

WELCOME TO SEAMLESS 2008, a fashion show and celebration featuring emerging designers from around the globe whose functional creations push the boundaries of wearable technology. Combining the glamour of a runway fashion show with the personal engagement of an interactive installation, **SEAMLESS** offers a glimpse of the future now as these designers reinvent how we think about clothing and the body. The designers approach this reinvention from an array of perspectives that include the physical, psychological, social, technological, political, educational, and aesthetic. Some projects spotlight social issues; some explore how technology could enhance our relationships to ourselves and to one another; others playfully celebrate the imagination.

Our fabulous emcee for the night is Steven Rosengard, from the three-time Emmy-nominated competition reality series *Project Runway* seen on Bravo. The evening offers a twist on the standard runway show as designers and models descend two floors in the Museum's dramatic exhibition hall. The show then transforms into a "living exhibition" and party, during which we invite you to experience these works of design in a salon-style format. Models and designers will demonstrate the interactive pieces, and you will have a chance to ask questions about their ingenious technological inventions, discuss their philosophies, and when possible, try on their creations. Enjoy!

For more adult programming at the Museum of Science: mos.org/adults.

Support for this event provided by the Barbara and Malcolm L. Sherman Fund for Adult Programs.



Project: 802.11 Apparel

802.11 Apparel is a line of clothing that literally "brings to light" a portion of the invisible radio waves that pervade our surroundings. In each garment, up to five stripes are illuminated in accordance with the Wi-Fi signal strength in the wearer's immediate environment. Pieces are created using a hacked Wi-Fi detector, an Arduino microcontroller, LEDs, and extended electronic components.

Designer: Jenny Chowdhury

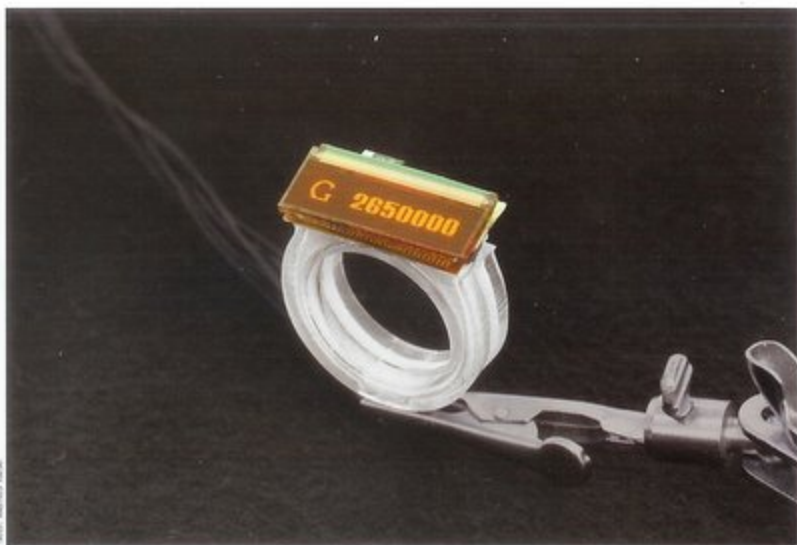
Jenny Chowdhury is a New Media Artist who likes to do funny things with electricity. She is a resident researcher in the Interactive Telecommunications Program at New York University, researching wearable technology and physical computing. Jenny holds a BS in electrical engineering from Tufts University and a master's from NYU/ITP. Her work may be viewed at jennyLC.com.



Project: Charming Burka

The Charming Burka deals with Freud's idea that all clothes can be positioned between appeal and shame. The Burka was chosen because it is often perceived in the West as a symbol of repression. A digital layer was added so that women can decide for themselves where they want to position themselves virtually. The Burka sends an image, chosen by the wearer, via Bluetooth technology. Every person next to her can receive her picture via mobile phone and see the woman's self-determined identity. According to the artist, the laws of the Koran are not broken, so the Charming Burka allows the possibility of living a more Western life, should a woman so desire. The Charming Burka is realized with Bluebot (bluebot.eu), a Bluetooth marketing solution developed by Haase & Martin, a mobile marketing company in Dresden, Germany.

