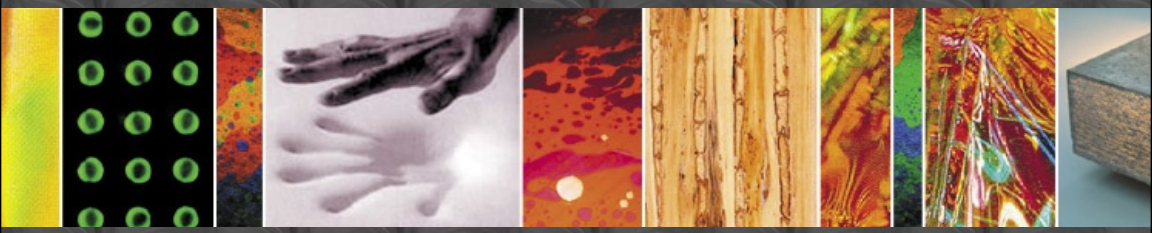


TRANSMATERIAL

A catalog of materials, products and processes that are redefining our physical environment.

Edited by Blaine Brownell | nbbj

TRANSMATERIAL

Unlike the artist, who interacts directly with his or her palette, the architect is one-step removed from the physical substance that makes architecture. This synapse often breeds ignorance about what materials are available or what properties they possess, which is reinforced by the fact that most buildings are still comprised by relatively conventional products and systems despite the wide variety available.

Indeed, when one assesses the diverse and fantastic range of materials available today, one realizes the extent to which humanity has been hell-bent for innovation. One sees not a fixed catalog of products, but rather a constantly shifting array of materials which offer continual improvements upon known standards or which render those standards obsolete.

Within this ever-changing inventory, several broad classifications arise which elucidate the material transformations that are occurring. By analyzing the most innovative products and processes according to these expansive trends, it is my hope that we can gain a greater comprehension of these developments in order to imbue our physical environment with the same unrelenting expectations for innovation.

CONTENTS

CODE

Each product sheet is codified with a variety of information to enhance data retrieval and further research. The system includes the following components:

Quoted source

Product thumbnail

Primary category

CSI division +

s	software
h	hardware
01	general
02	sitework
03	concrete
04	masonry
05	metals
06	wood + plastics
07	thermal + moisture protection
08	doors + windows
09	finishes
10	specialties
11	equipment
12	furnishings
13	special construction
14	conveying systems
15	mechanical
16	electrical

Product inventor/manufacturer

Reference source

Hyperlink

http://www.litracon.com/

Oliver Graydon, "Concrete casts new light in dull rooms " in Optics.org, 11 March 2004

UP 03

LiTraCon

optics.org Website

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

ULTRAPERFORMING

Throughout human history, material innovation has been defined by the persistent testing of limits. Ultra-performing materials are those which are stronger, lighter, more durable, and more flexible than their conventional counterparts. These materials are important because they shatter known boundaries and necessitate new thinking about the shaping of our physical environment.

Interestingly enough, one of the most significant trends in material innovation is actually dematerialization. The ongoing pursuit of thinner, more porous, and less opaque products indicates a notable movement towards greater exposure and ephemerality. The recent fabrication of translucent concrete, for example, is significant because what has been understood to be a thick, heavy, and opaque material can now transmit light. We can now see through walls.

It should come as no surprise that ultra-performing materials are generally expensive and difficult to obtain, although many of the following products are being developed for a broad market.

UP

BIOSTEEL

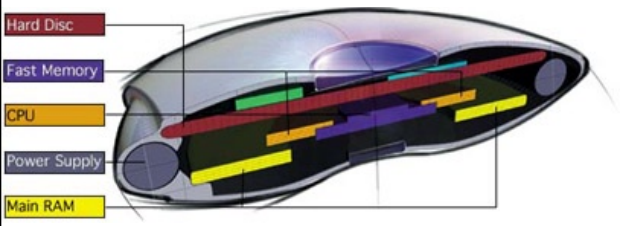
Spider silk has long fascinated man for its elegant evolutionary solution - a unique combination of enormous tensile strength and elasticity with an ultra-lightweight fiber. Spiders produce a number of different silks with different mechanical properties for use in spinning webs or forming cocoons. Of these silks the “dragline” or “frame” silk has been the object of desire for materials engineers because of its extreme performance mechanical properties, particularly strength. In fact, spider dragline silk is widely recognized as the strongest material known.

