

The Generative Powers of Textiles

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Abstract

The paper addresses an applied research approach to the generative powers of textiles and their global diachronic cultural and aesthetic influence on Art and Design. The author attempts to reveal the powers of Hellenic and North-East Mediterranean textiles on Art and Design development, based on evidence collected from a wide geographical and temporal expanse. Over the centuries diverse textile artefacts have been spreading throughout Europe, inspiring new designs, ceramics, furniture, decorations, founding local design heritages as well as cultivating national ones. The oldest forms of textile art, consisted of geometric figures, formed a common design background around the Mediterranean littoral, becoming the basis for the spread of intellectual and technical skills, providing inspiration to sophisticated artefacts, contributing to Art and Design evolution. The research team investigated the possibility for innovative design ideas and product-design development that results from the thorough study of textiles' culture and heritage in the context of the living memories and identity that is still present, both theoretically and practically. The approach has been in the applied research direction, and investigates the practical and academic value of an extensive knowledge of textiles among those working in the applied arts. The author guided the new designers towards this starting point for design works that are inspired by local textiles, through using the new perspectives of technical developments, with the idea of combining historic data, culture and innovation. Designers are gradually obliged to increase the quality and innovation of their design products in order to be competitive. Thus, the demand for original innovative designs with identity formulated the starting point of the research. Examples will be presented from the research work, the case study, the teaching programs and the product development. The theoretical and practical results of the total work offer good reason for further investigation on the contribution of textiles to the emerging industrial design culture, as well as to the practice of textile design and the active textile-education field. The total research and design development wish to bring new approaches to all fields of multidisciplinary education.

1. Introduction

The aim of the project was to develop an understanding of the values of antique and modern textiles, of their overall generative powers, of textile-design research methodologies. *The objectives* were to investigate pathways for innovative artefacts that result from the combined research on cultural textiles and today's accelerating electronic technology and to explore the role of research, technology and of the processes that lead to innovative artefacts with cultural

identity. The project was *targeting* to create new opportunities, visions, skills, directions and media for textile design students, professional designers and producers.

Cloth accesses an astonishingly broad range of human experiences. It is the raw material from which things are made, and has various associations: sensual, somatic, decorative, functional and ritual. Textiles are part of our everyday lives, their very familiarity and accessibility invites a range of speculations about their personal, social and cultural meanings. Textiles cover our body and our surrounding in thousands of variations, by hiding, protecting, warming, connecting, separating, enchasing and exposing. They follow our life from birth to death. They are materials of enormous importance, prime necessity, great variety and demand. It is actually this opulent variety of textiles that make them an incomparable human creation.

Clothing is made from textiles, which are themselves among the first composite materials engineered by humans. Everyone is wearing clothing. It conveys a sense of the wearer's identity, provides protection from the environment, and supplies a convenient way to carry all the paraphernalia of daily life. Textiles and clothing are also of great importance to the survival of the human race, playing key role in society, too. They are weather protections of the body, interrelated to sex and social rank, expressing characteristics and ways of living and thinking, of groups and individuals, of time periods and societies, projecting differences and similarities, capturing human nature. Textiles transcend boundaries, as they unite and divide mankind. The mode of dress differentiates friend from foe and peasant from prince. Changes in the appearance and types of textiles and garments through the ages are a significant indicator of social, economic and chronological changes.

