

رابطة الجامعات الإسلامية  
المؤتمر العالمي الرابع للفنون والعمارة الإسلامية  
دور الحضارة والفنون الإسلامية في النهضة الأوربية

المحور السادس

الاقتصاد في الفن الإسلامي

- متطلبات سوق العمل ودورها في تطوير الحرف الفنية الإسلامية لتناسب الإنتاج العالمي - وتوظيف شباب العالم الإسلامي.

عنوان البحث

الخط العربي والتقنيات الحديثة من أجل مدخل مختلف إلى الحرفة والإنتاج الكمي.

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## عنوان البحث

الخط العربي والتقنيات الحديثة من أجل مدخل مختلف إلى الحرفة والإنتاج الكمي.

### الملخص:

الخط العربي هو أحد أهم الخصائص الفنية التي تنتمي إلى هوية المنطقة. بينما الحرف التي تقوم على الخط العربي منتشرة كثيراً في الوقت الحالي في الأسواق العربية، فإنها في الحقيقة مجرد أعمال حرفية يدوية من قبل الحرفيين.

سوف يطور الإنتاج الكمي لتصميمات الخط العربي دعم وإحياء هوية الفن الإسلامي. لقد تم عمل بعض من تصميم المنتجات لدرجة محدودة ولبعض التطبيقات: في إصدارات محدودة أو كتطبيقات على الأسطح. الأكثر من ذلك، أنه تم مزج شكل المنتج وشكل الحرف في تصورات تمثل "التشكيلات من الخط". الكثير من تقنيات الإنتاج الكمي المحتملة غير مستخدمة، بسبب عوائق مادية أو حرفية مرتبطة بالحاجة لخبرات معينة.

بالإضافة لذلك، فكما أن تطور مراحل عملية تصميم تنتقل من المصمم إلى الحرفي، فإن المنتج النهائي غالباً لا يطابق التصميم الأصلي. لأن القيم الجمالية وقيمة الخط العربي تحتاج إلى توفير التطابق الدقيق ما بين التصميم الأصلي والمطبوع في المنتج.

ما هي النقاط التي يجب مراعاتها والتحضير أنت التي يمكن عملها لضمان جودة عالية للمنتج النهائي مطابقة لجودة المنتج الأصلي؟

تهتم هذه الدراسة بتحليل تقنيات الإنتاج التي تساعد المصمم على تطبيق تصميمات الخط العربي بالشكل الذي يتناسب مع نجاح عملية الإنتاج والتسويق مع الاحتفاظ بذوق وقيمة التصميم الأصلي. بالإضافة للاهتمام بالخامات المحلية بالسوق المحلي، التي توفر أسعاراً اقتصادية للمنتج النهائي، وكيفية استخدام هذه الخامات مع تقنيات الإنتاج الكمي.

### الكلمات المفتاحية:

الإنتاج الكمي - الحرف - الخط العربي - التقنيات الجديدة

**ISLAMIC UNIVERSITIES LEAGUE**  
**THE FORTH INTERNATIONAL CONFERENCE**  
**THE ISLAMIC ART AND ARCHITECTURE**  
**THE ROLE OF CULTURE AND ISLAMIC ART IN THE EUROPEAN**  
**RENAISSANCE**

**SIXTH FIELD**

**Economy and Islamic Art**

Sub-field: the requirements of the market and it's involvement in the developing of Islamic Crafts to meet the international production - and find job opportunities for youth in the Islamic World.

**TITLE:**

**Arabic Calligraphy And New Technologies For A Different Approach To Craft  
And Mass Production**

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2014

**TITLE:**

**Arabic Calligraphy and new technologies for a different approach to craft and mass production**

**ABSTRACT:**

Arabic Calligraphy is one of the main artistic features which belong to the identity of the region. While the calligraphy crafts are widely spread recently in the Arab world markets, they belong still into the field of hand made craftsmanship.