Despite its superior mechanical properties, spider silk is not used commercially because of an absolute constraint on supply. Recently, however, the modern tools of biotechnology have offered the possibility of mass producing man-made spider dragline silk for the first time - in goat’s milk. Nexia’s proprietary silk production system is an innovative approach, proven successful in producing the most authentic, man-made spider silk to date. The result is “BioSteel”, a family of spider silk proteins. Nexia’s technology relies on the anatomical similarities between the spider silk gland and goat mammary glands. In both cases, epithelial cells manufacture and secrete water soluble, complex proteins in large amounts.

BioSteel may be used in a wide variety of medical and industrial products, from wound closure systems to ballistic protection fabrics.

http://nexiabiotech.com/HTML/technology/biosteel.shtml

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



OPTOELECTRONIC COMPUTER

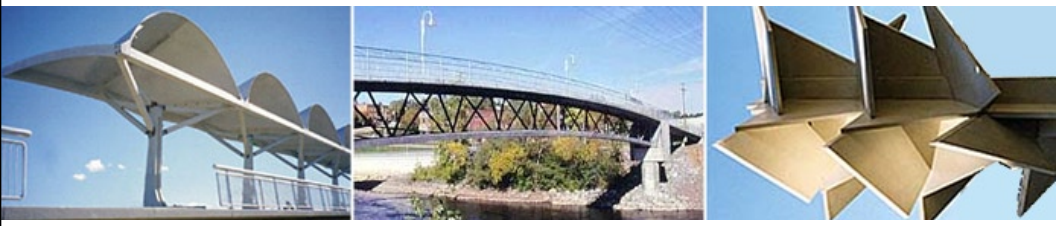
Kip Crosby, "Introducing the Computer of 2010" *Forbes ASAP* Cover Story, 08/21/00

For decades, silicon, with its talent for carrying electrons, has been the mainstay of computing. But for a variety of reasons, we're rapidly approaching the day when electrons will no longer cut it. Within 10 years, in fact, silicon will fall to the computer scientist's triple curse: "It's bulky, it's slow, and it runs too hot." At this point, computers will need a new architecture, one that depends less on electrons and more on optics.

With the assistance of award-winning firm frogdesign, Forbes ASAP has designed and built (virtually, of course) the computer of 2010. Whenever possible, our newly designed computer replaces stodgy old electrons with shiny, cool-running particles of light - photons. Electrons remain, doing everything they do best (switching), while photons do what they do best (traveling very, very fast). In other words, we've brought the speed and bandwidth of optical communications inside the computer itself. This mix is called optoelectronics, another buzzword we encourage you to start using immediately. The result is a computer that is far more reliable, cheaper, and more compact--the entire thing, believe it or not, is about the size of a Frisbee - than the all-electronic solution. But above all, optoelectronic computing is faster than what's available today. How fast? In a decade, we believe, you will be able to buy at your local computer shop the equivalent of today's supercomputers.

http://www.forbes.com/asap/00/0821/087.htm

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



HIGH-PERFORMANCE CONCRETE

Imagine a footbridge as long as a football field with a platform as thick as your hand. Or a 6' x 10' sheet just 1 inch thick that bends as it continues to support a 2,000 lb car.

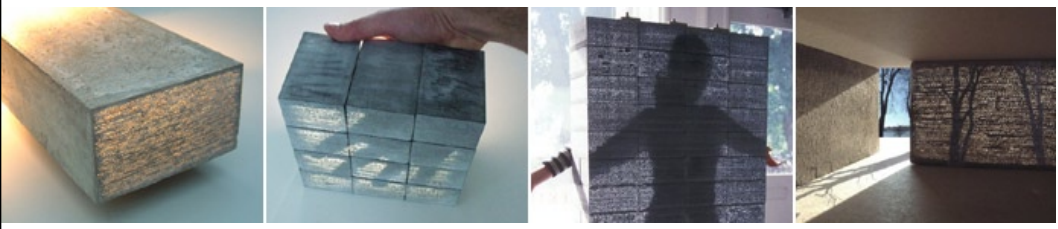
Working in collaboration with Rhodia and Bouygues, Lafarge has developed a whole new family of concretes called Ductal. These concretes have high compressive and flexural strength, and their special characteristics enable the achievement of outstanding architectural feats.

Ductal concrete incorporates strengthening fibers and opens the horizon to ultra-high performance due to its special composition which provides it with outstanding strength, six to eight times greater than traditional concrete (under compression).