Designer: Markus Kison (Bio on following page.)



Project: Vanity Ring

Rings are well-known status symbols. A jewel's weight in carats is often seen as comparable to the owner's social stature (e.g., the world's two largest diamonds are in the British crown jewels). The Vanity Ring doesn't have a jewel. Instead, it indicates the number of hits resulting from a Google search for the name of the person who wears it, a more appropriate ranking in our time. The ring is personalized using custom software: after a name is entered, the ring connects to Google to search for it. The ring's display changes to show the resulting personal "attention carats." Every night, when it is inserted into its docking station, the ring is reloaded and updated.

Designer: Markus Kison

Markus Kison studied physics and IT at the University of Ulm in Germany. He is currently in the Digital Media class of Professors Joachim Sauter, Jussi Angeleslevi, and Kora Kimpel at the University of the Arts, Berlin. His work has been shown at ZKM (Karlsruhe), Ars Electronica (Linz), the Tokyo Metropolitan Museum of Photography, and the SESI Gallery (São Paulo), among others.



Project: clothing/cladding

This dress is cut into flat-pattern pieces assembled in such a way that the observer loses a singular reading. This assembly logic produces moiré patterns, or dynamic perceptions, as the viewer moves around the wearer. The patterns are generated by a wave algorithm. As an architectural design, the dress is considered a facade. The folds and waves create volume that obscures the wearer so that issues of privacy and exposure become primary. Rather than being a static object, this textile, when unfolded (it is a developable surface), is an architectural element. Its fabrication processes make it clear that it is as much a cladding device as it is a garment. The pieces can be "patterned" on a surface to create an interior finish, again using the device of opening and closure. The exterior material has a soft matte finish while the interior is sheer and lustrous.

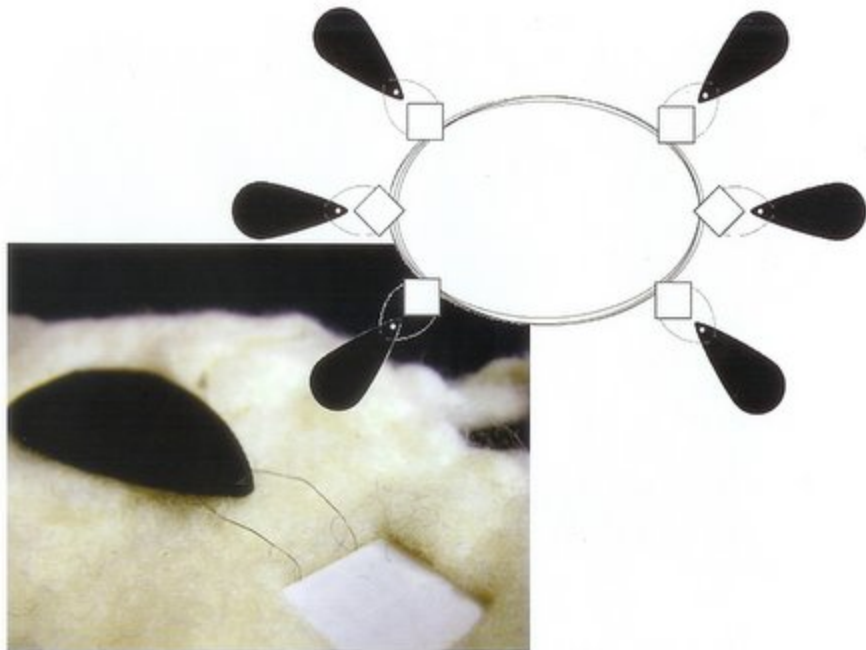
Designers: Mariana Ibanez, Simon Kim, and Analisa Russo

IJK studio is a multidisciplinary team that is interested in destabilized practice of design, where dynamic networks replace the single authority. Established in London in 2004, the studio has projects in Boston, London, and Buenos Aires.