2. Textiles

Clothes began from the efforts of people to cover the human body by the skin of an animal, to be replaced later by a rectangle piece of loomed cloth wrapped around the body, inevitably forming folds, embracing it in a variety of elaborate ways, creating garments that are often distinguished by their quality and simplicity [1]. Closely connected with the practical need of humans to be clothed is the desire for beautification of the imperative clothing with colours and patterns. From a historical point of view, dyeing is as old as the textile industry itself. According to Greek mythology Ariadne, the goddess of spinning and weaving, was the daughter of Idon, the dyer. This is an interesting chronological coincidence that shows how intimately the art of dyeing was connected with sister arts. Spinning and weaving goes back to the dawn of civilization to at least 8000 years ago, with the first materials probably woven like a basket, without loom [29]. Textile production around the Mediterranean littoral from antiquity was, and still is, mainly a woman's work and to this they devote more time than in their other pursuits. Clothing was usually homemade by the ladies of the house and the female slaves [20]. Quite often the task was considered a religious duty and an honour for women, as it was the case with the '*peplos*' of the statue of goddess Athena. Weaving was an occupation of the ladies of the highest status. In the *Iliad* Homer mentions that goddess Athena wears dresses she wove herself; in the *Odyssey* he states that queen Arete has offered to Odysseus clothes she had made with her female-slaves' help, while Penelope is described to weave and re-weave a piece of cloth to postpone second marriage [30]. Textiles and clothing have been also a great attraction of the travellers of antiquity since the Egyptian and Hellenic Bronze era. It is evident that travelling was quite limited at that time to few intellectuals with curiosity [26]. Democritos, Herodotus, Plato, Aristotle, Ptolemy were some of the well-known travellers of the ancient world and via those travellers curiosity, fabulous hand made rare textiles moved from India and China to Egypt, Greece, Rome and the Black Sea littoral, inspiring and transplanting diverse local cultures, founding local heritages and cultivating national ones.

During recent years, the textile design industry has highlighted the strong position of hand made items and natural fibres. The “*traditional*” fabrics have come back with the use of various techniques of mechanical and chemical finishing. Clothing industries and producers of home textiles had turned back towards natural materials such as linen, cotton and wool into their collections. Natural fibres are applied in a whole assortment of products from clothing, bedclothes and upholstery to window decorations, carpets and fitted carpets. After a period of fascination with plastics, the conviction that natural fibres are especially precious materials is becoming more and more popular. They are ecological and have very good application and aesthetic qualities.

3. Textiles and Cultural Heritage

Designing textiles is a conscious process, carried out by synthesizing visual, aesthetical and applied means, which can be expressed in forms and creations. It is also a subconscious process expressing the designers’ inner world, marked by their identity. The evolution of an idea into an innovative form of clothing has always been a challenge for any designer, unknown or a famous, exercising his or her imagination and reason. The form always emerges from many factors as a result of the original concept, though it is considerably modified during the process of creation. It expresses the artist’s vision and culture, as far as this is possible, within the limitations of materials and techniques. Social groups express their cultural values through their demands, ideologies and preferences, and their aesthetic values have been improved through the distribution of various man-made products, and via their positive or negative appreciation of them. Industries are fully aware of that, and want to influence popular aesthetic values in order to flood the market with products, which are based on their selected standards. It is these very aesthetic standards, which are used by the producers to manipulate consumer demands not only in textile products but also in textile art. The art of design/textile design stands in intimate relationship with materials, purposes, forms and styles. In many instances, depending on the form of the objects, it is also influenced by the materials in use, the manner in which the natural objects are presented, the purposes for which an object is created, as well as by the nature and the culture of the different people involved at different times, reflecting the spirit of the times, the political or religious ideas of the people, and the effects of foreign cultures. The styles so formed are the truthful expression and presentation of the character of the people of a certain area in a certain historic epoch, and constitute part of their cultural heritage [25]. Design is the product of its epoch rather than of a single person, and local heritage is the catalyst that enables the expression of the same designs seen in nature and which are inspired by the same fauna and flora in a different fashion, according to the culture in which it exists. The use of particular designs is linked to traditions, reflecting unchanged beliefs, customs and hierarchies, often with spiritual meanings. There is a complex relationship between textile design and identity, connected to aspects as culture, heritage, religion, social status and caste.

Culture and heritage have made a great contribution to textile development. The oldest forms of textile designs consisted of geometric figures such as circles, bands, straight and curved lines, which were drawn in categorical regularity, according to a certain rhythm, and conforming to the structure of the objects they adorned. They formed the common design background throughout the Mediterranean littoral, were the basis for the spread of intellectual and technical skills and provided the inspiration the Europeans needed to create more sophisticated designs. Local cultures remain one of the outstanding inner strengths of Europe and via history they have long contributed to textile design evolution. Across the centuries, Europe and European intellectuals have preserved their attachment to their heritage. The

values of European cultural heritage are appreciated again, enriched with experience, new ways of thinking and techniques.