"Fiber-reinforced" means that it contains metal fibers which make it a ductile material. Highly resistant to bending, its great flexural strength means it can withstand significant transformations without breaking. Ductal also comes with organic fibers for applications with less load and for architectonic applications

http://64.227.188.244/imagineductal/home.asp

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



LIGHT-TRANSMITTING CONCRETE

Oliver Graydon, "Concrete casts new light in dull rooms " in optics.org, 11 March 2004

The days of dull, grey concrete could be about to end. A Hungarian architect has combined the world's most popular building material with optical fiber from Schott to create a new type of concrete that transmits light.

A wall made of "LitraCon" allegedly has the strength of traditional concrete but thanks to an embedded array of glass fibers can display a view of the outside world, such as the silhouette of a tree, for example.

"Thousands of optical glass fibers form a matrix and run parallel to each other between the two main surfaces of every block," explained its inventor Áron Losonczi. "Shadows on the lighter side will appear with sharp outlines on the darker one. Even the colours remain the same. This special effect creates the general impression that the thickness and weight of a concrete wall will disappear."

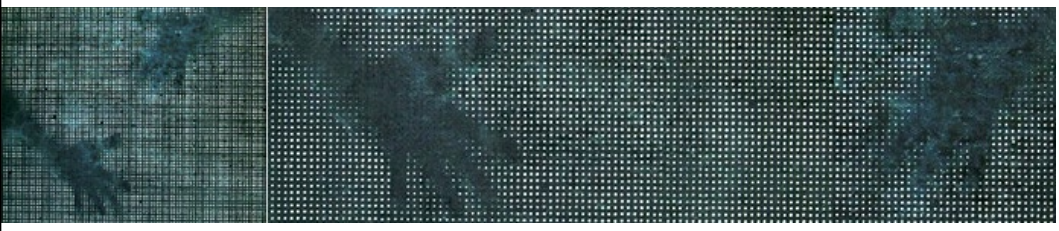
The hope is that the new material will transform the interior appearance of concrete buildings by making them feel light and airy rather than dark and heavy.

LiTraCon

optics.org
Website

http://www.litracon.com/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



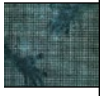
TRANSLUCENT CONCRETE

Ken Schulman, "X-Ray Architecture" in *Metropolis*, April 2001, p. 72

An idea hatched in the research department of OMA promises to transform the nature of buildings. Inventor Bill Price conjures up the ultimate material: translucent concrete.

"My ultimate goal was to create a material to change concrete - but still keep the construction technique intact," Price says, switching to a slide of a poured block of translucent concrete made from a crushed-glass aggregate and a plastic binder. Lit from underneath, it seems to breathe light like the sun breaking through winter ice. He reaches behind him onto the bookshelf, takes a small cylinder made from the same material, and places it and two other samples onto his desk. They look like high-design paperweights: crushed glass, plastic tubes, and crushed opaque gravel frozen in translucent plastic. It's easy to imagine a tabletop made of this material - or an entire wall of a house, theater, or museum...

Translucent concrete will need to be further researched, perfected, and tested before widespread applications are possible. The analyses conducted thus far - tests done in the laboratory at Virginia Tech on small columns and cylindrical sections of translucent concrete with the crushed-glass aggregate and plastic binder - have shown the new material to be superior to traditional concrete in compression and flexure. But large-scale applications of his new material are still months - if not years - away.



PERVIOUS CONCRETE

Pervious pavement is a cement-based concrete product that has a porous structure which allows rainwater to pass directly through the pavement and into the soil naturally. This porosity is achieved without compromising the strength, durability, or integrity of the concrete structure itself.

The pavement is comprised of a special blend of Portland Cement, coarse aggregate rock, and water. Once dried, the pavement has a porous texture that allows water to drain through it at the rate of 8 to 12 gallons per minute per square foot. For reference, tests conclude that a square foot of bahia sod drains at the rate of 2 1/2 to 3 gallons per minute. According to the manufacturer, this rapid flow-through ratio inspired the phrase “the pavement that drinks water.”

http://www.centralconcrete.com/pervious_concrete.html

AUTOCLAVED AERATED CONCRETE

It was discovered in 1914 in Sweden that adding aluminum powder to cement, lime, water, and finely ground sand caused the mixture to expand dramatically. The Swedes allowed this "foamed" concrete to harden in a mold, and then they cured it in a pressurized steam chamber--an autoclave.