Mariana Ibanez is an assistant professor of architecture at the Graduate School of Design at Harvard University. She teaches in the architecture core design studio sequence.

Simon Kim is a postgraduate research assistant at MIT. He is pursuing research in architectural design strategies using input/output sensor technologies.

Analisa Russo is an MIT undergrad who assisted with materials science and fabrication.



Project: Frisson

The Frisson necklace is made of a series of individual beads resembling teardrops. Each bead is adorned with a temperature-changing Peltier junction governed by a microcontroller embedded in the bead. Each bead is electrically and computationally autonomous and can decide to become cold, warm, or hot on its own. The necklace's behavior produces animated temperature patterns around the wearer's neck, creating an unsettling feeling similar to shivering.

Designer: Vincent Leclerc

Vincent Leclerc mixes inductors and bread dough in the hopes of one day creating a crusty 802.11 baguette. He spends most of his time steering electrons at ESKI (eskistudio.com), stitching circuits at XS Labs (xslabs.net), and teaching physical computing at Concordia University, Montréal (design.concordia.ca).



Project: Incision Shirt

Our understanding of the body has changed radically since the Renaissance, yet the way anatomy is taught and presented has changed very little. Models of body structures tend to be standardized, evenly surfaced, hard; they describe, but they do not evoke. The Incision Shirt explores haptic and emotional sensibilities as meaning is revealed not only in form but also in materials and processes. It allows the wearer to experience the intrusion of surgical incision into an evocative muscle landscape. Utilizing the common and accessible language of textiles and anatomy—tissues, fabrics, seams, layers, fibers—it rekindles the sense of depth and feel of the living body.

Designers: Karen Fleming, Aoife Ludlow, Duncan Neil, Emma McClintock, and John McLachlan

Karen Fleming, Aoife Ludlow, Duncan Neil, Emma McClintock (Interface, University of Ulster, Ireland), and Professor John McLachlan (University of Durham, England) are a science and art cooperative exploring the use of textile structures in anatomy education.



Project: Jacket Antics

Jacket Antics comprises two handwoven garments that display unique texts and designs scrolling through LED arrays woven into the backs of the fabrics. When the wearers hold hands, the LEDs present a third, synchronous message scrolling from one array to the other, creating a new pattern of communication.

Designer: Barbara Layne

Barbara Layne is an artist, a professor at Concordia University, Montréal, and the director of Studio subTela, also in Montréal. As part of the Responsive Textiles research group at the Hexagram Institute, subTela operates at the intersection of textiles and technology. Project assistants include Hesam Khoshnevis, Diane Morin, Maryam Golshayan, and Meghan Price.



Photo: Hogan Ducharme

Project: Tornado Dress

The fabric of the Tornado Dress features a Mimaki print of a funnel cloud and a tornado photographed by Nebraska stormchaser Mike Hollingshead. Three small photocells detect ambient light and trigger a variety of flashing patterns in an LED display embroidered onto the lining of the linen dress.

Designer : Barbara Layne (Bio on previous page.)



Project: The Kyrielle Collection—Christian and Edouard

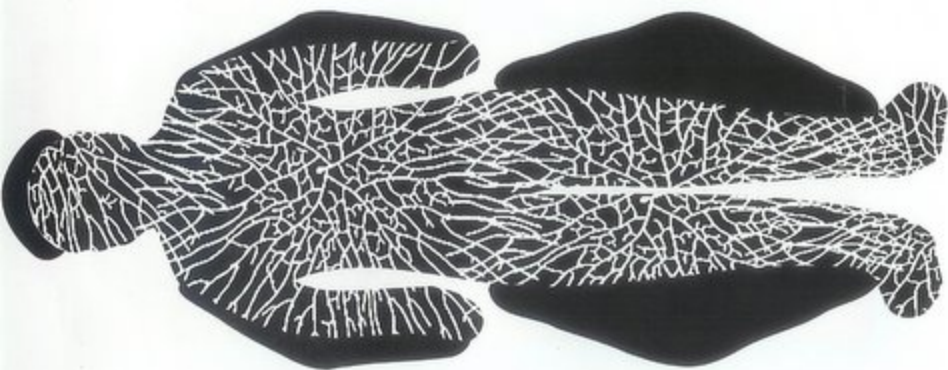
The Kyrielle collection integrates technology into design, giving bags distinct personalities while creating creature-like companions. Inherent to each is a storyline, a narrative of the collection.

