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For Nature/With Nature: New Sustainable Design Scenarios

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Learning by Doing and the Role of the Body in Knitting Tasks: An Integrated Approach on Ergonomics and Social Sustainability in Fashion Design

Martina Motta, Giovanni Maria Conti, and Hassan Sadeghi Naeini

Abstract Knitting, one of the most ancient human handworks, is transitioning from a purely manual process to a technological industrial practice supported by digital tools and advanced machinery. This transformation is challenging the learning process, traditionally based on the tactile experience, the manual interaction with the medium of creation, and the reiterative learning through mistakes. Computer-controlled machines are changing the design and learning processes of knitting, as they change the memory of the body, gestures, and thoughts. In this transition, it is essential to avoid the overcoming of technology over man, in the Industry 5.0 symbiosis between human and machine towards sustainability and workers' well-being. This study combines ergonomics as a multidisciplinary science with knit design. Through in-depth observation of knit design students working with manual machines and digital ones, researchers investigated the two learning-by-doing processes in terms of ergonomics, observing body movements in relation to learning out-comes and students' satisfaction. To assess the body postures the RULA method was used, while data gathering was done with questionnaires among students. Starting from results showing that the process of learning-by-doing is perceived by students as more relevant in manual tasks than in digital ones, the authors aim to understand how technology changes the relationship between the human body and the gestures of knitting, to comprehend the relevance that manual intervention keeps when working with software and power knitting machines, and to detect the memory of the body that is kept while switching between the manual work and the digital one.

Martina Motta wrote sections 1, 2, and 4.2; Giovanni Maria Conti wrote sections 3, 5 and 6; Hassan Sadeghi Naeini wrote section 4.1.

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1 Introduction: The Experience of Learning Between Physical and Digital Environments

Diverse studies in neurosciences (Eimer 2004; Hatfield and Allred 2012) explain how the human brain activates similar areas for manual work and for movement in open spaces: in both cases, it is coordinating visual processes with motional ones. The brain is merging visual information with spatial perception: a body that moves in a space and two eyes that supervise, control, learn those movements. We can say this is the most general condition to be able to think reality and to learn from situations.

The moment of learning is where declarative (Grote-Garcia and McDowell 2011) and procedural memory (Zichlin 2011) come into play. Declarative memory, located in the cerebral cortex, i.e., in the outer layer of the brain, is used to remember data, while procedural memory lays deeper (i.e., subcortical), and is the kind of memory that makes us able to ride a bicycle even after years of not doing it anymore. We could define it as a memory of the body and of space, or of the body in space (Falcinelli 2022).

Falcinelli (2022) recalls some recent studies that highlighted how—when it comes to studying—it is easier to memorize ideas and concepts using a physical support (e.g., a book) rather than the monitor, and the hypothesized reason is precisely due to the spatial elaboration made by the brain: while the printed page is still, digital pages tend to make the text and images flow and change the shape of the general layout.

The same dichotomy happens in knitting, which despite being one of the most ancient handworks practiced by humans, is experiencing the transition from a purely manual process to a technological industrial practice supported by digital tools and advanced machinery. Exactly in the same way as we experience the diffused idea that paper is outdated and is progressively being replaced by screens, the general perception of knitwear is that the way of designing, learning, and working is leaving the physical support of manual machines to replace them with software and power knitting machines. To recall again Falcinelli (2022), the digital media do not exclude the physical ones, and at the same time there is a few space for a nostalgic apology of the manual: the key is the aware distinction of the two, as thinking with and on the screen is different from thinking with and on paper, or with and on a manual knitting machine. Different media result in different reasoning, creating, and learning experiences. The interest of the study presented here is not to define the dominance of one over the other, but to understand how our thoughts change when the medium and the technique change, and to investigate the role of both in the contemporary reality.

If design is by its nature the discipline of experiential learning, as it addresses ill-defined and real problems (Cross 1982; Brown et al. 1989; Friedman 2008) in

the overcoming of the division between thinking and acting, what happens to the learning experience when the medium changes?

When we knit on manual machines we coordinate eyes, mind, memory, action in perfect synchrony. The hands move and control the yarn, touch the material, feel the thickness of the resulting fabric, while the eyes watch the fabric taking shape, control every single stitch, check the progressive creation, the mind learns and processes, the memory recalls previous experiences and records new ones. Moreover, this synchronism would seem to help concentration: the physical contact allows to fix ideas, to see them, to think deeply about them, making the actions dense and meditative. For decades, indeed, the learning process has been based on the direct tactile experience (Growth 2016), on the manual interaction with the medium of creation (Manzini 1989), and on the reiterative learning through mistakes.