Autoclaved aerated concrete (AAC, also called autoclaved cellular concrete--ACC) is produced by about 200 plants in 35 countries and is used extensively in residential, commercial, and industrial buildings. At a density of roughly one-fifth that of conventional concrete and a compressive strength of about one-tenth, AAC is used in load-bearing walls only in low-rise buildings. In high-rises, AAC is used in partition and curtain walls. The material is also fairly friable and must be protected from weather with stucco or siding. On the positive side, it insulates much better than concrete and has very good sound absorbing characteristics.

After a history of aborted efforts to introduce AAC to the U.S., two large European conglomerates have both decided to take the plunge. The German Hebel Group, through Hebel USA, has just completed the first full-scale AAC plant in the U.S. Once the plant is fully operational, licensee Hebel Southeast will control production.

http://www.babb.com/aac/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

FLOATING CONCRETE

David Pescovitz, "Stuff Love," *Wired* (January 2000), p. 184

By replacing sand and gravel with tiny polymeric spheres, University of Washington materials scientists have created a concrete stronger than traditional concrete but so light it floats in water. The team won the regional American Society of Civil Engineers Concrete Canoe Competition last year.

http://students.washington.edu/asce

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

FOAMED ALUMINUM

"Light-as-air, stronger-than-steel materials are just beginning to shape our world. Foamed aluminum first emerged from the lab in the frame of a 1998 Karmann concept car. Ten times stronger than traditional aluminum at just one-tenth the weight, the material allows a more fuel-efficient vehicle. Its isotropic cellular structure helps the frame absorb shock and serves as an insulating firewall between the engine and the rest of the car. The foaming process can also be applied to steel, lead, tin, and zinc." [Jessie Scanlon, *Wired*]

CYMAT's Aluminum Foam Division is an innovator in the use of closed cell aluminum foam for a wide variety of applications. Initially developed by Alcan International, this material won the National Research Council (Canada) Award for Product of The Year in 1993. The product is a high strength, extremely light weight material that possesses high durabilty, excellent finish and lasting value. The foam comes in an assortment of densities and sizes up to five feet wide and up to fifty feet long. It has numerous applications including architectural, automotive, marine, military, aviation, transportation, electronics, appliances, signage and many more.

http://www.cymat.com/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

SMART BEAMS

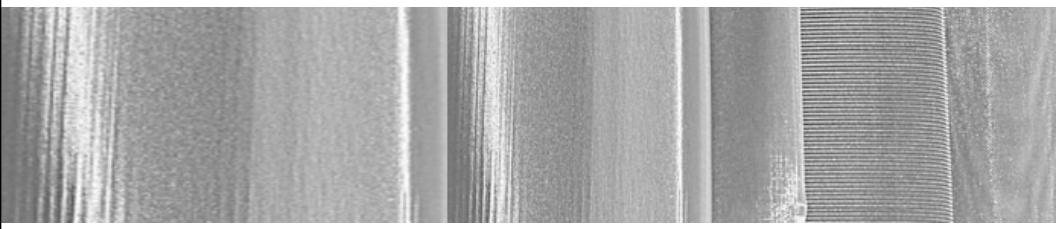
Sweets Product News, August 2002

SMI Steel products is an innovative steel manufacturer specializing in the smartbeam, which is suited for long-span composite floor construction or long-span roof applications for architecturally exposed steel. Produced with castellated, hexagonal web openings or cellular, circular web openings, smartbeams operate most efficiently between 30 and 80-foot spans. Smartbeams allow a more flexible, column-free, long-span floor space at the same cost as traditional short-span construction.

The most common building types for smartbeams are office buildings, mezzanines, parking garages, or any application utilizing a suspended composite floor. Smartbeams' superior vibration characteristics and ability to accommodate mechanical services make them ideal for any composite floor application.

http://www.smisteelproducts.com/English/Home.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



WOVEN STAINLESS STEEL

K5 New York is now offering woven stainless steel in 18 different weaves, produced in Switzerland by G. Bopp. This product has been used in projects as diverse as railing systems and furniture components. Custom weaves and patterns are also possible.