The developing of mass production of Arabic Calligraphy design will enhance and support the revival of Islamic Art Identity. Only to a limited extend and certain applications the Calligraphy has been introduced to product design: in limited editions or as application on surfaces. Furthermore, the combination product form and letter form is very often limited to the adaptation of existing “calligraphic patterns”.

Many of the possible mass production technologies are not used, for financial obstacles or professional needed experiences. Additional to this, as the development process of the design goes from the designer to crafts technicians, the final product is often not alike the original design. For the aesthetics and value of Calligraphy the matching of original and copy need to be completely overlapping.

What are the concerns and preparations to guarantee a high quality final product similar to the original design?

This study wants to analyze the production techniques that allow designers to apply the Arabic Calligraphy in mass production that can be successfully marketed and still keep the taste and value of the original design. Additionally it is concerned about the materials in the local market, which provides economic prices of the final product, and using them on mass production technologies.

**KEYWORDS:**

Mass-production – Crafts – Arabic Calligraphy – New Technologies

## THE FULL PAPER

### TITLE

## Arabic Calligraphy and new technologies for a different approach to craft and mass product

### Introduction

The importance of writing is much wider in the Arabic world than in other cultures due to the central role of the God's message delivered through the prophet's tradition. It has conserved through centuries an entire language, the Arabic language, from major changes, being at the centre of the religious and ethical education as an intangible support and tool to the populations. In the Qur'an, we can find the importance of the word on one side as a deliverer of knowledge and on the other side the calamus as a tool of distribution of the message (image 1 and 2)



Image (1) from The Noble Qur'an – Surah Al-Alaq

- 1- Read! In the Name of your Lord Who has created (all the exists).
- 2-He has created man from a clot (a piece of thick coagulated blood).
- 3- Read! And your Lord is the Most Generous.
- 4- Who has taught (the writing) by the pen.
- 5- He has taught man that which he knew not. (Surah 96 Al-'Alaq) <sup>1</sup>



Image (2) from The Noble Qur'an – Surah Al-Ankabut

- 48- Neither did you (O Muhammad) read any book before it (this Qur'an), nor did you write any book (whatsoever) with your right hand. In that case, indeed, the followers of falsehood might have doubted. (Surah 29 Al-Ankabut) <sup>2</sup>

<sup>1</sup> The Noble Qur'an Surah 96 Al-'Alaq

<sup>2</sup> The Noble Qur'an Surah 29 Al-Ankabut

## Use of Arabic Calligraphy in Design

Till today, the calamus (image 3) is the best tool to venerate the elegance of Arabic writing through calligraphy. Later than in other parts like in Europe or Asia, printing technologies have been introduced to produce exact copies of the Devine text. Until seventieth century it was tradition to copy the book by hand, for which a good writer needed 4 months <sup>3</sup>. The risk of copying by hand each sample of the book lied obviously in the small mistakes which could occur among the approximately 500 pages of texts, but only starting from 19<sup>th</sup> century there is a diffused practice of printed books, where from 1924 there is considered the Egyptian print as standard throughout the Islamic world.

*Starting from here, there is a culture of the book which is among the most important one, and a love for the writing which raised the Islamic calligraphy to finest art, superior almost to painting; an art which one can appreciate fully if intended as music, and which has like Music rules of composition, rhythm and harmony for the expert's eye and his passion for aesthetics.*<sup>4</sup>



Image (3) the calamus, tool of writing calligraphy

Therefore the art of writing in the traditional way, extended to a real art form as Calligraphy, has reached our days with no major alterations. In many hands (styles) and under many forms calligraphic copies and delivers messages and texts on many supports, from paper and textiles to architectural surfaces and objects and remain so far a vivid art in the Islamic world, carrying the traditional values of the societies. Inscriptions are not an Islamic invention, but in the Muslim world they are

*present in all periods, on virtually all kinds of objects, regardless of value, function or material: from eating and drinking vessels to jeweler, carpets and textiles etc. The Arabic letter was painted, moulded, engraved, woven, embroidered, carved, incised. Calligraphy was even rendered on the leaves of trees in Ottoman Turkey.*<sup>5</sup>