Reconsidering textile art and design from a new viewpoint and with new media is a real design work, because during the process of designing, the artist views things without preconception. It is also a human-centred approach, in the very broad meaning of the term, since textiles and culture are fundamental parts of human nature. Of course if one is unfamiliar with the real textile culture, the attempt to recreate or unite it with industrial products can destroy both the form and the artist's intention. The revival of textile culture and heritage through industrial design doesn't mean mere imitation of old designs. Actually they need to be fully understood and a renewed appreciation of traditional culture should be gained. It is vital to develop cultural originality and distinctiveness, and to design textiles and products that reflect cultural background in ways that establish one's identity and originality. When this distinctiveness is reinterpreted in terms of form, image and symbolism, and is compounded into products local industrial competitive powers will be definitely strengthened. Education is a very important factor in forming cultural-consciousness and the increasing opportunities offered by multimedia and the Internet help us to get closer to the values of textiles and cultural heritage [21].

4. Textile Design Research

The research team and the working group faced the fundamental question if textile design is a valid research area and technique - to be proved a valuable one. Design research by definition changes the state-of-the-world through the introduction of novel artefacts, which is the motto of the present case study. Design research is distinguished from design by the production of interesting to a community new knowledge. Design is distinguished from design research within its community of interest by the intellectual risk, the number of unknowns in the proposed design which, when successfully surmounted, provide the new information that makes the effort research and assures its value. Creativity is essential to any design effort. All design disciplines, including textiles, have a long history of building their knowledge base through the construction of artefacts and via the evaluation of artefact performance that follows the construction. Textiles are a strongly construction-oriented discipline, with a history extending over thousands of years to the pre-historic era.

Research in textiles has developed, expanded to technical textiles, while is still maintaining activity in important traditional textiles. Projects integrate textile design with technology and the study of the aesthetic concepts associated with the incorporation of shape and materials. Research is carried out also in the textile/clothing interface, in methods for measurement of textile aesthetics, for fabric mechanics, computer-aided 3D modelling and visualisation techniques, linked to human body, and in face modelling developed to simulate garment drape. Electronic textiles, also referred to as smart fabrics, Intelligent textiles and Nanotextiles are quite fashionable right now, proving that textiles are more than just cloths and curtains. Fabrics can catch bullets, fight infection, light up, warm, cool, and even react at the blink of an eye. Whether used as life-saving device or for sheer novelty factor, the latest innovations in textile effects are opening ways for textile developing beyond conventional limits. Their close relationship with the field of computer wearables gives many diverging research directions. On one end of the spectrum, there are pragmatic applications such as military research into interactive camouflage or textiles that can heal wounded soldiers. On the other end of the spectrum, work is being done by artists and designers in the area of reactive clothes: "second skins" that can adapt to the environment and to the individual. Fashion, health, and telecommunication industries are also pursuing the vision of clothing that can express aspects of people's personalities, needs, and desires.

Conductive yarns and fibers are used for power delivery, communication, and networking. These textiles are created using traditional textile manufacturing techniques: spinning conductive yarns, weaving, knitting, embroidering, sewing, and printing with inks. Leading apparel companies are successfully commercialising clothing with added functionalities, revolutionising fabrics and high fashion markets in the years to come. Textile effects are created with the most exciting technologies of tomorrow, like the shock-absorbent or breathable fabrics. One of the greatest challenges in the fabric enhancement are the Nanotextiles. Improving the quality and value of textiles without impacting texture at all has been very difficult, but scientists have discovered that this can be achieved by modifying fibers and fabrics at the nano scale. Groundbreaking enterprises are making commercial applications using nanofibres and nano-scale membranes and coatings. A system called Robotic Fiber Assembly and Control can mold a non-woven fabric of melt-blown nanofibres onto a mannequin, manufacturing a garment without cutting and sewing, shaping them into lightweight, high-performance protective clothing. Further research is underway to incorporate electro-spinning technology with the system, to reduce garment weights while increasing protection. This technology is available for soldiers and fire fighters to protect themselves from almost anything.

