REVOLUTIONIZING FASHION EDUCATION: EMBRACING TRANSDISCIPLINARITY AND POST-HUMAN PERSPECTIVES IN DESIGN PEDAGOGY

AUTHORS

Dr Iannis Bardakos
Istituto Marangoni Shanghai

Karl Kristian Steinberg
Istituto Marangoni Shanghai

Danilla Attivissimo
Istituto Marangoni Milan

KEYWORDS

Transdisciplinarity, Post-human Perspectives, Fashion Education, Technoetics, Cybernetic Feedback

ABSTRACT

This research advocates for a radical transformation of fashion design education, anchored in the post-humanist and technoetic ethos, challenging the prevailing human-centric design paradigm. It calls for a transdisciplinary approach that transcends traditional disciplinary silos, promoting a holistic and inclusive discourse. By weaving technology, psychology, sociology, and environmental sciences into the educational fabric, it emphasizes the imperative of collaborative and interdisciplinary learning. This methodology fosters a post-human design perspective, advocating for sustainable and inclusive practices, thereby reimagining fashion's role in a technologically sophisticated and diverse socio-cultural milieu. Concurrently, this paper delves into the professional landscape that fashion designers navigate, highlighting the essential competencies for emergent designers. It draws on expertise from educators, critics, and designers to dissect garment creation, the crafting of market-ready collections, and the transition to digital fashion design. It contrasts historical and sociological know-how with technical and artistic dexterity, contemplates the digital shift's sustainability implications, and juxtaposes the creative processes of the analogue and digital realms. This inquiry aspires to serve as a compass for fashion education stakeholders, steering them towards innovative domains of knowledge and praxis.

INTRODUCTION

Cybernetics is the interdisciplinary study of feedback loops, control, and communication with in systems of animals, machines, and organizations. It explores how information and feedback mechanisms are used to regulate and adapt systems, aiming to understand and improve their functioning. Cybernetics, as envisioned by Gordon Pask, revolutionizes education by applying feedback and interaction theories to create adaptive learning systems (Pask, 1975). In cybernetics, systems within an environment acquire knowledge and practice learning through playful interactions and feedback loops.

Via a cybernetics lens, fashion design education can be envisioned as a complex adaptive system where feedback loops play a crucial role in all dialectic and creative processes (Bardakos, Younes et al. 2019). Rapid decision-making

in fashion, where the designer acts as both participant and observer, continuously receiving feedback from local or global environments. In this sense, the market and user engagement can be also considered a systemic mode of creativity interacting with fashion educational systems. This feedback informs the iterative design process, leading to modifications that better align with commercial viability, practicality, and brand identity.

Technoetics is a convergent field of study that explores the junctions and interfaces between art, science, technology, and consciousness (Ascott 2008). Influence by the lectures of Gordon Pask the artist and theorist Roy Ascott coined the term that blends 'technology' with 'noetics', a hybrid branch of metaphysics and art practice concerned with the study of mind and intuition via an extension of technologies. Technoetics examines how consciousness can be understood in an age of technological immersion, considering how technologies can extend, amplify, and enhance human thought, perception, and artistic expression. It engages with the idea that technology affects not just social structures and external behaviors, but also internal states and the construction of reality itself. This field involves speculative research that seeks to understand and utilize the profound changes that digital media, cybernetic systems, and bio-technologies can induce in human experience (Ascott 2008).

Such technoetic perspectives in the process of fashion design education further enrich this dialogue by considering how consciousness and technology intersect to enhance creative expression. The industry's evolving nature calls for a hybrid art-tech approach to education, where the technical (digital-mechanical) tools are not merely instruments of poietics (Bardakos & Lioret 2019), form and structure but manifest as extensions of the designer's cognitive and sensory capabilities. This suggests an educational framework where technology is seamlessly integrated into the curriculum to augment human senses and intuition, providing a multisensory learning experience that transcends traditional methodologies and envisions an expanded meta-fashion designer role.