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<sup>3</sup> Cook, 2001, page 25

<sup>4</sup> Mandel Khan, 2010, page 9

<sup>5</sup> Al Khemir, 2006, page 12

The details of the single letters, the spacing and the overall composition create a melody through the hand of the artist: while in other art forms like painting, which rarely can be reproduced in such a way that the original taste of beauty and aesthetics can be conserved, Arabic calligraphy is based on strict rules where the variations make the excellence of the art work. Here lies then the aspect which is common to the general “uniqueness” of art pieces, which we are capable to understand from exhibited pieces in museums or art galleries. The cultural importance of Calligraphy art has in the Islam sure highest social value, giving aesthetical taste and information at the same time. Instead of a symbolic meaning of forms and objects, the Calligraphy creates through the composition of its signs a more precise and defined aesthetics which can be handled as ornament and transportation of information at the same time <sup>6</sup>. This appears still more at a higher level by understanding the Muslims mentality to relate things not only to the human eyes but also for the Creator from whom it derives and to whom it returns <sup>7</sup>. The meaning of beauty acquires a different importance in such a context. (image 4)



Image (4) Arabic Calligraphy on an Islamic Architecture.

However, used materials for creating objects to be decorated are very different and not related to costly or inexpensive materials in past:

*The artist’s interaction with a particular material does not seem to have been dictated by its monetary value: the significance or meaning of material was not only defined by its value <sup>8</sup>.*

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<sup>6</sup> See also the introduction of C.G. Jung to his essay *Man and its symbols*

<sup>7</sup> Al Khemir, 2006, page 19

<sup>8</sup> Al Khemir, 2006, page 18

Therefore today, applications of Calligraphy do not seem “out of place” on different kind of materials, and it seems highly acceptable to introduce innovative reproduction technologies for creating a platform of a new aesthetical feeling in a less educated environment.

### **Reproduction of art pieces**

Already with the invention of the photography and its use as an art form, the artist’s or craftsmen’s hand has been substituted by a machine, which is guided only by the perception of the eyes. As Walter Benjamin states in his book “Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit”, there is missing the status “*hic et nunc*”<sup>9</sup> if the art work has been reproduced. The environmental and historical context of the creation and placing of an art work covers a fundamental role for most of the cases: from a cultural, self-expressive into a ritual character. The context of realization creates the importance of the art work, and lead to its value for man. This means clearly, that there is an important social component in the creation and existence of art pieces, which rarely is considered: people admire art for its symbolic or aesthetical origin inside the place it has been generated.

A different and new role play museums, which are however built to venerate the art work as unique pieces of human expression.

While in visual art, like sculpture and painting, the historical and social context changes the sensorial perception of art in society<sup>10</sup>, in Calligraphy the perception remains unaltered as long as the content of the signs remain understood. What could change is the aesthetical perception through different ways of communication. However, while changing taste, there are also the defused phenomena of acquiring reproduced art works probably as a sign of intellectual and social belonging, and as a new trend of creating personal collections.

Looking at new forms of arts, like photography, the discussion of “original” becomes useless. There is no first print of a digital photo, and all copies have same artistic value. While in former times art has been identified by the excellence of the work, creating a name to the craftsman as a master in his *bottega* (and making out of him a notorious artist), today there is a new way of creating the value of the art piece: by promoting the designer, artist or actor through marketing the person. This leads to the lost of quality. While the personalities become famous, their art starts to be more and more commercial with less aesthetical value. The “exposing” of the art piece is more important than the artistic component itself: (image 5)

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<sup>9</sup> "here and now" in sense of the environmental context of the art work.

<sup>10</sup> Benjamin, 1935/2011, page 9



(...) today, through the absolute weight of exposing, the art piece has been transformed in a work with completely different functions, where the one we know, the artistic component, starts to become the less important one.<sup>11</sup>



Image (5) stamps prints of one design of Arabic Calligraphy.