Kyrielle: Christian comprises two bags completing each other through proximity and connectivity. Nonfunctional when by itself, the male bag refuses to open completely, while acting as the support system and power source for the female bag, dragging heavy electrical components that are useless when alone.

Kyrielle: Edouard is an antitheft system integrated discreetly into an aggressive bag. Once armed by a hidden switch, the system emits a high, piercing sound, alerting the bag's owner to any unauthorized openings.

Designers: Julie Legault, Josiane Mercier Auger, and Elio Bidinost

Graduates of the Design Art program at Concordia University, Montréal, Julie and Josiane met and merged in 2004. While expressing their hopes and nightmares of their uneasy contemporary world, they assuaged their electronic concerns by involving Elio Bidinost, a Concordia computation arts student who explores the boundaries of interaction design and physical computing in experimental interfaces that can enrich our everyday experiences.



Project: $N=0=$ Infinity-The Infinity Burial Suit

Jae Rhim Lee is currently working with mycologists to develop the Infinity Mushroom, a new hybrid mushroom that facilitates the decomposition of the body, the remediation of industrial toxins and viruses in the body, and the growth of new plants. The Infinity Burial Suit is a fitted bodysuit embroidered with thread that has been inoculated with mushroom mycelium. The embroidery pattern mimics the growth and migration of mushroom mycelium. "Fins" extend from the suit into the surrounding environment, and "wicks" take up a solution of processed and sterilized urine that provides ammonia and nitrate, necessary nutrients for the Infinity Mushroom. Accompanying the suit is a spore-mass slurry, an alternative embalming fluid used to fill the body with mushroom spores. Because the Infinity Mushroom is still in development, the Infinity Burial Suit contains only the mycelium of the oyster mushroom, *Pleurotus ostreatus*.

Designer: Jae Rhim Lee

Artist Jae Rhim Lee's work draws on interests in psychology, thanatology, environmental sustainability, Eastern religion, and disaster management. Her previous work includes customized beds and body-waste recycling units for self and environmental sustainability. She is a graduate of and teacher in the Visual Arts Program at MIT, and is a consultant for the City of New Orleans Office of Recovery Management.



Photo: Mahir M. Yavuz

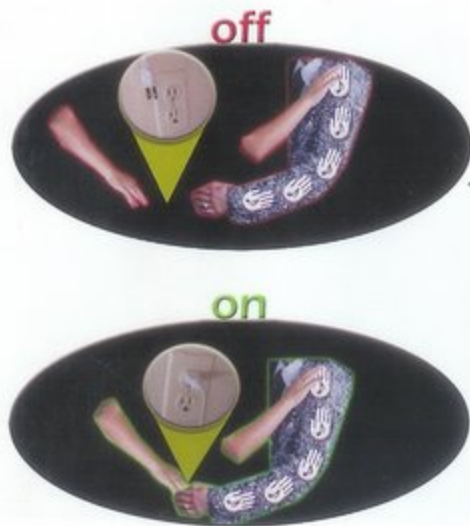
Project: News Knitter

News Knitter was initiated as a quest for translating large-scale data into knitted daily wearables. In contrast to today's common methods of pattern design in the commercial textile industry, News Knitter generates knitted sweater design patterns using a live news feed from the Internet. Custom software gathers information from online daily political news sources, analyzes and filters it, and generates a unique pattern for a single sweater. A fully computerized flat-knitting machine receives the generated pattern and produces a sweater that is the result of a specific day or period. The individual design process becomes a worldwide collaboration.