Textile design research can contribute to better theories and practices: the methodological construction of textiles and textile products/artefacts. The phase of textiles research on which reflection and analysis focuses and the level of abstraction to which the reflection and analysis generalize, determine precisely what is obtained from a textile design research effort. The construction phase of a textile design research effort can be an experimental proof of a method, or an experimental exploration of a method, or both. The problem statement is subject to revision as the design research effort proceeds. Evaluation takes place continuously in any design/textile design process, research or otherwise, since a large number of “micro-evaluations” take place at every textiles decision. Each decision is followed by a “thought experiment” in which that part of the textile design is mentally exercised by the designer. Research in the area of textile education is also vital in order to ensure that academics are at the forefront of textile and clothing industry developments, to ensure that the teaching is always up to date, and to prepare the graduates in an appropriate way for the world of work.

5. The Generative Powers of Hellenic Textiles

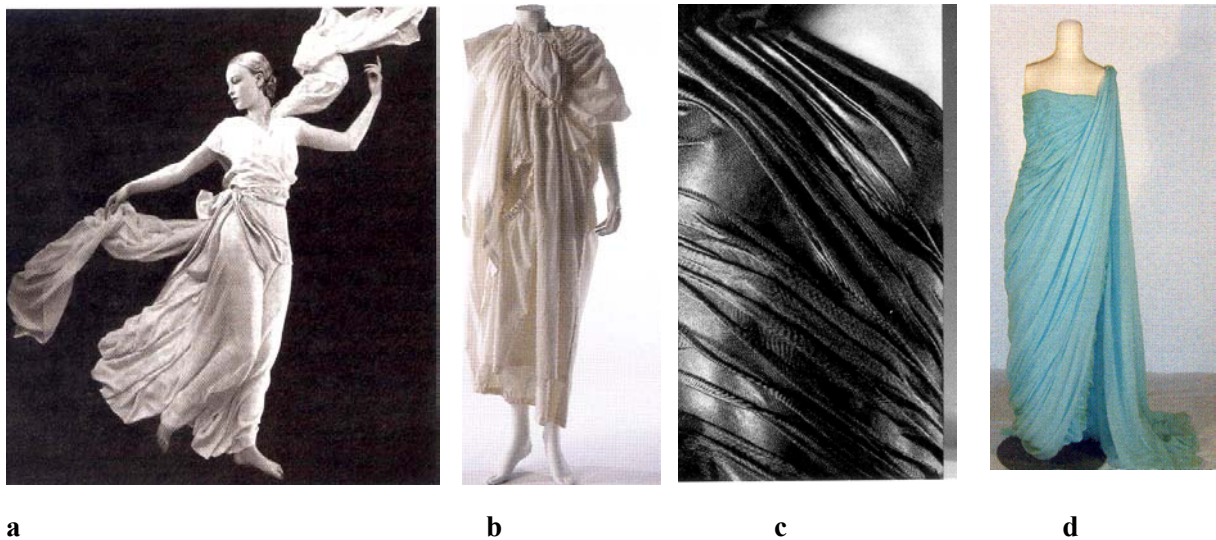
The earliest Hellenic civilizations thrived 4,000 years ago, but their culture still impacts arts, philosophy, science, literature, politics, and even fashion. Ancient Greek clothing is of increasing interest to scholars in many fields, including archaeology, anthropology, art and design. Unfortunately Greek mild climate is one of the worst to preserve archaeological textiles, since only extremely dry climates are ideal for preserving almost any type of fabric. Clothing in ancient Greece was plentiful, of a relatively high standard in terms of materials, construction and design, centred in an aesthetic that idealized the human body, rather than attempting to conceal its natural shape [22]. The Hellenes were always keen on fashion, fine cloths and fabulous decorative furniture fabrics, with evident increasing preoccupation with clothing during the Minoan/Mycenaean, Classical and Hellenistic periods [18]. There is plenty of evidence of very early blooming textile ‘factories’, from the 3rd millennium BC to the Roman era. Spinning, weaving and tailoring techniques were already known in Neolithic times and documentations of woven goods date back to 2000 B.C [3, 5].