The role, that Calligraphy covers in the Islamic world relating to cultural and aesthetical self-understanding, cannot be underestimated. Long before of the mass reproducibility of photography, the structure of the Calligraphy work made it possible to be reproduced on different supports, surfaces and objects by composing it each time in a new way. However, for many, the working techniques, among them of course the one creating high valued Calligraphy compositions, occupy an inconvenient place. As Richard Sennett states

*Techniques have a bad reputation. They seem without soul. But those whose hands reach a high specialization see this different. For them the technique is always strongly connected to “expressivity”. (...) As Kant observed two hundred years ago: “the hand is the window of the mind”.*<sup>12</sup>

The following paper wants to show the possibility of maintaining the artistic quality of the original Calligraphy composition after the realization of a digitalized matrix. This can be achieved by keeping the aesthetical value of the reproduced signs into digitalized forms by the hands of the same artist. His own sensitive expertise conducts the creation of the digital file by maintaining the scent of originality. Having digitalized files of the Calligraphy, it is possible to use new production techniques, which make possible to produce exact copies or create small variation on products. The aim is to keep vivid the art of Calligraphy throughout affordable products, without sliding into a computerized standard of Calligraphy letters that can be simply composed on any keyboard.

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<sup>11</sup> Benjamin, 1935/2011, page 14

<sup>12</sup> Sennett, 2008, page 147

## The Human touch in digitalized design

The human factors in design connect the human senses of the user and apply the function of the product. Fulfilling the human senses and giving information to the user gives more value to the product, especially the product of art and applied design.

The historical products of Arabic calligraphy always had this human factor of design, because they were hand made products mainly, even if it was a part of a mass production, the mass production technology needed human hand in many parts of it, and it differently gave a certain taste to the product. Like also the copies of the scripts had a special taste different that the modern mass production printing technologies:

*The written word inscribes the estranged, ephemeral symbolism of the separated being, whose double nature Arabic calligraphy expresses. It would be rash that materials neither retain their form nor influence its expression, but they certainly cannot turn aside the extractive, expressive impulse. (description of: the word "woman" - lithograph from an Arabic Qur'an with Urdu translation, probably transcribed in the middle of the nineteenth century) <sup>13</sup>*

Today, the using of innovative techniques of production, like 3D printing, gives no chance for any human affect to show up on the final product. But, if the designer of the whole process realizes this value, and chooses to keep some of the human affects on the computerized design (prepared for the 3D printing) then the product would be so called "artistic product" or "applied art" product, not really "artificial"

The artist of calligraphy is using materials like the ink and the Ecoline colors on papers of different kinds, these materials are semi-transparent. And so, various unpredictable aesthetic affects occur on the papers out of using the materials and the tools. (image 6). These aesthetic affects enrich the value of the design.



Image (6) A detail of the piece of art work by Reham Mohsen.

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<sup>13</sup> Khatibi, Sijelmassi, RIZZOLI New York 1977. page 130

## CASE STUDY

The example shown here is a co-operation in design and a final product of "Rania Hilal"<sup>14</sup>. The order was to design calligraphy in a certain geometric shape ( ) but the artist/calligrapher was trying to create "free of shape" forms of calligraphy in the very beginning steps of sketching to find the artistic best taste in the design before getting limitations from the order of the co-designer and producer of the product.

In order to prepare the art work for a production procedure, the artist of the calligraphy changes his "creative mood" of an artist, to a "thinking mood" of a designer. Now the art work that has all the free hand sensations and the human touch and many mixed up colors with layers of transparency, all this need to go to a different stage of editing to prepare for a production procedure.

Another form of calligraphy before using the computer can be called a sketch of the design, these reductions of artistic elements like colors, tones, textures.

To computerize the design, higher reduction of details need to happen to the original drawing. Also a reduction of colors or tones of one color to few numbers of tones will match the possibilities of printing or engraving or other techniques of production. In brief, general reduction of the artistic characteristics of the art piece must be done to modify it into an applicable design. (image 7 and 8)



Image (7) and (8) The first steps of sketching for the product order. The first image (7) represents an artist style of designing by colors and free lines, the other image (8) represents more limited lines in colors and tones and variations.