We get close to the concept of education expressed by Peters (1965) and Cross (1982), who said that being "educated" means not just to pursue a result but to be conscious of the activity someone has done. Related to this, there is also Schön's (1983) concept of the designers as "reflexive practitioners", who approach problems, think and make products through complex processes, reflect on what they are doing (reflection-in-action) and, afterwards, reflect on what they have done (reflection-on-action) so that they consequently learn from that.

On the other hand, the computer and the power machine allow to re-elaborate ideas quickly and to be fast, associative, and productive. We are in front of two ways of knitting that require different mindsets and have a different impact on the memory of the body, hands, gestures, and thoughts. In the shift towards the Industry 5.0, centered on symbiosis between human and machine (Longo et al. 2020; Xu et al. 2021); and on the respect for the planet and workers' wellbeing (Breque et al. 2021), it is essential to define the boundaries between the two practices, to pursue balance between craftsmanship, design, and technological evolution (Annichiarico 2009), and to avoid the overcoming of technology over man and hand.

What is today the role of manual knitting? What is its relevance when working with software and power knitting machines? Does the body keep any memory of the manual knitting when we work with digital? How did technology change the relationship between the human body and the machine?

To answer these questions, this paper investigates different processes of experiential learning by narrowing the attention on how the body learns and remembers. Combining the diverse expertise of the authors in ergonomics and in knit design, the study involved knit design students working with manual knitting machines and with digital ones, to observe their body movements in relation with their learning outcomes and satisfaction.

2 Manual and Digital Knitting: Two Different Media

As stated elsewhere (Motta 2019), in knitwear the merely industrial aspects and the artisanal ones, that may seem so distant, are bonded together, and constitute the fundamental pillars of the discipline. The culture of knitwear is made of materials, shapes, techniques, and stitches that, despite they retain their ancient allure related to handmade, evolve with the Zeitgeist and are today the fundamental elements of a productive industrial sector.

Knitwear certainly has a centuries-old tradition related to the manual techniques of hand-knitting. Its origins date back to when human beings started to weave yarns with fingers, around 1000 BC (Sissons 2010), even before the advent of knitting needles. Over the centuries, hand-knitting successfully produced any kind of accessory and garment, and evolved as part of the human society, perpetuated through generations, charged with symbolisms and techniques that articulated the rich cultural heritage of manual knitting (Sissons 2010; Black 2012; Taylor and Townsend 2014). More than just as a domestic practice, hand knitting spread as a profitable commercial activity and evolved from a hobby into a modern industry starting from 1589, when the English Reverend William Lee invented the stocking knitting frame. No more one stitch at a time but whole rows knitted at once. Knitting became faster and faster, opening the path to the development of the knitwear industry and the growth of mass-production (Sissons 2010). Until 1970s, manual machines were used for industrial production, making it faster while still relying entirely on the manual intervention of human beings. Their presence helped to preserve the craftsmanship aspect as an intrinsic value in all the processes of industrial knitwear even during the last fifty years, when the introduction and the evolution of power knitting machines with their software is progressively jeopardizing manual techniques and their role in a contemporary designer's work.

Indeed, manual machines are still in use in two main situations –aside from private hobbyist activities–: the teaching and learning, and the very first prototyping phases of knit design. The reason why they are still useful in a context that provides much more advanced machinery is that they allow the knitter to clearly see every stitch, understand how it is formed, adjust settings while working, check and learn from mistakes, intervene directly on the fabric to solve problems, and to overcome some limits by acting directly with the hands on the manual media. Moreover, they allow the eye to look and the hands to touch and feel the material, to check the yarn that is becoming a fabric with its thickness, compactness, opacity or transparency, color combinations, feeling. We can understand how valuable the haptic dimension of material-making remains for teachers and learners, as well as for designers to start generating ideas and experimenting with knitted structural techniques or fabric manipulation methods.

