Industrial Design Culture and Textiles Traces - a transdisciplinary look at working conditions, industrial changing and the question of identification of producing and designing people as drivers for (textile) cultures"

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short biographical notes

Prof. Dr. Marina-Elena Wachs (pic: V.Wachs,2017)

Marina-Elena Wachs, Professor of Design Theory, at Hochschule Niederrhein-University of Applied Sciences, Germany - master tailor, tailor directress and industrial-designer - graduated at Braunschweig University of Art with the thesis "Material Mind – New Materials in Design, Art and Architecture" - works as consultant for companies and foundations **- focuses sustainable** and smart design **solutions.**

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Abstract

The research study „Textiles Traces" is focussing on sustainable education and changing of working conditions in the textile industry in European centres of textiles experts to create a perspective of the next education programs for industry 4.0, after the fourth – digital – industrial revolution.

The study is focussing on intercultural codes of typical creation characters, which are the representative icons of society based on individual life courses, which proof the passion of textile

experts, based on handcrafted and developed industrial processes in history, the basis for the cultural competence for the circular economy in the textile industry of today. It is obvious that the textile industry domains of the past – like Manchester (GB), Borås – (S), Krefeld (GER), were the industrial centres with tremendous economic power on the basis of individual experts textile skills. At the same time a change in style of product languages is based on the beginning of a new consciousness in design, generating new style after the World War.

In consequence the relationship between steel and textile, - between men and women and changing role models, between people and things and of >textile behaviour< and because of regional and cultural identification conditions are examined for demonstrating the industrial development in relation to changing conditions; but demonstrating at the same time the need for sustainable education aspects within textiles and design disciplines. (223)

Keywords

Textile traces; textile behaviour; rethink culture; the first industrial revolution: regional and cultural identification; correlation between steel and textile industry; change of life courses and textile nerds; cultural behaviour an textile manpower; the fourth industrial revolution; drivers in (textile) design, sustainable design studies, sustainable European education programs; product values are generating ethical value.

Structure:

1. Introduction – Case study “Textiles Traces in Germany” as part of the greater research project “Sustainable Design Studies - within the scope of cultural theory and material behaviour”

The research study ”Textiles Traces“ is focussing on sustainable education and changing of working conditions based on the regional identification of workers in the textile industry in European centres of textiles experts.

This research study is part of a bigger research project with the subject “Sustainable Design Studies – within the scope of cultural studies and the material behaviour”. The long term research project is focussing on intercultural codes of typical creation characters, which are the results and - as insignia – the representative icons of society – cultural mind (Jan Assmann) – and based on individual life courses imprinted by the development of industry.

Theses typical life courses are at the same time proof for the passion of textile experts, based on handcrafted and developed industrial processes in history, the basis for the cultural competence for the circular economy in the textile industry of today. We have to look back to go forward in sustainable design areas. It is obvious that the textile industry domains of the past – like for example Manchester in Great Britain, Borås in Sweden, Krefeld in Germany, St. Gallen in Switzerland, Lyon in France – were the manufacturing and industrial centres with tremendous economic power on the basis of individual experts skills and “textiles nerds” – as textile manpower. On the other hand the great passion for change in style of product languages is based on the beginning of a new consciousness of design, like the Bauhaus women in Dessau and Weimar created together with the men of the hour – the teacher - in generating new style after the World War.

In consequence the relationship between steel and textile (cultural history of technology, Marina Heßler), the relationship between men and women and changing role models in business and working conditions (Christiane Funken), between people and things (Michael Brian Schiffer) and because of regional and cultural identification conditions (Helga Nowotny) are examined for demonstrating the industrial development in relation to changing social conditions but demonstrating at the same time the need for sustainable education aspects.

2. Looking back to go forward in sustainable design areas

We have to go to the “lieux de mémoire” (Nolte, P.), “places to remember” and to rethink culture, like Pierre Nolte described for France. Every year it starts an excursion for the students of the faculty Textile and Clothing Technology within the course of Design Theory and -History to the Museum Zeche Zoll Verein in Essen: It is a place to remember, where the industrial heritage and the textile industrial revolution can be experienced touched in a physical way. The place is characterised by the typical brick architecture of the time of industrialisation, it is marked by machines, to produce coking coal for the iron and steel industry, the precondition for the textile industry.