Designers: Ebru Kurbak and Mahir M. Yavuz

Ebru Kurbak is a lecturer and researcher at the Department of Space and Design Strategies in Kunstuniversität Linz, Austria. She received her MSc in architecture from Istanbul Technical University.

Mahir M. Yavuz is a lecturer and researcher at the Department of Interface Cultures in Kunstuniversität Linz, Austria. He received his MFA in visual communication design from Istanbul Bilgi University.



Project: ok2touch

Ok2touch is a musical jacket with a human-contact “on” switch. To activate the jacket, empathetically hold hands with the friend wearing the jacket—just as you might see two children holding hands while creating a play-plan on a Boston preschool playground, or two heterosexual men walking down the street holding hands in India. Then, using your other hand, touch the jacket with care to improvise a song. What’s the magic “on” switch? Holding hands with the person wearing the jacket.

Designers: Jay Silver and Jodi Finch

Raised by a pack of hippies and midwives, Jay Silver has been a go-go dancer, a Taco City busboy, a statistics professor, The Krazy Ice Cream Man, and a yoga instructor. Now he designs for Skin-to-Skin Contact and Urban Exploration in the Lifelong Kindergarten at MIT's Media Lab.

Jodi Finch is a yoga, music, and art teacher at a preschool. She has worked in many different art media such as clay, paint, and fabrics. She is moved by the affectionate interaction she sees between children, and wishes our society could learn more social grace when it comes to physical contact.

Mood: Sanyal Astarbak Technical prototype photograph: Robert Moss



Sketch: Farida Kebaili

Project: Open Shade

This project showcases the latest developments in custom laser-cut soft-circuit designs, using processes first published by Leah Beuchley and Michael Eisenberg from the Craft Technology Group at the University of Colorado–Boulder, and further extending the technical process by incorporating solar energy. Conceptually, Open Shade seeks to use the iconic form of the head covering to playfully question and probe current perceptions of this accessory, looking at the larger social narratives being debated in recent court cases throughout Europe. The head covering, at once controversial and symbolic and yet an article of everyday clothing, highlights the complex social rituals at play in fashion. Open Shade playfully flirts with this question: what statements on femininity and lifestyle are articulated when women everywhere (from urban fashionistas to their Bedouin sisters) choose strategic headgear for illuminating personal power?

Designers: Alice Tseng-Planas, Farida Kebaili, Nadra Kebaili, Leif Krinkle, Hatti Lim, and Laura Moore

Open Shade is a collaborative project conceptualized and initiated by Alice Tseng-Planas with design and creative contributions from Farida Kebaili (fashion), Nadra Kebaili (print pattern), Leif Krinkle (electronics), Hatti Lim (physical computing), and Laura Moore (apparel patternmaking technology/fit).



Project: Party Dress

Party Dress is a roving performance that is part living architecture, part monumental fashion. Designed by two sisters, Party Dress functions as a pavilion worn exclusively by five women that seamlessly injects architecture into fashion by using the body as space. The dress begins as a shared, bustled garment that gradually unfolds to create a temporary inhabitable structure. Each seam, each dress, and each body is interconnected by a single, amorphous surface of flowing material. With room for spectators beneath the fabric, Party Dress flirts with traditional concepts of public and private space while adding sparkling wit to the conversation between fashion and architecture. Party Dress works across multiple scales and environments, unraveling conventional notions of space, materiality, and temporality.

Designers: Dana Karwas and Karla Karwas

Dana Karwas is an architect specializing in new media, and her projects investigate the relationship between art, architecture, and technology. She has taught classes at the Graduate School of Architecture at Columbia University and at Harvestworks in New York. Dana is currently an adjunct assistant professor in the Interactive Telecommunications Program at New York University.