Greeks were among the finest to portray fashion and costume with meticulous care and precision. There are untold numbers of frescoes, statues and carvings in pottery, which are revealing their textiles and fashions [9]. There are also great writers such as Homer and the Greek historian Herodotus who has given explicit details and descriptions of clothing and

textiles [13, 14]. Though there are no surviving textiles of the Hellenic Bronze age, except a few scraps of cloth, the well-known impressions of the Aegean islands of Crete and Sandorini display the complex richness of clothing shapes and designs of the era [4, 27]. During the Hellenic Bronze Age the most widely used fibre was flax along with wool, goat's hair and other animal fibres [7]. Minoan and Mycenaean textiles displayed distinctive colours and dyes characteristic of their art and culture [28]. The belief that classical Greek clothing was plain and not ornamented and that Greeks did not know how to make patterned cloths was an archaeological presumption [11, 12]. It is opposed by the discovered textile fragments, the numerous historical descriptions of heavily patterned and highly elaborate hiton (tunic) and peploi (veils), and their artistic representations, painted on thousands of classical vases, spread around the world's Museums, showing men and women wearing garments covered with figured friezes and all-over elaborate patterns [6, 10]. The Ancient classical Greek costume, which belongs to the draped and wrapped convention, is one of the oldest forms of dress to be found, surviving to the present day in many traditional – and Greek - costumes [2] and in haute couture. Ancient Greek dress was more voluminous than that of the Egyptians, and was most often made of fine woollens, although it is thought that the Greeks also had regular access to linen, hemp cloth and silk [23, 24]. Although the Greek costumes had read no form, they managed to stay the same for many generations [8]. They were mostly made up of rectangles of cloth of various shapes and sizes but basically all stayed the same shape for men and women. Like Egyptian dress, The Greeks made many clothing decisions based on this aesthetic that were less than practical choices [19].

Though no ancient Greek dress has survived, modern designers have interpreted the Hellenic fundamental dress forms, as they are displayed on statues, in countless ways and versions [17]. Pleats light and shade continued to follow their path in history and at other latitudes and longitudes [15, 16]. From the so-called neoclassical dresses of the Directory period to the highly experimental investigations of the designers of the 20th century, classical cloth has influenced fashion design in different diverse ways, becoming a power of evolution in the hands of intelligent creators. The endless complex beauties of the simple draped and pleated clothing according to Greco-Roman style caught the eyes of artists of every sort, painters, sculptors and poets, for their delicate artfulness. Over the years styles changed, but the source of interest remained as a perpetual challenge and inspiration to all artists. The drapery in representations of Classical date grafted their aesthetics on to the garments over the years. The return of classical ideal to form in 19th century and early 20th dresses and Cashmere shawls recall the Greek hiton and himation, and the Roman toga.

Modern designers have interpreted Hellenic fundamental dress forms, in countless ways and versions. Madeleine Vionnet's, whose name is closely bound with the ancient draped cloth, evening gowns in shades of white, recall ancient Greek dresses. Her brilliant creation *The Living Statue* of 1931, implying all the concepts of the aesthetic culture of classical Hellenic clothing, revived the statue of Victory with wings (figure 1, a). Issey Miyake (figure 1, c), who is one of the most highly recognized Japanese designers, gained his esteem with a series of ethereal works of pleats and folds according to the ancient Greek manner, combining advanced technology with precise drawing and ethereal simplicity. Mariano Fortuny created the gossamer dress "Delphos" inspired by Isadora Duncan's dancers and the silk scarf "Knossos", inspired by the Minoan Lady with the scarf, of the 2nd millennium BC. The crystallised pleats of Desses (figure 1, d), Fath, Dior, Balenciaga captured a frozen moment of movement of the pleated cloth. The endlessly beauties of Hellenic draped and pleated clothing remained over the centuries a perpetual challenge and inspiration to designers. The culture of Hellenic Textiles are flourishing around the world, moving beyond the traditional Western sphere of influence, as designers explore their cultural, structural and thematic beauty, playing important role in many diverse design disciplines.



a **b** **c** **d**
Figure 1. Real works of art, all inspired by the beauty of the Hellenic cloth. a: Madeleine Vionnet's "Living Statue", 1931; b: Rei Kawakubo dress, 1984; c: Issey Miyake Waterfall body, 1984; d: Jean Desses robes-manteaux, 1960.