Today, the Red Dot Design Museum is located at the Zeche Zoll Verein, every year demonstrating the awards for new good design solutions for different design disciplines, but otherwise with a great collection of our design and product history – our cultural heritage.
(fig.1) The present paradigm of the digitalisation of the fourth industrial revolution of the Industry 4.0 today demonstrates that we stand again at one great mile stone for new economic working conditions – also within the textile industry.
"*In tomorrow`s world, many new positions and professions will emerge, driven not only by the fourth industrial revolution, but also by non-technological factors such as demographic pressures, geopolitical shifts and new social and cultural norms. Today, we cannot foresee exactly what these will be but I am convinced that talent, more than capital, will represent the critical production factor. For this reason, scarcity of a skilled workforce rather than the availability of capital is more likely to be the crippling limit to innovation, competiveness and growth."* Like Professor Klaus Schwab, founder and executive chairman of World Economic Forum, is demonstrating in his book "The Fourth Industrial Revolution", in 2016, at page 44 f, this development and consequences of technological impact of the digital revolution, we have to focus on talents capacities and in so far on "human capital" more than anything else.

3. Human capital and capacities in future society and Textile Industry 4.0

This argumentation leads to my thesis: The challenge of the fourth industrial revolution in Industry 4.0 will generate a new demand for new skills and for new European education programs not only within the textile industry.
At the same time we have to look at changes of societies and individual needs and to serve in a sustainable manner in textile and fashion design / management.
With the help of examining textile heritage / - objects and working conditions, with the help of expert interviews and of comparable literature and digital references, the research on the case study "Textiles Traces" is supported by the interdisciplinary project Textile ArchiSculpture since 2017.
The focus and research interest are shown in the following parameters:

- History / Heritage of products, technological possibilities in relation to industry and society
- Knowing about textile heritage creating value for planet & people
- Differentiation between generation / characteristics skills and cultural behaviour in using new media.
- Different media competence related to imprint of childhood, cultural background.
- In- /Security and not / believing in technology.
- Geopolitical background and family life courses of the individual.
- Chances in change for innovation related to psychological impact on the individual.

"Textiles Traces" are focussing on the one hand on literature, on a comparison of disciplines like

sociology, design history, cultural history of technology, cultural studies (anthropology) and philosophy. On the other hand the textile heritage in Europe stands in relationship to objects, things and peoples' life courses. It follows in the footsteps of the life courses of the Bauhaus women and teachers as an elaborated position on the one hand, and at the worker conditions of the textiles industry after the World War on the other hand: individual choices, fortune or fate.

4 Sustainable design models and textiles traces in the heritage of >work and people<

4.1. Cultural design heritage as part of the European comparable studies, (Significance of 3D collections)

Design is the mediator between products and user, is in the interest of the entrepreneur and the consumer group. Product values are generating ethical value , in using resource-efficient production circles, in addition to the creation of functional and long-lasting cultural goods.
High quality of products is a consequence of sustainable designing in asking about the origin, the need and additive design qualities, in focussing on a responsible behaviour. You have to think, to produce, to invest in a sustainable manner to act responsibly in production and economy circles to come to and to live with a circular thinking model. All of these facts are based on our textiles and industrial heritage and of courses a waste number of individual life courses and impassioned people.[1] The Challenge for the next century would be to connect[2] to the (3-D-) collections and institutions in Germany, important parts of our cultural mind (Jan Assmann) and at the same time it would be valuable to connect these to other institutions with German Institutions and –foundations in design and fashion and textile in the case of the textile creative industry. In the next step, it would be obvious to fall in line with other European centres in design with the focus on textile heritage and in especially to education patterns in textile areas.

4.2 From the first industrial revolution + workers to the fourth industrial revolution + thinkers – case study Textile ArchiSculpture

The first industrial revolution triggered the development of the textile industry until the middle of the 19th century in Northern England and stands in relationship to all of the parameters: sources – technology – capital and human capital – transportation conditions – infrastructure – and business markets. To create the (pre-) conditions for the industrial revolution, many parameters come together first in England, that Great Britain is called the "First Industrial Nation" (Liedtke, R., 2012). To produce fine iron, innovations to get coking coal as precondition for machines made of steel and iron, the steam engine and other more developed functions of energy, which substituted manpower and waterpower and last but not least the flying shuttle by John Kay in 1733, all these parameters created

[1] Cf.: Wachs, Marina-Elena, 2008, Material Mind, Kovac.
[2] Cf.: Nowotny Helga, 2005, Unersättliche Neugier-Innovationen in einer fragilen Zukunft.

the “key factor(s) for industrialisation” (Liedtke, R, 2012, p. 33). The investment in machinery in GB stands in relation to the high salaries in connection with manpower. The power of capital was first shown in an extreme way with consequences for individual life courses and the society: when many weavers lost their work in consequence of being substituted by innovative *parameters* that the Flying Shuttle and a faster production with higher output generated. Manpower came into consideration later on as human capital again, when Samuel Crampton’s innovation of the Spinning Mule in 1779 and the differentiation to weaver specialists founded a so called labour aristocracy, to generate highest quality of fine cotton fibres for textile production.