The proposed meta structure for fundamental training within fashion design should therefore be a synergistic blend of cybernetic principles and transdisciplinary insights. Such a structure would not only focus on the craft of fashion but also on the cognition of design, where understanding patterns, systems thinking, and predictive analytics become as integral as the mastery of fabric and form. This holistic educational scaffold would enable young designers to navigate and shape the fluidic terrains of fashion with agility and foresight, fostering an environment where specialized skills can be further diversified and refined. By embracing this comprehensive approach, fashion education can cultivate a new generation of designers equipped for the complexities of a rapidly transforming industry, where the integration of human senses and technology paves the way for innovative practices and avant-garde expressions.

THE HISTORICAL SENSITIVITY

An historical understanding of clothing is of fundamental importance to fashion designers. They must delve deep into the history of fashion to understand the evolution and function of archetypal elements and their interaction with culture and politics. For Roland Barthes, fashion extends as a language that manifests itself via clothes to interpret reality (Barthes, 1976). Of course, that is a point to which we may add that the perception of "reality" can be manipulated with the medium of dress, i.e., artists like Will Smith who participated in the hip-hop culture of the 1990s projected the perception of conspicuous wealth among the racially marginalized diaspora (Winston, 1993).

The study of archetypal garments like the "Bomber Jacket," which has a 100-year history, reveals the complex societal role such a garment has played throughout its existence, as it became adapted by a diverse set of youth movements with ever-shifting symbolic messaging and societal impact. The picture becomes more complex as symbols used by one subculture get subverted and hijacked by another. Such histories are rich and complex and connect the art of making clothes to culture and politics. Textiles, shapes, and design features come with pre-existing identities, and skilled fashion designers manipulate and subvert such elements to form new narratives. After all, for Naomi Wolf clothing has always been a language medium. a non-verbal method of communication (Wolf, 1991).
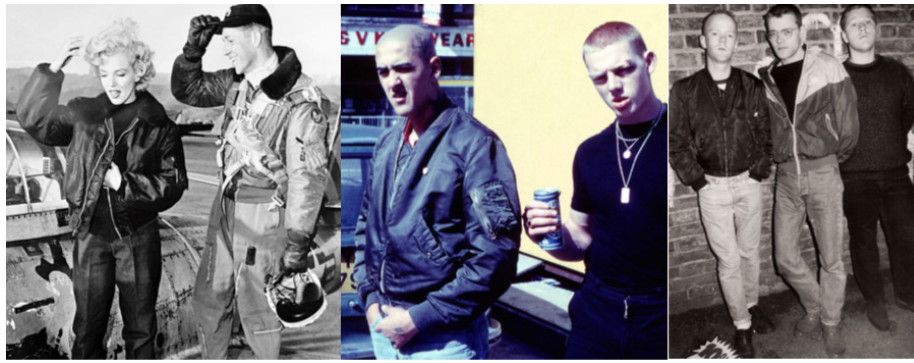
Fig.1 Epochal Moments in Cultural History. (Left) Marilyn Monroe visiting American troops in Korea, 1954. (Middle) Skinheads in Southend, England, 1983. (Right) Jimmy Sommerville, Larry Steinbachek, and Steve Bronski of Bronski Beat, 1985.

Material adaptation can have a profound socio-political impact, as exemplified by figures like Coco Chanel. Her choice of using military jersey for men's undergarments to produce boxy jackets and easy-to-move-in skirts for women had a revolutionary effect on womenswear in the early 1920s, but the success of the idea was closely connected to the perceived "stylishness" of her designs. Unlike the Bloomer girls, who wore trouser-like attires during the later Victorian period in a manner that was widely ridiculed, Coco Chanel used her life experience as a libertarian mistress to influential men to find time-appropriate ways in which to improve women's style (Johnson, 1999). As Oscar Wilde was commenting on the negative effects of late Victorian womenswear in the Rational Dress Society's Gazette, he outlined rules for "sensible" women's dress, i.e., "Not departing too conspicuously from the dress of the time".

