, installation, video, and photography, and exploring different themes. Many are looking at questions of identity, politics, and societal change while including traditional Saudi Arabian components of art and culture. Overall, the art of Saudi Arabia reflects the country's diverse cultural and historical influences and the creativity and vision of its contemporary artists.

Statement of Research and Publication Ethics

The research doesn’t require an Ethics Committee Decision.

Conflict of Interest Statement

The author declares that she has no conflict of interest.

BIBLIOGRAPHY[1]

Abu-Ghazzeh, T. (2022). The art of architectural decoration in the traditional houses of AL-ALKHALAF, SAUDI ARABIA. *Journal of Architectural and Planning Research*, *18*(2), 156–177.

Baldwin, A. (2011). *Creative paint workshop for mixed-media artists: experimental techniques for composition, layering, texture, imagery, and encaustic*. Quarry.

Christie, R. M. (2015). *Colour chemistry*. Royal Society of Chemistry.

Hüttemann-Holz, B. (2017). *How to create encaustic art: a guide to painting with wax*. Schiffer Publishing, Ltd.

Lombardo, D. (2001). The Art of Encaustic Painting: Contemporary Expression in the Ancient Medium of Pigmented Wax*. Library Journal*, *126*(19), 67–68.

Mauger, T. (1993). *Undiscovered Asir*. Stacey International.

[1] The bibliography is not directly cited in the article, but is consulted during the research process.

Mauger, T. (1996). *Impressions of Arabia: architecture and frescoes of the Asir region*. Flammarion.

Mauger, T. (2020). *Rijal at the stroke of a brush: An exceptional village in Saudi Arabia* (1st ed.). Obeikan Education. Obeikan.

Philip, M. P. (2007). *World market for pigments and their preparations, the: a 2007 global trade perspective.* ICON Group.

Seggebruch, P. (2011). *Encaustic mixed media: innovative techniques and surfaces for working with wax.* North Light Books.

Stacey, R. J., Dyer, J., Mussell, C., Lluveras-Tenorio, A., Colombini, M. P., Duce, C., la Nasa, J., Cantisani, E., Prati, S., Sciutto, G., Mazzeo, R., Sotiropoulou, S., Rosi, F., Miliani, C., Cartechini, L., Mazurek, J., & Schilling, M. (2018). Ancient encaustic: An experimental exploration of technology, ageing behaviour and approaches to analytical investigation. *Microchemical Journal*, 138, 472-487. https://doi.org/10.1016/j.microc.2018.01.040

Wolgamott, L. K. (2006). Hot wax & cool artists. *Lincoln Journal Star*, *1*(1), 6.

Womack, L. (2008). *Embracing Encaustic: Learning to Paint with Beeswax* (2nd ed.). Hive Pub.

Woolf, D. (2012). *The encaustic studio: a wax workshop in mixed-media art*. Interweave.