When the development of transportation and global network – in relation to the parameters of sources and manpower – generated the success factor of the first industrial revolution, it is the rapidity of information transport for today regarding the fourth industrial revolution (cf. Schwab, K). The key factor of the present digital revolution is the time to *evaluate* digital data and to *integrate* the benefit into the right concept for the market. It is the question about the value of data, the characteristics, which define the price of a product and service today. But how to find the right parameters to evaluate the price of a worker, or should I say of a *thinker* today, of the experts of the textile industry? We have to look for the right combination of media: when do we need analogue tools and when will it be more efficient to use CAD-systems? What about the skills and the value of the textile experts, if we are talking about only *two* employer groups in the future?

The fear about the first Industrial Revolution during the Biedermeier time could be compared with a feeling about insecurity of all the information spread by the world wide web, and the fear that all robots will substitute the peoples’ ability to work. We have to look at the individual life course for today, when work spaces are not locally needed because of the digital work possibilities. The fourth industrial revolution gets the chance to both believe in technologies and robots unlimited possibilities AND to come back to analogue sustainable slow design and engineering working process: just the clever combination of both will generate the benefit.

Sustainable design models and textiles traces in the heritage of >work and people< (Schiffer, M. B., 2009) are examined in some case studies by the project Textile AchiSculpture by Marina-E. Wachs in the year 2018[3].

Cultural textile heritage is part of the European comparable studies, as a question of identification and this as benefit for satisfied working conditions, which triggers innovation: the drivers of Textile Industry 4.0 in design, engineering and management.

Theoretical concepts in design and design sciences will drive the design future. The interdisciplinary design project >**Textile ArchiSculpture**< (2017-2019) (original >**Textile ArchiSkulptur**<) is connected to the just mentioned research work by Marina-Elena Wachs, highlights the textile heritage in North Rhine-Westphalia (NRW), and connects the textile expertise of Europe. On the one hand it

[3] cf.https://web.hs-niederrhein.de/faculties/textile-and-clothing-technology/research/textilarchiskulptur/

analyses concise textile industry locations within the scope of textiles studies which count as textile heritage of technological history. On the other hand it refers to the relevance of representatives of textile production facilities and their special correlation among each other. The characteristics of the textile heritage become visible in cities by the help of architecture, industrial culture, textile product design but also via the résumés of dedicated textile sponsors and drivers for innovative design; All of these parameters are in relation to each other – even in a future digital (production-) world.
The topic Textile ArchiSculpture pursues the textile industrial culture and the textile architecture by exploring and connecting Europe's light houses of the textile industry.

Hence today's play with textile sculptures serves, in connection with textile industrial architecture research, the search of connections in the area of NRW and beyond. With this project we would like to connect: partners of the area of NRW (Lower Rhine, Germany) and beyond throughout Europe: Design connects European textile sites via a huge textile cultural and industrial heritage, it connects textile experts and textile generations for the digital textile (production-) world of tomorrow in the form of sustainable textile solutions. Textile ArchiSculptures creates textile linkages and the textile expertise of tomorrow. See some case studies in summery in the catalogue at the faculties website.[4]
Talents such as human capital are the prospective benefit, for the next industry 4.0.That is the reason for, that European interdisciplinary and intercultural education program would be worthwhile, the best investment for Europe to a stronger world's position in the textile industry again and to slow down a geopolitical crises.
One of the research results is the BENEFIT for interdisciplinary and intercultural education programs for the future in design – engineering – and management in the textile industry: Innovations in the advanced textile digital world will be driven by the identification of textile talents, the agreement on the one hand to the transformation and abstract understanding of key factors of the fourth industrial revolution but on the other hand on satisfied working conditions in an interdisciplinary and intercultural positive team work – based on inter- and transcultural education programs.
Looking back to go forward means not only to look at changing working and life conditions of people in history but to look twice at the education system in design, engineering and other industrial disciplines in former times.

4.3 System of signs in relation to identity and identification - to education and life courses

Theoretical concepts in design and design sciences will drive the design future.
Looking back to the **1960s**, when the University of Arts Braunschweig and other universities of arts covered design education, and during the same time Roland Barthes' study of the "Fashion System" attempted to find and generate a special field of >design theory<, Barthes, as a philosopher said:

[4] https://web.hs-niederrhein.de/fileadmin/dateien/FB07/Forschung/Forschungsprojekte/01Messekatalog_archiskulpturProfWachs2018small.pdf

"My main intention has been to reconstitute step by step a system of meaning, […]to reconstitute the semantics of actual Fashion. […] The object of analysis […] is a true code, even though it is always only "spoken". Hence, this study actually addresses neither clothing nor language but the "translation", so to speak, of one into the other, insofar as […]a system of signs."[5] It is a system of signs and of behaviour! we can consider in 2018.