Furthermore, each kind of production technique requires certain "design style" as preparation to obtain successful achievement of production.

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<sup>14</sup> Rania Hilal is a well known name in the field of design and produce master pieces of jewelry in Egypt; with conteneous exhibitions inside and outside the country, and unique style of folklore Egyptian designs, she built her name.

In some cases, the art work is changed into a different form to make a successful design (image 9). The art work remains as the base inspiration of the design, as an intermediate step like a design sketch. Being an art piece or a design sketch can be evaluated or decided later by the artist, but in any case the idea of being applicable as a design remains clear.



Image (9) this is one of the first artistic trials to sketch for the final design that was changed totally to match the requirement of size and form of calligraphy needed for the design.

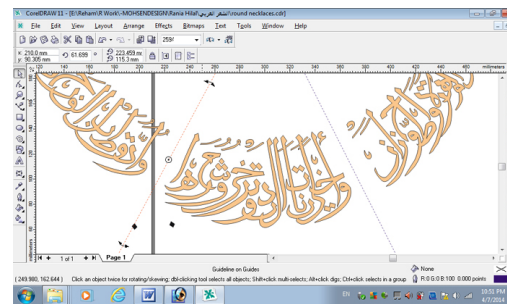
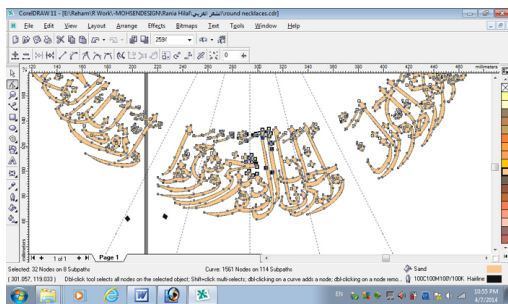


Image (10) and (11) steps of simplification of the lines of calligraphy while digitally tracing the design on the computer to allow accurate production.

On later steps the designer takes the role of tracing the art piece on the computer, and this is changing the art style into a design style of form; as the calligraphy design now starts to be characterized by the out lines only, and not any more the colors, tones, or textures on the paper. (image 10 and 11)

The final stage of design before the production includes the designer comparing and choosing of what to keep as the free hand and what to change to an accurate geometrical form on the computer to determine a certain level of human touch in the design. And the designer is re-choosing these parts in a new way in each new design according to the new design form, and to keep the final product vivid and artistic (image 12 and 13). Here the designer prefers to leave the dot on the top in a no

accurate square, but as free lines as how it was in hand made sketching of the design. The Arabic calligraphy designs that are made of ready digital fonts on the computers lack of this value of human factor in design.

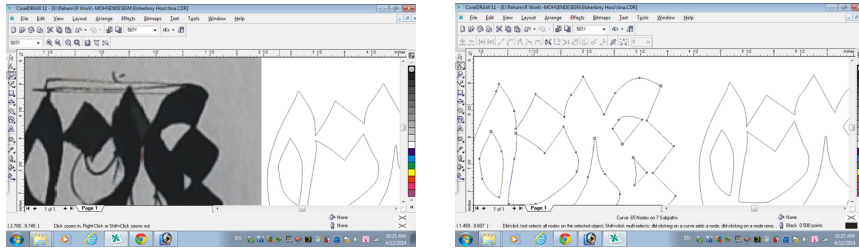


Image (12) and (13) the designer choices of what to keep as the free hand and what to change to an accurate geometrical form on the computer.

The final product keeps both artistic taste of calligraphy and the accuracy of computer digitalized drawing. Which gives the final product a unique quality (image 14 and 15)<sup>15</sup>



Image (14) the final product.<sup>16</sup>



Image (15) the final product.