http://www.k5newyork.com/prod01.htm

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

CREATIVE WEAVE METAL MESH

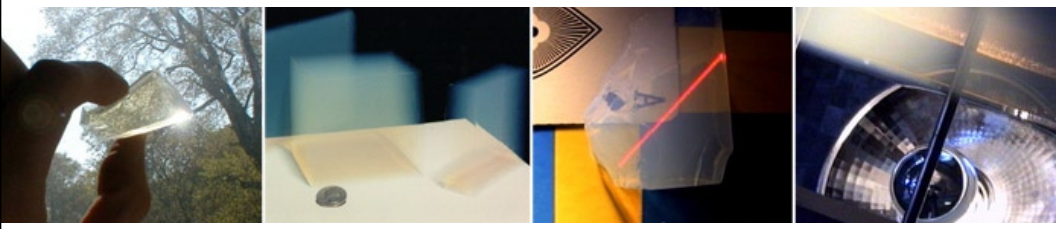
Metal meshes have been known as decorative and functional design elements in architecture for only a few years. The French National Library in Paris was the first architectural project where GKD, in cooperation with French architect Dominique Perrault, succeeded in systematically implementing metal meshes in a building in various ways and applications. Since then, this development has continued worldwide.

For decades, GKD has manufactured metal meshes for industrial applications in filtration and separation technologies and the process belt sector. At first, it was their visual attractiveness that made metal meshes suitable for the architecture and design sector. During the continuous product development it became clear that metal meshes also have considerable technical advantages which are extremely relevant in the field of architecture. Today, the architect has a wide range of mesh samples at hand, with weaving widths up to eight meters, which allow for great design flexibility.

Woven metallic meshes used as partition elements convey a new dimension to any space. They can be used as projection screens, and, taking into account their acoustic characteristics, are suitable for the use in public buildings, opera houses and concert halls.

http://www.gkd.de/englisch/index.html

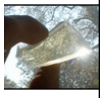
Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



AEROGEL

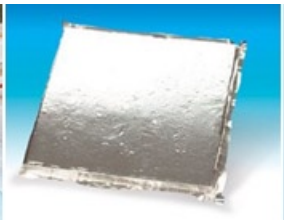
Aerogel or “Airglass” is a transparent material that looks like glass, insulates better than mineral wool and is more heat resistant than aluminum. The material has many interesting properties and possible applications such as insulation in windows and solar collectors, windows in firewalls, a component in air-conditioning equipment, etc.

Aerogel has outstanding properties, especially regarding heat transfer. The material transmits about 88% of the integrated solar spectrum (thickness about 10 mm, or 3/8 inch). Aerogel is molded, giving the possibility of getting different shapes: cylinders, cubes, plates of varying thickness etc. Chemically, Aerogel is composed of quartz and a great deal of air, making it fragile. The grains of quartz are small compared to the wavelength of light, giving Aerogel good transparency properties. At around 750°C (1380°F), it starts to shrink and slowly collapses to a piece of ordinary quartz. Aerogel can be cut with a band saw and holes can be drilled with a metal drill. It should be noted that Aerogel is non-flammable and non-toxic.



http://www.airglass.se/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

VACUUM INSULATION PANELS

Cars and homes have at least one thing in common: they consume energy in the form of oil or gas. Energy-efficient vehicles typically make use of lightweight materials and improved engine technologies, and soon home builders will also need to pay greater attention to environmental concerns in their designs. Apart from modern and efficient heating systems, thermal insulation makes the biggest difference. Vacuum insulation panels (VIP) could well be the material of the future.

Until now, such panels have been used primarily in cooling and refrigeration units. Now they are finding more widespread application as insulators for flat roofs. VIP's work on the same principle as the thermos flask: when air is evacuated from the cavity of the double-walled container, heat conduction and convection decrease sharply. A metal layer on the surface further reduces the heat transfer by IR radiation. A VIP consists of a filler material such as compressed silica which is vacuum-encapsulated in a plastic barrier foil. "The real advantage is the amount of space that can be saved", explains Dr. Klaus Noller of the Fraunhofer Institute for Process Engineering and Packaging IVV. "Panels with a thickness of two centimeters insulate just as effectively as 20 centimeters of mineral fibers."

http://www.fraunhofer.de/english/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

ULTRA-SLIM DOORS

Tre Più is a leading company in the design and manufacture of top quality doors, supported by the continuous creative and innovative contribution of renowned names in architecture and industrial design.

The Tre Più door is known for its highly architectural quality and formal ability to re-design a space. The Tre Più door has been conceived and designed to become an object whose distinctive and original qualities enhance interior design.

The Convex door was designed by F.A. Porsche, the Milano door by Luca Scacchetti, and the Rever door by Cini Boeri, Laura Griziotti and Guido Nardi.

http://www.trep-trepiu.com/eng/tre-piu/prod.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

LIGHTBLOCKS

Initially developed for use in public art installations, Lightblocks are high-strength, integral-color acrylic and polycarbonate panels which can be used in interior and exterior applications. Lightblocks have been shown to withstand impacts approximately three times greater than laminated safety glass and have six times greater impact resistance than ordinary glass. Moreover, Lightblocks are 50% lighter than glass.