On the other side, the industry has evolved with highly specialized software and computer-controlled knitting machines. Here, the production of a knitted piece happens in two separated and consequent moments: the software programming and the machine setting and processing. All the variables must be set in advance through

the software, which works with codes that represent knitted structures and shapes. Once the program is completed, the operator moves away from the computer to reach the machine and set it up by matching the electronic parameters with mechanical settings and by adding the yarns into the yarn feeders. Power machines are expensive and mechanically complex, even dangerous due to some sharp components and automatic functioning: security regulations impose the machine to operate with protections that prevent manual intervention on the needles. Settings are controlled on a small screen before the start, and, apart from few parameters, the work cannot be modified while knitting.

The complexity of software and machinery, which are "such that the instruction is non-negotiable and based on the principle of there being a right and a wrong way of doing something" (Taylor and Townsend 2014, p. 16), require a precise set of skills and advanced knowledge of technical programming alongside the expertise in knit craftsmanship. This often represents a barrier for designers, who need the constant assistance of an expert technician and are limited in experimenting on their own. Today, a large part of the realization and success of designers' ideas depend on the attitude and skill of technicians (Taylor & Townsend, 2014), and the more technologies are up to date, the more designers have to rely on the programmers' support to control or even gain experience with these fundamental tools (Motta and Dumitrescu 2022). If the evolution of industrial knitting technologies could boost design and product development, pushing the boundaries for designers' intervention, many authors still report that technology is not being used to its full potential by designers (Evans-Mikellis 2011; Yang 2010; Underwood 2009; Smith 2013) due to the expansion of the domains of knowledge they need to control.

As stated before, different media are meant to be used for different purposes and consequently approached with appropriate mindset. To recognize and understand the value of digital tools is fundamental for researchers to fill the existing knowledge gap and exploit each advancement while avoiding the overcoming of technology over human and preserving the cultural value of craftmanship.

3 Comparison of Methodologies

This study is both exploratory and explanatory-qualitative, and involves inductive and deductive processes (Creswell 2014; Bauer and Gaskell 2000). As a result, the research approach lays the groundwork for an interdisciplinary approach by investigating the current complexity of knitwear design from an ergonomics perspective. The methodology used combined the Grounded Theory (Glaser and Strauss 2017) whose research reference influences the procedure of the data coding phase, and the triangulation of results observation (Kawamura 2015; Denzin and Lincoln 2006), used to describe how the data was collected, constructing a different qualitative concept by observing students in the field (in the laboratory) during their work. If it is true that practice should be based on a scientific theory that can only be obtained through controlled experiments (Schön 1983), then in knitwear the 'testing' phase

takes on the same importance as the finished product; ergonomics, the 'way of doing things', and attention to the 'body' become an integral part of the final design.

In terms of the results, during the research, two surveys have been made to verify the results of the observation (reported in Sects. 4.2 *Step 1: wellbeing of the knitting body* and 4.3 *Step 2: Learning while knitting*).

4 Memory of the Body

This section introduces the observation done by the researchers considering the drivers given by Ergonomics together with the knowledge on the processes related to Knitwear Design to investigate the relationship between the body, manual tools and digital ones during *learning by doing* processes.

Step 1 of the investigation focuses on the wellbeing of bodies while working with manual and digital tools, while Step 2 was aimed to understand how the involved bodies perceived they were learning while knitting with manual and digital tools, what and how deep.

4.1 Ergonomics in Design and Fashion

Ergonomics as a multidisciplinary science has a wide scope in which some subjects are highlighted such as workstation and tools design, product design based on physical and emotional users' needs, prevention of work-related health hazards, and so on (Salvendy and Karwowski 2021; Sadeghi Naeini 2022). The study of human beings, users' satisfaction, and man-machine interaction are another scope of ergonomics (Salvendy and Karwowski 2021; Sadeghi Naeini 2019; Das Neves Brigatto and Paschoarelli 2015).

According to IEA (International Ergonomics Association), Ergonomics (or human factors) is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data, and methods to design in order to optimize human well-being and overall system performance. Practitioners of ergonomics and ergonomists contribute to the design and evaluation of tasks, jobs, products, environments, and systems in order to make them compatible with the needs, abilities and limitations of people (Sadeghi Naeini 2019, 2020; Tosi 2020).