Karla Karwas is a New York-based architect. Her work resides in an expanded architectural context, questioning the relationship between object and environment as well as the spatial influence of new media. Recent projects include Modular 3, a modular home that received Architecture Magazine's Home of the Year Award 2007, and The Yurt, a traveling installation done in collaboration with the Graduate School of Architecture at Columbia University.



Project: Peau d'Âne—Sun Dress, Moon Dress, and Sky Dress

In the Charles Perrault fairytale "Peau d'Âne," a young princess orders the impossible from her doting stepfather in order to avoid marrying him: three dresses made of immaterial materials—the Sun, the Moon, and the sky. The aim of the project Peau d'Âne is to incarnate these impossible dresses in material form. An antenna collects live weather data that transforms the dresses, reflecting in real time the changing barometric characteristics of the Sun, Moon, and sky.

The Sun Dress displays light patterns based on changes in the Sun. The dress is embroidered with LEDs and conductive fabrics and threads. The LEDs are lit based on UV and Sun intensity readings. The greater the intensity of the Sun, the brighter the dress glows, emulating the Sun itself.

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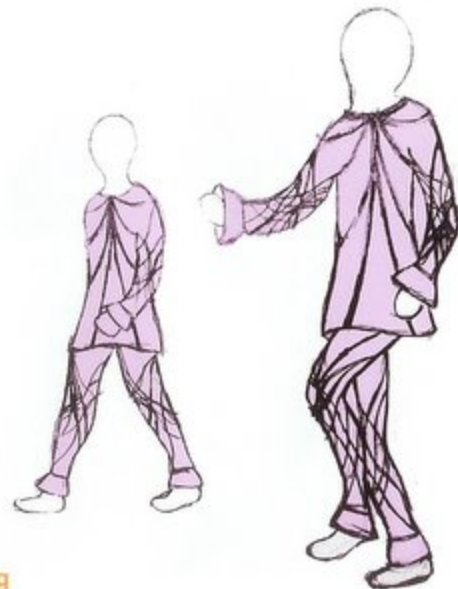
The Moon Dress's color patterns change according to the 28-day cycle of the Moon. Thermochromic painted flowers embroidered with resistive silver threads change colors based on the Moon's phases.

The Sky Dress changes structure and movement based on fluctuations in wind velocity and direction. The dress is made of inflatable fabric pockets that expand and vibrate to display real-time climactic changes.

Peau d'Âne is supported by Conseil des Arts et des Lettres du Québec, OBORO, and Groupe Molior.

Designers: Valérie Lamontagne with Lynn Van Gastel, Patrice Coulombe, and David Beaulieu

Valérie Lamontagne is a Montréal-based performance and digital media artist, freelance art critic, and independent curator. She received her MFA from Concordia University, Montréal, where she teaches in the department of Design and Computation Arts. She is a cofounder, with Brad Todd, of the media arts collective MobileGaze, and is currently a PhD candidate investigating "Relational and Ubiquitous Performance Art."



Project: Piezing

Piezing is an outfit that generates its own power using the natural gestures of the human body in motion. Around the body's joints the garment is specially woven with piezoelectric film fibers that convert mechanical strain into electrical voltage as the wearer walks. The voltage created can be stored in coin batteries disguised as buttons and later discharged into any portable electronic device.

Designers: Amanda Parkes and Adam Kumpf

Amanda Parkes is a designer currently working toward a PhD in the Tangible Media Group at the MIT Media Lab, with a research focus on kinetic textile interfaces. Before joining the Media Lab, Amanda developed exhibits at the Exploratorium in San Francisco and installations and programs for the Science Museum in London and the Peggy Guggenheim Collection in Venice. She holds a BS in product design and a BA in art history from Stanford University, and an MS in media arts and sciences from MIT. Outside the lab, she likes to sew, surf, and amass exquisite shoes.

Adam Kumpf is a master's student at the MIT Media Lab working on a range of projects that involve music, product design, mechanics, programming, circuitry, and the creative process. While eager to build circuits and write code, he is most interested in exploring art, human expression, and the wonderfully simple interactions that people experience everyday.