Lightblocks are available in unlimited translucent or opaque colors, and have been proven to withstand weather and sun exposure for long periods without any detectable deterioration. Available in thicknesses ranging from 1/16" to 4", the material can be molded, curved, slumped, cut, drilled, and carved, and surfaces can be smooth, textured, glossy or matte.

http://www.lightblocks.com/index.shtml

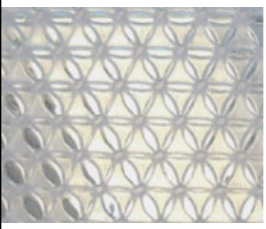
Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

LUMICOR

Lumicor panels are made from thermally-laminated translucent resin, with options for integrating textile materials or graphics between polymer layers. Lumicor panels are superior to glass in terms of their stronger break resistance, lighter weight, and lower cost. They can be thermoformed, crowned, beveled, polished, water jet cut, bent, etc. The typical panel size is 4′ x 8′, but custom sizes can be made up to 5′ x 10′. Panel thickness ranges between .030″ and 1″.

http://www.lumicor.com/index.asp

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com




LAMINATED THERMOPLASTIC PANELS

Blizzard Composite GmbH manufactures high-tech plastic composites for the architectural field as well as the trucking industry. Their core expanding machinery heats up and vertically expands solid thermoplastic sheets, which are then processed into sandwich panels by lamination equipment. Due to the unique geometry of the PepCore, the panels are of low weight and provide an excellent combination of high stiffness and compressive strength.

http://www.blizzard-composite.com/index.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com




THERMOPLASTIC COMPOSITE PANELS

PepCore is a honeycombed truss-wing-formed composite wall sandwiched between a seamless, one-piece, thick outer facing and a thinner inner facing with no rivets required.

The PepCore power structure starts with plastic sheet material like polyethylene, ABS, Surlyn, Polystyrene, or Polycarbonate. The core material is then formed with Phelps Engineered Plastics proprietary PepCore process which, through heat and convection, the core sheet is expanded to the desired honeycomb thickness and geometry. When mated with the specified facing, it becomes a material with a high degree of rigidity.

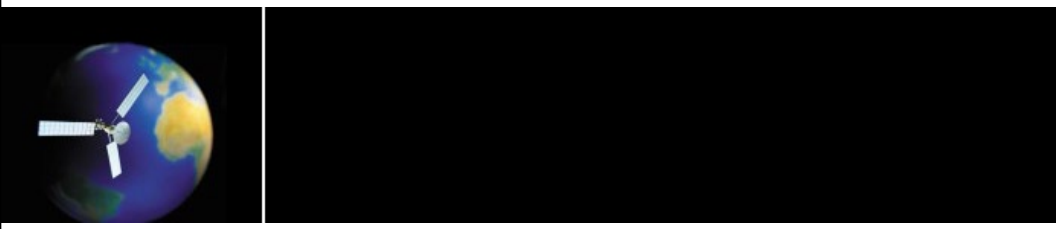
PepCore is “pound for pound, lighter than aluminum and stronger than steel,” and solves the four problems traditionally experienced with traditional aluminum sheet and post body construction: leakage, rust and corrosion, dents and dings, and weight management.

The lampshade shown above at the far right was designed by Jun Takagi and manufactured with PepCore material.

PepCore

AR Haire Website

http://www.arhaire.com/pepcore.shtml



SUPERBLACK

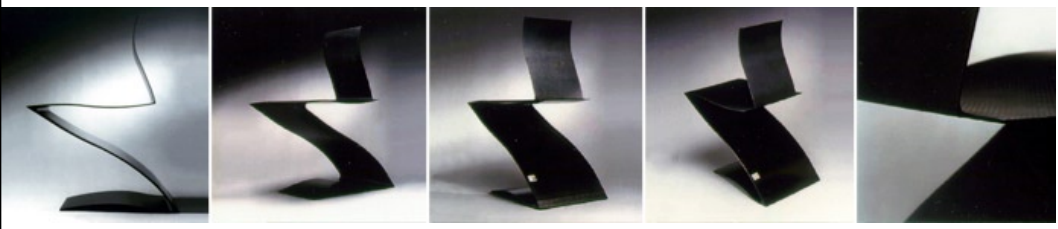
British scientists have invented the darkest material on Earth. The super-black coating was developed by researchers at the National Physical Laboratory in London. It could revolutionize optical instruments because it reflects 10 to 20 times less light than the black paint currently used to reduce unwanted reflections.