6. Teaching and Learning Methodologies in Textile Design

An important issue for the research team was to identify and adopt a teaching-learning methodology. Textile Design education is multidisciplinary, offering a range of textile design specialisms including print, weave, knit and mixed media. It is open and flexible, enabling to cross boundaries from one discipline to another and to direct work towards fashion, interior, craft or gallery outcome. There is a strong emphasis on visual research and drawing for design and concept development. Projects encourage self-motivation and generate personal creative languages. The education of textile designers is by its very nature the education of theory and practice. One cannot separate one from the other without irreconcilably corrupting the historic and process-based links that exist between them. Theory as an agent upon design process/practice, and design process/practice as an agent upon theory, create a symbiosis that are intimately and undeniably bound together. This bond exists both in practice and in teaching processes.

Textile Art/Design students are more accustomed to learning through teamwork, collaborative activities and peer assessment. Some Applied Arts disciplines, such as History of Art, offer a more traditional, academic approach to study. Textile learners prefer a more practical, visual, approach. Design learners are 'visual thinkers'. They appreciate materials, which are well conceived visually, but they can be critical or dismissive of those, which may not meet their aesthetic preferences. Textile artists and designers respond well to materials or activities that provide them with the stimulus to create something. The occurrence of dyslexia in art and design does not affect the design study. Many gifted students who use the new, visually oriented technologies are dyslexic or have other academic learning difficulties. Currently, art and design students are learning to use a range of tools, among which, the most popular are web and e-mail services. In the textile design field the greatest part of learning is independent learning. That does not degrade the role of the instructor. On the contrary, instructors help learning to take place by providing learners with resource materials and chances to test their learning, by giving them feedback on their progress and by helping them to make sense of what they have learned. Textile learning is resource-based. Design learning resources take many forms, including human resources (tutors, fellow-students) and information-type resources (books, databases, on-line databanks, learning packages, lecture notes, manuals). Nowadays, the range of media available to support textile art and design learning is extended

due to many technological developments and important learning outcomes can also be achieved through games, simulations and role-play exercises. The research team adopted the independent resource-based and the teamwork learning approach, focusing on the learning side of the teaching-learning equation.

The adapted teaching methodology was composed of the following actions: *The first action* of the research team was to point all the participating students in the direction of exploring and studying selected periods of textile art and design. The study, by the participants, of the morphology of antique textiles resulted to innovative products. The *Investigating part* included collection of photographic data, sketches and drawings together with impressions, feelings and ideas, presentation, analysis and evaluation of the selected data, within special design teaching projects. It was comprised of three actions: *Field and desk research*, for an academic semester, of a selected cultural area of textiles. The working team created a flexible learning pathway among the different periods of the history of textiles for the participating students, offering them an optimum learning experience from the design data, and greater incentive to benefit from collaborative approaches to their subject. *Collection of textile designs* from the selected period. The participants had to outline what method of research had been used to obtain the information, what references and information had been sourced and could be utilized, and how the collected data had been organized and filed. *Study* of cultural textile designs, organized according to historic periods, within special lectures on the History of Textiles.

The second action was the design teaching projects. The students explored, as sensitively as possible, the developing possibilities of cultural textiles, acknowledging the constituent elements of 21st century and the contemporary way of thinking. The teaching projects involved design students trained to the same level in design/textile design. For all the participants the academic and practical work took place at the Textile Design Studio of TEI of Athens. *The Creation part* that followed included the development of the selected designs into new textiles and products by the participants, following the principle that the conformation of a design should be in keeping within its form and structure but not in complete subordination to it. The designs were treated with emphasis on their cultural values and identity. The total work aimed to create designs that fulfil the demands of the modern consumer and can be produced with traditional and computerized means of production. *Creation of new products*, accompanied with examples of the possibilities of their use, of applications and adaptations. The final products in many cases were developed by hand and via computer programmes, thus offering to participating students work interest, versatility and variety of possibilities and applications (Figure 2). All were created during the educational sessions and via special design teaching projects. A parallel market research was required, too.