THE CULTURAL SENSITIVITY

Some of the most renowned and impactful designers weave the rich tapestry of their personal narratives and cultural legacies into their creations, amalgamating a diverse spectrum of inspirations and stylistic threads into a coherent and compelling narrative. This narrative is not merely a matter of aesthetics, but a dialogue between the designer and the cultural zeitgeist, a conversation that transcends borders and epochs. Simone Rocha, for example, emerges from the lineage of the esteemed Sino-Irish designer John Rocha. She masterfully intertwines her rich cultural tapestry, creating a sartorial lexicon that resonates with both her Eastern heritage and her Western upbringing. Her designs are not just garments; they are a confluence of stories, traditions, and visions. They speak of a heritage that is both deeply rooted and expansively global, a heritage that straddles divergent worlds – melding the delicate opulence of the East with the robust narratives of the West.

Rocha's work is a testament to the power of fashion as a vehicle for cultural synthesis. Her aesthetic – a fusion of oriental motifs and fabrics with the structural silhouettes of Western fashion – does more than create a distinctive look; it bridges worlds. Each collection is a chapter in a continuing narrative, one that respects the solemnity of tradition while embracing the dynamism of contemporary design. This different aesthetic and silhouette offer a dialogue with the past, a negotiation with the present, and a vision for the future of fashion that is as inclusive as it is distinct. It is this ability to balance the homage to heritage with a forward-thinking approach that sets apart designers like Rocha. Her designs are not static; they are dynamic, ever evolving with the narrative of her own life and the collective story of her dual heritage. In this way, the work of Simone Rocha becomes a canvas on which the stories of East and West are not just told but are also reimagined and reinterpreted for a new era.

TECHNICAL AND ARTISTIC PROFICIENCY

The Proto-Indo-European root *teks-, meaning 'to weave,' is the etymological progenitor of 'techne,' the Greek for art and craft, encompassing the skilful means of bringing together disparate elements to form a coherent whole.

This foundational term is the linguistic ancestor that threads through the fabric of technology, fashion, and culture, binding them in the deepest sense. The act of weaving, both literal and metaphorical, reflects the intricate interlacing of innovation, creativity, and utility that characterizes human craft. From the looms of antiquity to the loom of the digital age, *teks- is emblematic of our continual quest to intertwine materials, ideas, and practices, creating the tapestry of human advancement and cultural expression.

The intimate bond between clothing and its wearer necessitates an intimate understanding of materiality, one that transcends mere aesthetics and ventures into the realm of haptics — the science of touch. This understanding elevates garment design, distinguishing it from broader product design disciplines. Garments are not merely judged by their visual appeal but by the sensory experience they offer; the tactile dialogue between textile and skin, and the adaptability of fabric to form, all these are paramount. In this nexus, textiles become an extension of the body, their flexibility, and the resultant garment's shape moulded by the unique contours of the wearer. Through the precise choreography of style lines and the expertise of cutting, the designer sculpts garments to accommodate and enhance diverse physiques, often with the objective of creating a universally flattering silhouette — a "slimming" dress stands as a paradigm of such endeavours.

In the light of Gilbert Simondon's philosophy of individuation (Simondon, 1959), the garment can be seen as a technical entity that achieves its full meaning when integrated with the wearer, a process not just of wearing but of mutual adaptation. Fashion design, when viewed through the lens of Technoetics, becomes design praxis that melds human intentionality with the material's potentiality, leading to new forms of (a-linguistic) expression and performativity and interaction. The emergence of the "augmented" fashion agent invites a deeper cybernetic analysis within a triadic context of cultural, social, and aesthetic dimensions. This analysis situates the agent within an environment teeming with observers, where the interplay of observation and interaction is paramount. It also places them within a complex network of dialectical entanglements, where each action and response become a thread in the ever-evolving fabric of the fashion ecosystem. In the context of the medium, today's materials reflect tremendous strides in offering comfort, breathability, and a gentle caress against the skin. The fashion designer, then, becomes the curator of this synthesis between luxurious tradition and cutting-edge innovation, ensuring that the choice of material meets both aesthetic and technical benchmarks. This delicate balance is what Edward de Bono encapsulates in his view of creativity: it "involves breaking out of established patterns to look at things differently." (de Bono, 1993). Thus, the fashion designer is not merely a craftsman or a technician of clothes but a weaver of experiences, a technoetic artisan shaping the interface between the human the inter-human and the tex-tile.