The key to the nickel and phosphorous coating's blackness is that its surface is pitted with microscopic craters. "Super-black" is especially effective at absorbing light which hits it at an angle. With the light source at right angles, the coating reflects less than 0.35%. Black paint reflects about 2.5% - seven times more.

One of the early applications might be on star-trackers, navigational aids which help spacecraft stay on course by fixing on pinpricks of light in the heavens. The material could also be used in works of art. NPL says several artists have shown an interest.

Nigel Fox, who heads the optics group at NPL, said: "When you look at the black, it is an incredibly beautiful surface. It's like black velvet."

http://www.npl.co.uk/



CARBON FIBER CHAIR

Constructed entirely of carbon fiber, the Z5 chair weighs only 14 pounds but will withstand loads in excess of 1200 pounds. The technology used to construct this chair was originally developed for military applications and is a primary component in all advanced fighter aircraft. By exploiting the characteristics of this exotic material, Giovanni Pagnotta has created what appears to be an updated version of Gerrit Rietveld's 1934 Zig-Zag stool which is "not only visually disarming but also extraordinarily comfortable."

Z5 is available as shown in naked carbon, red, yellow, blue, or dressed in black leather.

AIRTECTURE

Building with air, the most natural of all materials, is a special challenge, since air-inflated components are used in place of the usual load-bearing components.

The idea behind Airtecture is based on mechanically pre-tensioned membrane constructions that have been used for several interesting buildings, e.g. the German Pavillon at the EXPO 1992 in Seville, Spain or the International Airport of Denver, Colorado. The most important innovation of Airtecture is that the membranes are not pre-tensioned mechanically, but by means of air pressure and in such a way that they are able to bear loads.

The classical air-supported buildings were the prototypes that the German Pneumatic experts Festo intended to develop further. In contrast to such buildings, however, Airtecture works with a much higher air pressure and also has atmospheric pressure in the inside.

http://www.festo-tooltechnic.cz/air_in_air/eng/corpo421.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

TREE TENTS

Elaine Louie, "A Canvas the Artist Curls Up In," *The New York Times*, July 5, 2001

Dre Wapenaar, a Dutch artist who is practically unknown in the United States, believes that a properly designed tent can alter human behavior. It can do so, he says, by making people feel secure, calm and friendly.

Administrators in a Dutch high school in Helden-Panningen, a town 90 miles southeast of Rotterdam, last year asked Mr. Wapenaar to solve a perennial problem. The school's 400 students needed a place for a little privacy.

Remembering the hangouts of his own youth ("always a difficult location, somewhere behind the school," he said), Mr. Wapenaar, 39, devised a 33-foot-long pavilion with seating for 70 students under a canopy of overlapping translucent polyester.

For Mr. Wapenaar, who titled the work "Hang Kiss Smoke," this was one of his few permanent creations. His tents, which have been exhibited in the Netherlands, Italy, England, Japan and France (and for three days recently in Aspen, Colo.), have become contemplations on what makes a home and how people interact.

"There is a universal language of tents," Mr. Wapenaar said on a recent visit to New York. The tent, he added, is "an object for meeting people."

http://www.nytimes.com/2001/07/05/living/05DRE.html?pagewanted=all

BANNERWORKS

Koryn Rolstad is a Seattle-based industrial artist who leads an integrated team of industrial designers, graphic designers, project managers and production staff in creating large-scale aerial sculptures and public art installations around the world. Known as "Bannerworks," her pieces dexterously cross the boundaries between sculpture and signage, art and engineering. Her project list includes interior environments for Starbucks, Novell, AT&T, REI, Mishima Hospital, Oacis Healthcare Systems, and various schools.

http://krstudios.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

TENSION FABRIC STRUCTURES

Transformit's provocative tension fabric structures are appropriate for use in entertainment venues, special events, exhibits & trade shows, or anywhere that fabric architecture is appropriate. Made of nylon spandex, the structures offer a viable surface for any type of projection or lighting display, including front and rear-projected video. It is also possible to print on the fabric via silk-screening or dye sublimation digital printing.

http://www.transformitdesign.com/index2.htm

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

MULTIDIMENSIONAL

Obviously, materials are physically defined by three dimensions. But many products and buildings have long been conceived as a collection of flat planes which define space and function (consider a computer motherboard or Le Corbusier's domino frame, for example).