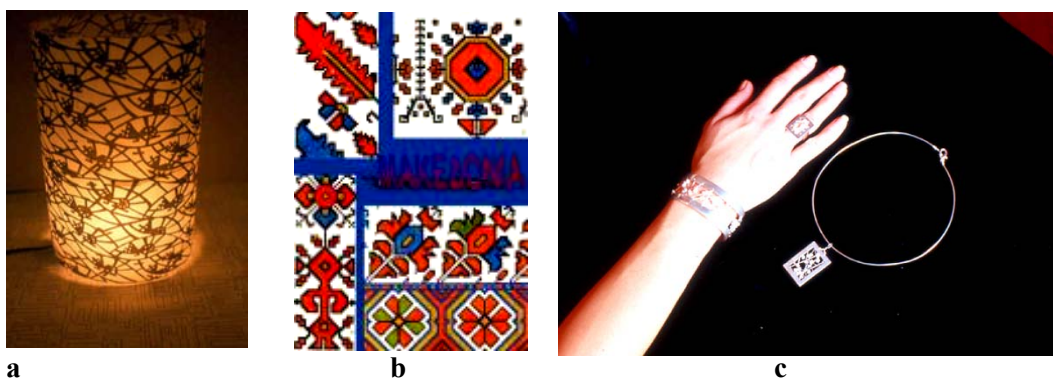


Figure 2. Both the jewellery design, c, and the lamb-shade decorations, a, are inspired and follow the motifs of the traditional cloth, b.

The students' creative minds developed techniques and applications, which led to artistic production of innovative forms for personal or decorative use. In accordance to the research work and inspired by the various presentations of female Minoan dresses from the Santorini frescoes, the students of the Textile and Industrial Design Studios of TEI of Athens developed innovative forms for new industrial products, proposing innovative toothbrushes, designed totally according to the figure lines of the Minoan female fashion, and also a lamp shade (Figure 2, a,) and a silver jewellery set (Figure 2, c), both inspired by a traditional embroidery of 19th century (Figure 2, b).

7. Conclusion

There were many learning outcomes from the project. The research team realized that research methods need complex referencing for the discovery of relevant information. The identification of sources of information concerning Hellenic and Aegean fashion and textile design was important facet of this discovery process. Analysis of the materials and techniques of textile production in the Aegean, Classical and Roman eras was another element of this important agenda.

Textile and fashion design development is multifaceted and operates on many different levels and across subject areas. In this regard it is also essential to analyse the materials and techniques of fashion and textile production in the modern European Industry. The project assisted in determining the value of providing case study material for the student to develop an understanding of value of deep knowledge of design/textile design history in the active product design process. It is expected that this initiative will provide a working model for developing future projects on culture, textiles and design.

The work of the participants was, directly or indirectly, technologically assisted, so the influence of communication technologies on the designer's sensibility and creativity was employed as criterion of the final evaluation. However, it was found that this influence was to a great extent less evident than expected and it did not limit the artistic freedom in creation. In the time of cultural changes, elements such as sensibility, creativity, personality and cultural heritage are still playing a very important, almost ethical, role in students' aesthetics, generating the power of design with or without the aid of technical processes.

The hope is that this approach to textiles will highlight new frontiers in design production, generate new opportunities for young designers and introduce new approaches to all fields of design education. This proposal aims to stimulate further research for design projects, which will result from historical/cultural data, have identity and inspire unique modern products. Simultaneously, the present work intends to open up new horizons for young textile designers with a spirit for innovation based on respect for their history of design. Thus, the educational work is not limited to the field of textile design; neither does it focus only on Greek textiles or design production. In fact, it aspires to motivate and strengthen European and international intercultural transactions.

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