CREATIVE PROCESSES AND TRAINING

In the realm of the fashion industry, where the creative and the temporal collide, designers engage in a complex process that demands both robust knowledge and intuitive foresight. This intricate dance of creation aligns with Johan Huizinga's notion of the 'ludic' (Huizinga, 1949) where play becomes an essential element of cultural development. The ludic process in fashion design involves a playful experimentation where ideas are nurtured and shaped through a series of trials and errors, echoing the playful seriousness that Huizinga deems fundamental to cultural formations.

Likewise, one could suggest that the process philosophy of Alfred North Whitehead in its very pragmatically manifested sense resonates with this type of art/design education, as students are immersed in a rigorous journey of learning, where ideas evolve from abstract concepts into tangible creations (Whitehead Encyclopedia 2022). Whitehead's emphasis on the reality of becoming, where every process is a moment-to-moment experience, mirrors the artists iterative method of draping, sampling, and modelling. The classroom, in this sense, becomes an ecosystem of research, experimentation, and development, reflecting Whitehead's view of reality as a constant flux of interrelated processes. These processes analyzed as morphisms between the abstraction and the concrete form a continuous flux between the theoretical and the practical. Yet again we meet Ascott's effort to equate, in his context of technoetic art praxis, the theoretical with the practical (Ascott 2009).

$$A, T, C, P \ \text{concept sets}, \ b : (bridge) \doteq \phi(x) = y : x \in A, T, y \in C, P$$
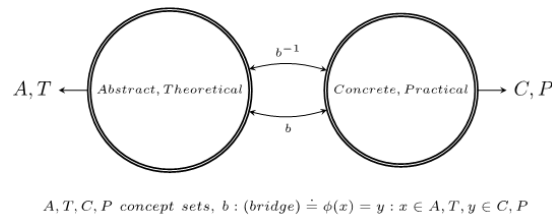
Fig. 2 A formal diagram showing the morphisms that relate the process from the Abstract to the Concrete and from Theory to Practice in an educational context for creative media. © 2023, Iannis Bardakos. All rights reserved.

Integrating these philosophies with the digital transformation in fashion design, students and designers alike explore new dimensions of creativity. Digital tools offer a realm where the playful co-manipulation of forms and the immediate behavioral (performative) feedback nurtures a fertile ground for image-creation innovation within the co-existence of teams students and tutors, related to Roy Ascott's "organism" as presented by Kate Sloan describing Arscott's revolutionary teaching process the "Groundcourse" (Sloan 2016). Ascott's idea emphasizes the organistic collaboration and co-authoring, the evolving nature of changing context and abandoning preconceptions by learning and creating, which is significantly mirrored in the use of technological frameworks in art, design and of course fashion education.

The rapid evolution of graphic cards (GPUs) within modern computer systems has ushered in an entirely new realm of creative possibilities and expanded the horizons of fashion design education. These advancements have given rise to a vibrant ecosystem of tools and systems that are revolutionizing the way designers engage with spatiality and garment creation.