In this context it is important to understand the difference between the power of product design within a three-dimensional object and fashion or textile in a represented way of a medium, which is creating a design system. This means a >design system< with typical characters of an object, like philosophers in ancient times had described about the Roman way of clothing or like in 1955 the "New Look" "designed" a new symbolic meaning. The field study of >Textiles Traces< would show us a new way of thinking about design systems; if we compare the "Little Black Dress" as classical design, with the "Black Box" in product design, you have to know how to read and reflect on the semantic meaning of classical objects. The field studies of industrial design offering a focus on FORM during the 1950s: "The Beauty of Form" and the paradigm of form & function, function & functionalism (Max Bill) were then postulated.

There are different levels and methods to look at art and design systems with a historical perspective, with an anthropological perspective and about the sociological agenda (Fletcher, Kate), in a semantic way to analyse the meaning of artificial codes, and the ethnological perspective of human behaviour in "using" things, sculptures, services and concepts.

As a scientist of design, based on an education of crafts and industrial design, I found another analytical way to define a valuable system of design codes: >from cut to context – an analysis on six levels to read and to create things and concepts< for the future.

In this research study about Textiles Traces, I will translate this model into textile theory and to take benefit from the relationship to textile and design engineering in case of industrial design. We may take benefit from looking at design history to find a sustainable model for designing the future – in a semantic way and, at the same time, thinking about designing in production circumstances – as well as in working conditions. The semantic meaning of product languages is adapted to the state of the art of design engineering conditions – also within the textile education!

4.4 Sustainable thinking and acting in design - and in design education: a question of cultural value and passion for regional (working) conditions

At this school the work created by hand shall be ennobled to the rank of True Culture of Form, which must firstly hold its ground in the area of Brunswick and Lower Saxony. May form values be created in cooperation with other art colleges, and may they later turn into economic values[6]
(Karl Wollermann, 1953!)

[5] Barthes, Roland, 1983 (1967), The fashion system, translated form the french by Ward, Metthew and Howard, Richard, London: Vintage Books, S. x/forword f.; Compare: French original: La Système de la Mode, 1967, S. 8.

[6] Wollermann, Karl, 1953, Werkkunstschule Braunschweig im Jahre 1953, in: Festschrift zur Eröffnungsfeier des neuen Gebäudes der Werkkunstschule Braunschweig, 18. April 1953, Werkstätten der Werkkunstschule Braunschweig.

These words, quoted from Karl Wollermann, 1953, the first director of the first school for applied arts in Braunschweig, are the connecting words between several design educations in Germany during the time after World War II. To build up with ones hands: a new spirit and passion for new forms new creations.

5. Collective heritage and social value shaped by design drivers and cultural backside – the next Design Traces and textile behaviour

Which were the values yesterday, time for a new form, to live with objects creating the all-day behaviour and life courses. It is not only the great narrative value for the individual of a textile heritage within the cultural mind (Jan Assmann), which is represented by an object from the grandmother or created by the grandfather. It is a collective heritage, which gives us social value back and shows us the state of the art of technical development of former times, to take benefit from.
At the same time, it gives us not only inspiration to rethink the conditions of former times, about rituals and representatives, it gives us the possibility to reflect the needs for tomorrow.
Valuable textiles artefacts are the proof of the corporate identity of people and things and regions, a proof for typical life courses in relationship to industrial working conditions and individual skills and to the textile behaviour or these people. In history the textile skills stood in relationship to regions, to the lieux de memoire, The study Textiles Traces is focusing on textile identities and next textiles sustainable traces in "rethink textile culture"[7].

In rethinking culture and considering "textile behaviour" the benefits of this perspective on "Industrial Design Culture", are the following:
I. Interdisciplinary and intercultural education programs for the future in European design – engineering – management are linked with educational programs for (the textile) industry. II. Innovations in the advanced textile digital world will be driven by the identification of textile talents, by the agreement on the one hand to the transformation and abstract understanding of key factors of the Fourth Industrial Revolution but on the other hand on satisfied working conditions in interdisciplinary and intercultural team work – based on inter- and transcultural education programs. III. Best educated forecasting talents and European study programs are an investment in human capital – and innovative sustainable productivity – as key capital aspect in the future of digitalized (economic) and creative industries and – world. (words: 3634 + abstract 223)

Translation by Viktor Schmidt, 2017, origin:„Das Werk der Hand soll an dieser Schule den Adel echter Formkultur erhalten, die zunächst im Raum Braunschweigs und Niedersachsens sich so zu behaupten hat, daß in Gemeinsamkeit mit den anderen Werkkunstschulen Formwerte geschaffen werden, die sich später in Wirtschaftswerte verwandeln."

[7] Cf.: here: chapter 2, Looking back to go forward in sustainable areas.

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