In fact, ergonomics follows a dual goal of health and productivity, in both workstation and product design toward sustainability and community quality of life (Sadeghi Naeini and Zolfaghari 2020). The scope of Ergonomics may be categorized into five subdomains, e.g. Micro-, Macro-, cognitive, cultural, and environmental ergonomics (Sadeghi Naeini 2022). Each branch concerns some specific area as follows:

- Micro-Ergonomics: Anthropometry, physical activities and fatigue, work physiology, ergonomic design for product and workstation based on physical characteristics.
- Macro-Ergonomics: Socio-technical concepts of work, work organization aspects, shift working and rotational procedures and planning.
- Environmental ergonomics: noise- humidity, temperature, radiation, vibration.
- Cognitive Ergonomics: perception, sensation, emotional aspects of design.
- Cultural Ergonomics: Social aspects of design, ethics and cultural aspects of users and community (Fig. 1).

Ergonomics considerations in industrial sectors help both employers and employees to have safe, healthy and sustainable place. Undoubtedly textile manufacturing systems such as other industrial sectors need ergonomic intervention and over the past few years, raising the number of conducted research and studies in ergonomics about the fashion industry, clothing functions and comfortable garments are considerable Das Neves et al. 2015; Teyeme et al. 2021). Indeed, industrial ergonomics in textile and fashion design concerns occupational health among both white and

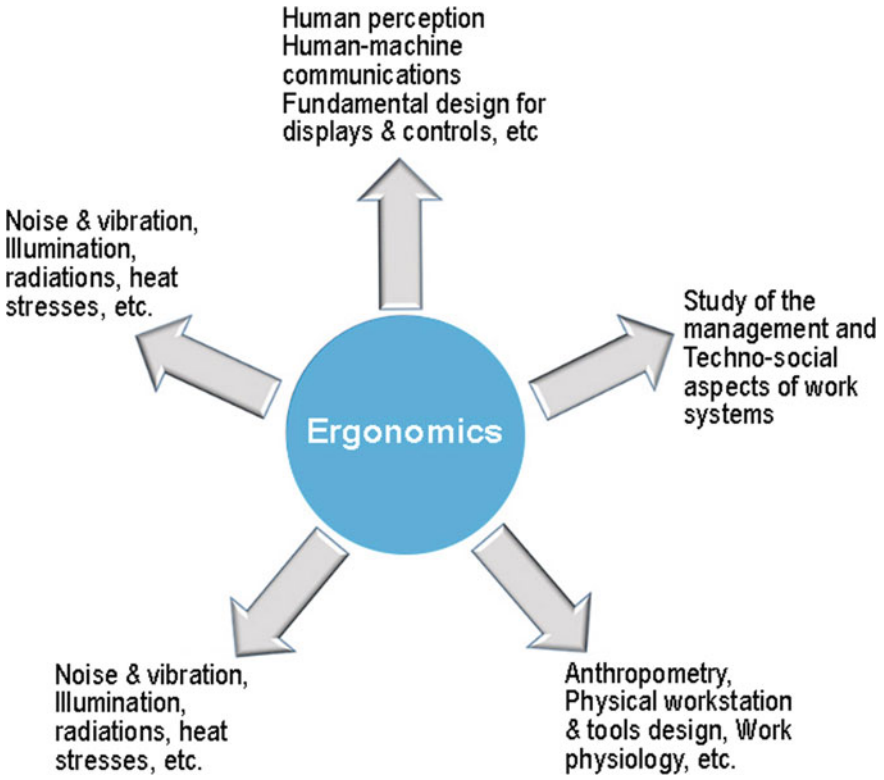

Fig. 1 Ergonomics scope. *Author* Hassan Sadeghi Naeini

blue collar workers, workstation design and related product design; however, it is not limited to industrial sectors: in other word industrial ergonomics concerns all sorts of tasks, including those performed at working stations in educational centers. Ergonomics interventions in fashion design processes be it in industrial sectors or elsewhere, also involve some aspects of sustainable development. Ergonomics in the fashion industry is quite a recent research field, and is growing fast (Martins and Martins 2012; Yang 2016).

4.2 Step 1: Wellbeing of the Knitting Body

This phase focused on the physical aspects of ergonomics interventions. Physical ergonomics explains how workplaces fit with the human body and anthropometric characteristics toward the prevention of work-related musculoskeletal disorders (WMSDs). WMSDs are known as one of the prevalent occupational disorders (Hossain et al. 2018). In this study, we also focused on workstation assessment to figure out the awkward postures among our research samples, because one of the main risk factors for WMSDs is awkward postures (Ezugwu et al. 2020; Lamontagne et al. 2022).