Three-dimensional tools, stemming from simulations, game engines, modelling software, and rendering programs, have transformed the design process into a dynamic playground of endless possibilities. Within the context of the Metaverse[1], designers can now explore a virtual space that transcends physical limitations, enabling them to create and experiment in entirely new

---

[1] The Metaverse is a collective virtual shared space, created by the convergence of virtually enhanced physical reality, augmented reality (AR), and internet. It is a space where users can interact with a computer-generated environment and other users. The term "Metaverse" was first coined by Neal Stephenson in his 1992 science fiction novel "Snow Crash," (Stevenson 1992) where he envisioned lifelike avatars meeting in realistic 3D buildings and other virtual reality environments. Stephenson's Metaverse provided a space for users to escape from the dystopian reality of the novel's actual world, prefiguring current discussions about digital escapism, social interaction, and economic transactions in virtual spaces.

dimensions. The Metaverse's immersive environments foster a ludic spirit where designers navigate this digital realm with tools like Clo3D, which enable a rapid and responsive design process.

Fig. 3 Metaversial Research Group in the context of the #NewMacy "Studio in Sympoiesis" event during the 12th Relating Systems Thinking and Design (RSD12) 2023 conference (Westermann et al., 2023)

Moreover, the integration of Web3 technologies and Blockchain re-monetization/gamification introduces a novel dimension to the fashion education experience. Blockchain's validation structures ensure the authenticity and provenance of design elements, providing a trustworthy foundation for the creation of digital assets and fashion concepts within the Metaverse. This not only minimizes material usage but also maximizes the potential for exploratory design, all while ensuring the integrity of the fashion ecosystem. This holistic approach emphasizes the paramount importance of a ludic approach in crafting innovative, aesthetically pleasing, and functional garments, all while embracing the transformative power of technology and the burgeoning creative possibilities of the digital age.

Fig. 4 AI generated fashion illustrations generation using a custom trained Stable Diffusion Style LoRA (Low Rank Adaptation model) tool within the Eden online generative AI system (Eden.art, n.d).The image is derived by training a set of custom ink drawings driven by a simple fashion sketch and prompting direction via text to a specific detail on a Latent Space[2]. © 2023, Iannis Bardakos. All rights reserved.

As designers traverse the landscape of poietics, they engage with the spatiality of garments as dynamic entities that exist not only in the physical world but also in the potential worlds of digital simulation. This intersection of space

and technology in design thinking enables a transmutation of ideas, where the garment is not a static object but a participant in a broader dialogue of cultural and technological narratives. It is in this interplay of physical and virtual, of fabric and pixel, where the contemporary narrative of fashion finds its stride.

[2] In the context of generative AI imaging, a latent space refers to a multi-dimensional vector space wherein each dimension encodes a latent attribute of the data. It is an abstract representation where similar data points are closer in space, providing a structured and compressed representation of the data. When working with generative models like Generative Adversarial Networks (GANs) or Variational Autoencoders (VAEs), the generative AI learns to map points from this latent space to realistic images. The manipulation of points within the latent space allows for the generation of new images that maintain the characteristics captured by the latent variables, enabling the exploration of novel visual forms and the synthesis of new images with desired attributes.

The evolution of techno-consciousness within this spatial dialogue is a dance of possibility, where speculative ideas are tested and retested in a cycle of simulations that refine and redefine the boundaries of fashion. This interactivity with spatiality is fundamental to the metamorphosis of design practice, where the act of creation is both a reflection and a projection of the expanding capacities of the human-technological symbiosis.

CONCLUSION

In the context of technoetic transformation, fashion design education stands at the vanguard of a new pedagogical paradigm, one that synthesizes traditional craftsmanship with the alchemical potentials of digital technologies like AI and AR. The techno-aesthetic education of the future must navigate this duality, fostering an alchemy of skills that anticipates the unpredictable morphologies of industry and culture. As we stand at the precipice of unknown vocational landscapes, the value of "learn by doing" is transmuted; it becomes a principle that evolves with the incorporation of virtual simulations and real-time feedback loops, emblematic of cybernetic principles.