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<sup>15</sup> This first piece of the product was exhibited in the "Rania Hilal" exhibition of jewelry in the GEZIRA ART CENTER – Zamalek, Cairo, Egypt, 9-23 April 2014

<sup>16</sup> Copyright of this product is preserved to Rania Hilal, the designer and producer, and Reham Mohsen, Calligraphy Art and Design.

## USE OF PRODUCTION TECHNOLOGIES FOR CALLIGRAPHY

The use of mass production technologies allows reduction of the cost of each single object, while guaranteeing a constant quality of the product. The origin of the idea of standardized products, reached through the growing mechanization of the industry lies in the future of the modern society:

*Standardization is not an obstacle to the development of the civilization, but one of its preliminary conditions.* <sup>17</sup>

What Walter Gropius wants to underline is the high value of reducing unhealthy work condition by a higher industrialization on the one hand, but on the other hand also the value of standardized quality of products developed with good criteria through designers.

The so created designs match perfectly the choice of materials and the related production technique. However, the reached standardization eliminates at the origin the “personal taste and human touch” on the object, which is so typical of craft products. Objects can become “iconic” rather than “human”. We can observe this process by recalling in mind the quality of craftsmen products and industrial products nowadays.

Also related to Calligraphy, the choice of how to apply the Arabic letters on a supporting object is conditioned of the used material. Even if, as already stated above, the techniques to apply the Arabic letter went from painting, molding, engraving weaving, embroidering to carving and incising <sup>18</sup>, the technique is related to application, subtraction rather than to additive production. It is easy understandable that on ceramic it is not possible to embroider, while painting and coating gives fine result. The same happens with carving out of stone letters to create one unique piece or composing phrases through the technique of mosaic. Production in a higher quantity of repeating objects are related to moldable materials like clay, form casting of metals or hammering sheet metals over a wooden form.

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<sup>17</sup> Gropius 1935, page 19

<sup>18</sup> Al Khemir, 2006, page 12

As long as there is involved the hand of the craftsmen in the final finishing of the object, light variation due to the execution maintain the human touch in the realization of objects. The quality of the material plays a role, as much as the expertise of the craftsmen or artist.

When it comes to the use of molds and cutting on preformed shapes, lately a simplified process through CNC and laser cutting, this variation disappears and the objects obtain a “standardized quality” throughout all the produced pieces.

This standardization does even not stop when it comes to finishing like the application of ornaments or, like in our case, Calligraphy. The difficulty of applying calligraphy on objects however lies in the creation of words or short verses, which cannot be shorten or lengthen in order to fit with the geometry of the object.

The choice of material defines the tools, methods and opportunities from the outset. There are four main categories of forming technologies which can support the creation of new products, but which need to be selected carefully when it comes to the application of calligraphy: molding and casting; machining and cutting; bending and pressing; rapid prototyping <sup>19</sup>. While the first three methods mainly exist traditionally, the last is a new technology which can increase the opportunity to generate unique pieces by applying the described process in this paper, where the designer/artist generates the digital outcome and handle eventually small variation throughout the ongoing production process.

High precision laser cutting is applicable on many sheet formed materials like cardboard, leather, sheet and any polymeric material.

3D printing allows today to use several materials and qualities from metal to polymeric materials to built a three dimensional form, which is not possible to realize in one piece through traditional technologies. Formed shapes can be also easily scanned and digitalized for a second treatment.

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<sup>19</sup> Thompson 2011, page 8

Multi axe CNC cutting allows to handle complicate shapes and generate calligraphy styles overlaying: what has been hardly managed in stone and wood, now can be reproduced in numbers.

Photochemical Machining can treat thin metal sheets by printing CAD file generated films.

## CONCLUSION

New technologies like the one nominated give to designers, craftsmen and industry to change the way of designing and producing objects: without high costly tooling it is possible to alter the virtual mold which is the digital file and work directly on the object. The paper wants to show that with these processes it is also possible to create a strong connection between the artistic origin of a design, like the calligraphy and the generation of unique objects in an ongoing production process by keeping however the level of costs low.



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