Method and participants. The participants in this descriptive study were students in the last year of the Bachelor of Science Program in Fashion Design at Politecnico di Milano (50 students) analyzed while working in the knit lab. Among the participants, the body postures of a volunteer sample made up of 5 students (3 F, and 2 M) with different body sizes were analyzed by Rapid Upper Limb Assessment- RULA method.

20 out of the 50 students involved filled out an online questionnaire including demographics information and some questions about their tasks, providing subjective responses about their experienced limbs pain and fatigues (based on the Standard Nordic Questionnaires (Namwongsa et al. 2018).

Posture assessment. In Ergonomics, there are different methods for assessing body postures. The appropriate methods should be chosen by considering the task analysis objectives and tasks circumstances. In this study, the RULA method (McAtamney and Nigen Corlett 1993) was selected.

In the RULA method, the positions of both upper and lower extremities are evaluated. Besides, force exertion or weightlifting are also qualitatively assessed. Each part of body gets a specific score based on its posture and force exertion, and each score shows the degree of awkwardness of a posture.

Results. The weight and height average of included participants in this study were 168.5 Cm (SD = 6.4), 56.6 kg (SD = 6.3), respectively. According to in-depth observation and RULA analysis (Fig. 2), 65% of limbs and postures need ergonomics intervention in the near future.

Questionnaires analysis show that when working with manual machines, about 56% of students work in standing for more than 4 h per day.

Percentage of sedentary tasks changes in two work activities considered (Fig. 3).

Fig. 2 Assessed workstations and body postures. Photo by Hassan Sadeghi Naeini

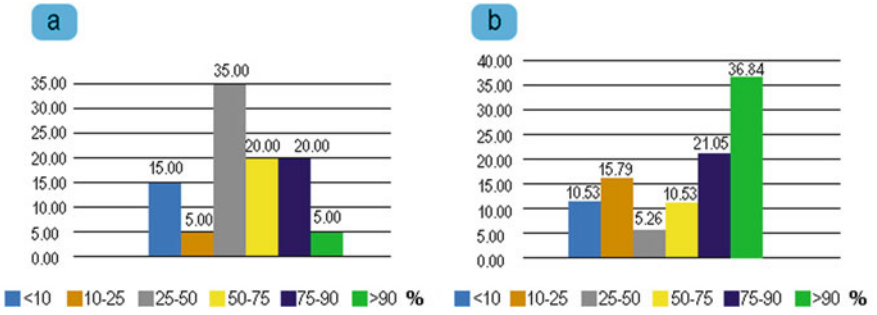

Fig. 3 Percentage of sedentary work with (**a**) Manual knitting machine, (**b**) Shima Seiki machine. *Author* Hassan Sadeghi Naeini

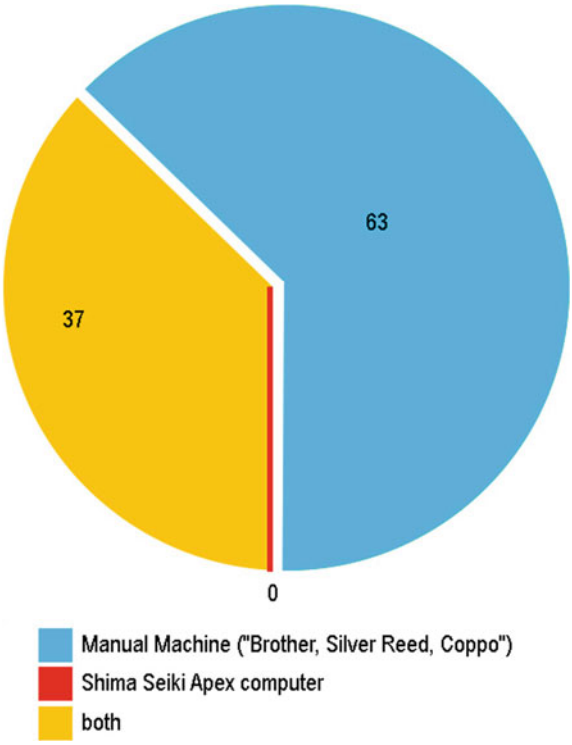

Fig. 4 The percentages of subjects' answers about when learning by doing happens during their task. *Author* Hassan Sadeghi Naeini

The results show more than 75% students do not adjust their seat height when working with a Shima Seiki Apex—VDU computer, and 95% of them do not adjust the backrest angle.