Project: Polite Umbrella

Polite Umbrella is a shrinkable umbrella that enables users to reduce occupied space and increase maneuverability. Users can easily adjust their umbrellas anytime by pulling a handle so that they can protect themselves from harsh winds or from bumping into others. The shrinking movement is immediate and is capable of morphing the umbrella into a jellyfish shape. Polite Umbrella is used as protection from the weather, preservation of personal space, maneuverability, amplification of gesture, visual expression, and fashion. It can also be used for visual communication, especially for sharing humor with others in a public space (jooyounpaek.com/politeumbrella.html).

Designer: JooYoun Paek

JooYoun Paek is an artist and interaction designer born in Seoul, Korea, and based in New York. She creates interactive objects that reflect on human behavior, technology, and social change. She earned a master's from the Interactive Telecommunications Program at New York University and is currently an artist in residence at Eyebeam. For the past six years JooYoun's art has been displayed and has appeared in publications around the world.



Project: Skorpions

Skorpions are kinetic electronic garments that move and change on the body in slow, organic motions. They can be imagined as parasites that inhabit the skin of the host. They breathe and pulse, controlled by their own internal programming. They are not "interactive" artifacts insofar as their programming does not respond to simplistic sensor data. Exploiting characteristics such as control, anticipation, and unpredictability, they have their own personalities, their own fears and desires. Skorpions integrate electronic fabrics, the shape-memory alloy Nitinol, mechanical actuators such as magnets, soft electronic circuits, and traditional textile construction techniques such as sculptural folds and drapes of fabric across the body. The cut of the pattern, the seams, and other construction details become an important component of engineering design.

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Eneleon is constructed of heavy handmade felt, creamy leather, and reflective lamé lining. Shaped like a large bilateral symmetric pod and enclosing the body from front and back, its movement is activated by beaded shape memory alloy (SMA) coils controlled through custom electronics. A sculpted felt mask obscures the face with reflective chain mail, further erasing the host's identity.

Skwrath is a quilted bodice constructed of stony leather lined with blood-red silk. It integrates a sculptural wing-like collar around the head that can be used to conceal the face and can be torn open to reveal the scarlet lining. The abdomen is composed of three interlocking leather segments or plates, embroidered with SMA threads that are activated through a custom electronic board to contract and curl back, revealing deep slashes of red silk.

Designers: Joanna Berzowska and Di Mainstone of XS Labs, with Marguerite Bromley, Marcelo Coelho, David Gauthier, Francis Raymond, and Valerie Boxer

XS Labs is a Montréal-based design research studio with a focus on innovation in the fields of electronic textiles and wearable computing. The studio tries to break down the traditional boundaries between disciplines. (xslabs.net)

Joanna Berzowska is an associate professor of design and computation arts at Concordia University, Montréal; a member of the Hexagram Research Institute; and the founder and research director of XS Labs. Her art and design works have been shown at the Cooper-Hewitt Design Museum in New York, the V&A in London, the Millennium Museum in Beijing, the Australian Museum in Sydney, NTT ICC in Tokyo, and Ars Electronica Center in Linz, among other places. She was recently selected for the Maclean's 2006 Honour Roll as one of "thirty-nine Canadians who make the world a better place to live." (berzowska.com)

Trained in fashion design at Central Saint Martins College of Art, London, Di Mainstone's eccentric style caught the attention of the press during a design partnership with cult UK labels Soochi and Choosi. Her fashion soon became a favorite of celebrities, selling internationally at boutiques such as Harvey Nichols and Urban Outfitters. Further design collaborations include illustrations at Jimmy Choo, accessories and homevares at Urban Outfitters, and prints at Topshop. Her interactive couture has been exhibited internationally. (dimainstone.com)



Project: Solar Vintage

Elena Corchero's goal is to explore clothing and textiles in order to design technologies that make us more human and less machine. She believes that whenever a technology is added to an ancient medium such as textiles, there is a need to respect and explore the medium's history and traditions. Solar Vintage is a collection of accessories for the eco-fashion-minded in which technology meets tradition. It explores delicate ways of incorporating organic solar cells and other electronic components into textiles. Embroideries and prints recall endangered birds. The pieces are charged when used outdoors during the day, and in the evening transform into decorative ambient light displays for the home.