Educators and mentors, in this technoetic ecosystem, act not only as knowledge transmitters but also as calibrators of a dynamic learning environment, where they and the students form an interdependent organism. This organism thrives through iterative loops of action, reflection, and adaptation, engaging with a learning environment that is both physical and digital, fixed and fluid. This reciprocal calibration ensures that the educational milieu itself evolves in concert with the students' burgeoning techno-consciousness.

In this transformative landscape, free practice is paramount, encouraging students to navigate the manifold possibilities of their craft with both autonomy and guidance. The emergence of AI as a design partner, AR as a spatial canvas, and other techno-alchemic aids serve to expand the creative lexicon of the student, enabling a confluence of speculation, ideation, and realization. The resultant education is one that is profoundly technoetic, instilling in students not just the capacity for critical thinking and self-awareness, but also an intuitive grasp of the cybernetic feedback loops that underpin both the creative process and the very fabric of our evolving techno-cultural reality.

REFERENCES

Ascott, Roy. (2009). "Frieze." [https://www.frieze.com/article/roy-ascott.html/] Accessed December 1, 2023 . at 11:20 CET.

Ascott, Roy (2008). Intellect Books | Technoetic Arts: A Journal of Speculative Research. [https://www.intellectbooks.com/] Accessed on December 1, 2023, at 11:40 CET

Bardakos, I., & Lioret, A. (2019). Diagrammes et abstractions mathématiques pour une poésie visuelle. Revue ATI-IN-REV, 5. https://inrev.univ-paris8.fr/revue/Revue_ATI_INREV_num5.pdf Accessed on December 1, 2020, at 11:40 CET

Bardakos, I., Younes, E. & Lioret, A. (2019). Digital interaction as an opening space for aesthetics of consciousness.

Technoetic Arts, 17(1), 5-16. https://doi.org/10.1386/tear.15.3.231_1

Barthes, Roland. (2004). The Language of Fashion, Paris: Éditions du Seuil.

De Bono, Edward. (1992). Serious Creativity, Using The Power of Lateral Thinking to Create New Ideas. NY: Harper Collins

Eden.art (n.d.) Home page. Available at: https://eden.art/ Accessed on December 2, 2023, at 12:00 CET

Huizinga, J. (1949). Homo Ludens: A Study of the Play-Element in Culture. Boston: Beacon Press.

Johnson, Paul. (1999). Fashionable Rebels: The History of Costume and Style. HarperPerennial.

Maguire, Jon A., and John P. Conway. (1997). Classic leather jackets of World War II. Schiffer Military/Aviation History.

Pask, Gordon. (1975). Conversation, cognition, and learning: A cybernetic approach. New York: Elsevier.

Rational Dress Society's Gazette. (1888). [http://www.bl.uk/collection-items/the-rational-dress-societys-gazette] Accessed on December 1, 2023, at 11:38 CET

Simondon, Gilbert. (1958). Du mode d'existence des objets techniques. Paris: Librairie Philosophique J. Vrin.

Sloan, Kate. (2016). Art, Cybernetics and Pedagogy in Post-War Britain: Roy Ascott's Groundcourse. Routledge Advances in Art and Visual Studies. First Edition. London and New York: Routledge.

Stephenson, N. (1992) Snow Crash. United States: Bantam Books.

Westermann, Claudia., Bardakos, Ioannis., Salvaggio, Eryk., Lombardi, Judie. and Richards, L., 2023. #NewMacy Studio in Sympoiesis. In: Proceedings of Relating Systems Thinking and Design (RSD12), 6-20 October 2023, Pittsburgh, USA, Georgetown University. Available at: https://rsdsymposium.org/newmacy-studio-in-sympoiesis

Whitehead, A.N., (1978). Process and Reality. New York: Free Press.

The Whitehead Encyclopedia, 2022. Process Interpretations of History. [online] Available at: https://encyclopedia.whiteheadresearch.org/entries/thematic/theory-of-knowledge/the-method-of-extensive-abstraction

Wolf, Naomi. (1990). The Beauty Myth. UK: Chatto & Windus.