The percentage prevalence of experienced fatigue and pain in low back, neck, and shoulder during work with a manual knitting machine (Brother, Silver Reed, Coppo) were 13.2, 11.8, and 8, respectively, while during work with the Shima Seiki Apex computer system they were 5.6, 7.5, and 4, respectively.

Students also reported headache and forehead pain (15%) during work with VDT.

Both machines are enjoyable for the students.

Figure 4 shows the students' opinions about when learning by doing happens during their tasks.

4.3 Step 2: Learning While Knitting

Method and participants. The participants in the second step were 31 students in the BA and MA in Fashion Design at Politecnico di Milano, familiar with both

manual machines, electronic ones and the related software. They have been observed in their activities in the knit lab for a duration of 7 months, twice a week.

At the end of the observation, the students filled out an online questionnaire providing subjective responses about their experienced with the two media.

Results. Participants say it's easier to get familiar with manual machines, while electronic machines are difficult or very difficult to approach for the 42%.

74.,2% declares manual machines help in understanding electronic ones, and 58% declares they help also in approaching the software, that is perceived as hardly accessible without any experience on the manual machine by the 67.8%.

Concerning memory, the 77.4% is able to remember perfectly how to reproduce medium complexity structures with manual machines, while only the 9.7% declares the same if they had to use programming.

When given a knitted structure, 93.6% is able to reproduce it with manual machines (58.1% remembers all the steps, 35.5% would be able to do it when in front of the machine); when asked about the ability to program the same structure, the 67.7% would be able to do it only in front of the software, and only the 3.3% could do it by heart.

About gestures, the 90.3% acquired and made some gesture natural and automatic with manual machines, versus the 9.7% who feels automatically familiar with the hardware and the 3.2% who acquired automatic gestures in using the software.

Mistakes come out as fundamental with manual machines, with the 96.8% of participants saying the learned a lot from mistakes. With the software, mistakes are useful for the 48.4%, average for 35.5%, and not very useful or not at all for the 16.2%.

Positive feelings are related to the manual work: the opportunity to intervene and to control the manual machine makes the 64.5% feeling calm, and the 51.6% feeling confident, while only the 19.4% feels unsecure or stressed.

The table reports answers to the question "Do you prefer manual or electronic knitting machines? And why?".

Manual machines 83.9%	Electronic machines 16.1%
With the manual machine I have more control and can change parameters as I work	Electronic machine seems to me more engaging and stimulating than the manual one. I believe you can experience stitches and techniques more quickly and intuitively
Although the result obtained by the software is often qualitatively better, the effort and commitment required by the manual machine are more satisfying	I really like using the electronic machine, due to the speed in which the cloth is programmed and with which it is knit, so I can see my ideas realized in a short time, also thanks to the renders that can be created. In cases other than a jacquard, however, I prefer to first try the stitch structures on the manual machine, and understand what works or not in a context in which I can act directly on the fabric while I am knitting it

(continued)

(continued)

Manual machines 83.9%	Electronic machines 16.1%
I feel I have more control in case something goes wrong, unlike electronic machines	
On the manual machine there is the sweat of a thousand battles, they are the ones that make it automatic for you to carry out a tarpaulin or repair it. Spending little time on the electronic one, you quickly forget everything	
Sometimes ideas come out while you knit, and it's not like that with programming	
It gives me more security	

5 Discussion: Understanding How Design Thinking Changes Knitwear Through the Manual and Mechanical Processes

We see from the result how the body reacts and relate with the diverse media and how manual actions create a stronger bond between what is done and what is learned, contributing to consolidate notions and procedures.

In knitwear design, the first thing you learn is manual practice, together with industrial design oriented towards the manufacture of products using technologically advanced machines. A knitted product cannot exist without knowledge of the movement of the yarn in a machine which is why, in knitwear design, teaching always begins with manual practice using needles and ball of yarn. This traditional, slow, and repetitive work becomes the basis of technical competence on which theoretical and practical knowledge can be transferred over time. As has been repeatedly proven, it is the yarn that, through a sequence of decreases and increases, together with different stitch structures, generates a shape. Nothing more.