Designer: Elena Cochero

Elena Corchero spent her childhood at her mother's fashion studio and studied fine arts. She joined MIT's Media Lab—Europe and specialized in smart textiles and wearable technologies. She recently completed an MA in design for textile futures at Central St. Martins College, London, and is currently a research fellow at Distance Lab in Scotland.



Project: Sp4rk13

Sp4rk13 is a dress that lights up due to its own motion. As Sp4rk13's skirt swishes and sways, it provides a dynamic lightshow, encouraging its wearer to be active and giving others a visible gauge of her level of motion. There are no batteries in the dress itself, which uses a novel power distribution mechanism and creates a dazzling effect with virtually no indication that electronics are involved.

Designers: Kit Waal and Rehmi Post

With her company Asteism, Kit Waal is trying to create an electronics assembly factory out of knitting needles, a spinning wheel, and her grandmother's sewing machine. She's been known to annoy polite company by insisting that ridiculous ideas in technology are only impossible until making a trip to the fabric store.

Rehmi Post has been combining electronics and textiles for over a decade, ever since he first learned how to sew circuitry into fabric. His focus now is to extend the design language of e-textiles to scalable architectures for distributed computation, sensing, and power. His fondest hope is to discover a killer app for smart clothing.



Project: Trikoton—The Voice Knitting Collection

How does it feel when your sweater becomes a medium for your own voice? The focus of Trikoton is the human voice, its different recording and reproduction techniques, and the connection between communication and fashion. Transferring signals of the voice into clothing creates a new aesthetic of speech recording. The scheme of pattern cards in the old, mechanical knitting machines was used to create an audio data program in which the frequency bands of a spoken message are converted into a binary code for knitting patterns. Working with a German knitting company, the designers realized a parametrical knitting program to produce fashion pieces—unique, like the human voice. Trikoton, Magdalena and Hanna's first project together, was presented at Ars Electronica 2007 in Linz, Austria.

Designers: Magdalena Kohler and Hanna Wiesener

Magdalena Kohler was born in 1982 in Wels, Austria. After finishing a goldsmith apprenticeship, she worked as a freelance jewelry artist in Austria. Since 2004 she has been studying fashion design at University of the Arts, Berlin, studying with Valeska Schmidt-Thomsen.

Hanna Wiesener was born in 1983 in Potsdam, Germany. From 2000 – 2004 she studied cultural studies and art history at Humboldt University, Berlin, and in Paris. Since 2004 she has been studying product design and interactive systems at University of the Arts, Berlin, studying with Burkhard Schmitz and Frank Fietzek.



Model: Mikem Hens

Project: X-travagant X-pansionism

X-travagant X-pansionism, a dress inspired by the elegance of peacocks and the extravagance of Marie Antoinette, contains yards of silk fabric in the rich hues of a peacock tail feather. The finely detailed corset displays the bold intricacy of the peacock, while the three-foot train and bustle reflect the finery of the Baroque period. The crowning feature of this dress is the spring-loaded tail of peacock feathers that fans out behind the wearer. At first the dress is viewed with the tail down, feathers peeking out from behind the skirt. When the audience least expects it, the model pulls the lever, releasing the tail to gracefully rise up behind the model.

Designer: Grace D. Johnston

Grace D. Johnston is a fashion design major at the VCU School of the Arts in Richmond, VA. For the past ten years, Grace has been designing and creating clothing from thrift-shop finds, vintage dress patterns, and her own imagination. She has worked in costume shops, theater companies, and her own living room making clothing and costumes for herself and others. She would love to thank her amazing family and fantastic friends for their never-ending support and continuous praise.

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