Therefore, think with your hands, produce with your mind (Conti 2022). And this work that is produced by hand is the same work that the machines will then do mechanically with the thread. Learning this mode of operation determines the learning processes of students who want to design for this specific sector; even more so in a design-oriented training that combines theoretical knowledge with manual techniques, aimed at redefining the design itself. Manual practice is the basis on which computer and programming knowledge is based, through the operating software of industrial machines. At the same time, the technical information on the threads and the specific actions of fashion design, such as modelling, determine the methodological structure for defining a design. The benefits of this kind of teaching and learning system are still actual and recognized: It has been noted in a recent investigation conducted by Christel (2016) that active learning in real problem-based situations

develops skills such as critical thinking, creativity, understanding of concepts, and problem-solving, but more than everything it gives students the ability to apply knowledge to a current problem and then to transfer knowledge to new situations. Instead of having a textbook which provides facts and then tests the student's ability to recall facts and concepts, it provides students the opportunity to directly apply their knowledge to a problem at hand (ibid. 2016).

So, knowing is knowing how to do (Fiorani 2021), and it would be better to speak of invention or design, because in knitwear design one learns by doing. Again, there are different ways of thinking: for example, the design of an object can stem from the different ways in which it can be used, from the mixture of materials, from technology. This continuous process of trial and error, of practical experimentation, is, in itself, a integral part of the learning process and, above all, will determine the quality of the final product. Moving from these statements (Micelli 2011), the craftsmanship aspect must be considered today as it still is an essential part of the cultural value of knitwear, and it is the duty of designers to enhance this peculiarity, especially in the face of the contemporary industrial system.

6 Conclusion: Designing Objects or Emotions?

The essence and beauty of knit lies in the fact that the designer invents everything from scratch, creating the stitch, the hand, and the weight, choosing the color, deciding on texture and shape, mastering the finishings and details (Sissons 2010).

Pleasant objects (Conti and Vacca 2008) contribute to a sense of psychological well-being, because in stressful situations our mind tends to move on to the idea of the problem.

Our brain is sensitive to certain situations and reacts in a positive or negative way. Senses contribute to the brain's elaboration of emotional states. Today, the holistic attention to sense stimulation is one of the most interesting approaches to design. Senses as a stimulus for memory, memory as the rediscovery of inner values, senses, and memory as the essence of emotions.

In knitwear design, the senses and emotions provoked by a certain material, or a color, or the combination of colors with the knitted structures used define the qualities of the product and determine its meaning. It is not only a visual issue: in knitwear, the definition of product qualities is tactile. Holism, or that focus on designing to stimulate the senses, becomes one of the most interesting approaches to design. The sensory as a memory stimulus. Memory as a rediscovery of intimate values. Senses and memory as fundamental parts of emotions.

Research in this area comes mainly from spinning industries: it is an industrial kind of research aimed to intervene on the quality of yarns, on its meshes, its touch, its fit, and comfort when put directly on the skin.

In the contemporary time, technology has permeated knitwear sector as well, succeeding in modifying the yarn through various treatments to increase its performance characteristics. The finishing treatments (Conti 2018) can be divided into two

main groups: those designed to improve technical qualities such as antistatic, crease-resistant, non-shrink, anti-infiltrating, impermeability, waterproofing, fireproofing, and mothproofing treatments; and treatments that affect the appearance of the fabrics and sometimes even disguise the original material, such as ironing, dyeing, scouring, felting, flocking, coating, embroidery, counter gluing, and lacing.

If Proust said that the real voyage of discovery consists not in seeking new landscapes, but in having new eyes (ibid. 2018), then, paraphrasing him we could say that in the knitwear sector, the real discovery is not to present a collection of garments different from season to season, but it is to understand how to move from tradition, in this case the Italian one, through the tools and design methodologies, to innovate 'from inside' a complex and multifaceted sector. Innovation is not a revolution, it is a way to deal with all sorts of problems day after day. The modus operandi of Italian design is integrating traditional knowledge with technological innovation and experimentation along the entire supply chain, condensing design, know-how and craftsmanship. In this return to the natural, to tradition, and to the material as such and to its grain, as the touch of a texture, there is also the recovery of manual activity and the brilliance of the hand, which is essential not only for artistic work but also in the most sophisticated technologies and particularly for our sense of ourselves and our pleasure and the pleasure of doing things by hand. This modus operandi finds its perfect terrain in knitwear, an expression of an ancient local tradition with a strong distinctive stylistic character and production quality, and places it with full rights in the recognized culture of Made in Italy.

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