A new trend highlights the exploitation of the z-axis in the manufacture of a wide variety of materials, ranging from fabrics to wall and ceiling treatments. One reason for this development is the fact that taking advantage of greater depth allows thin materials to become more structurally stable. Another reason is that materials with enhanced texture and richness are more visually interesting.

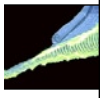
Augmented dimensionality will likely be a growing movement, especially considering the technological trends toward miniaturization, systems integration, and pre-fabrication.

MD

3D TEXTILE KNITTING MACHINE

Cetex has developed a knitting machine that can produce 3-dimensional textiles with novel properties, such as preformed shapes with a wide range of different profiles (e.g., seat cushion, wedge-shaped, L-profile, arched profile), and cross sections that closely approximate the final required contour; base fabric spacing up to 6 in (150 mm); flexibility in the knitting construction and design of spaced-thread constructions; bi-directional reinforcement; spaced textiles with wide spacing (up to 2.4 in; 60 mm) in the base fabric and good elastic recovery; and no delamination.

Applications include stitch-bonded fabric components for engineering, automotive, aerospace, and sports; foamed or coated and inflatable shaped parts; filtration components and shaped parts filled with solids; fully formed textile products for medical and sanitary uses; and reinforcing textiles for construction.



Cetex

Material Connexion Website

http://www.cetex.de/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

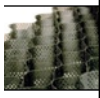



GEOWEB

Presto's perforated Geoweb cellular confinement system features an engineered pattern of perforations in the cell wall. This hole pattern provides increased frictional interlock with coarse aggregates, crushed rock and concrete.

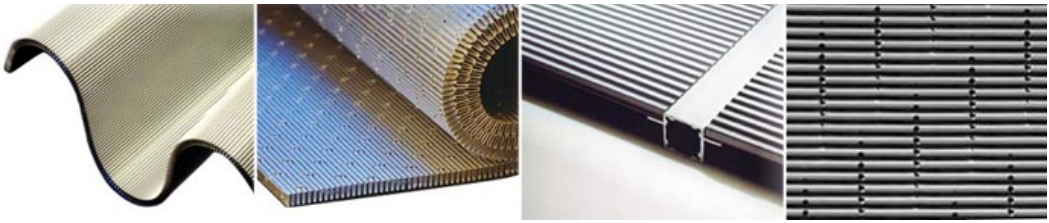
In vegetated systems, the perforations increase root lock-up, creating a more stable vegetated mass and overall healthier soil environment. The perforations allow lateral drainage through the system, thereby enhancing performance of the system in saturated soil conditions.

The Geoweb system enhances system performance in slope and channel protection, earth retention and load support applications. The multi-layered earth retention system is used for a wide range of design requirements and site conditions. The system's flexibility allows it to withstand large differential settlements and conform to a contoured landscape while typically using on-site infill materials. The system's outer cells, when filled with topsoil, provide an ideal environment to support vegetation.



http://www.prestogeo.com/index.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



AERO FORMED ALUMINUM

Aero consists of tightly corrugated anodized aluminum sheets that are flexible and formable. Variations in thickness, depth and rounded or square return edges produce five unique designs, some of which include precision-engineered perforations. Aero comes in a matte silver anodized finish with UV protection.

Aero is ideal for a breadth of interior applications, whether the visual impact desired is an emphasis on geometric compositions or fluid curves. The lightweight material is sturdy enough to be used for wall and ceiling panels yet is malleable enough to be rolled like a carpet.

http://www.forms-surfaces.com/products/aero/index.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

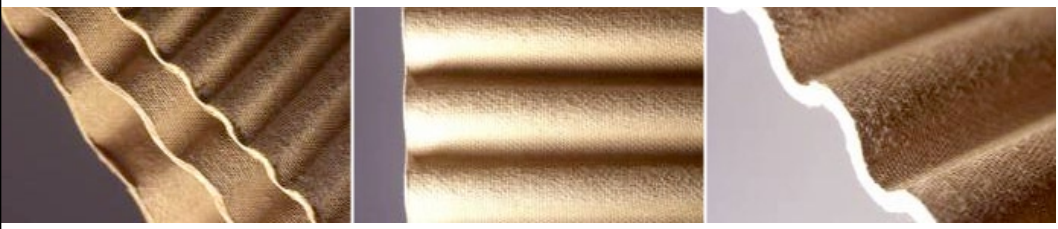
FLEXIBLE FRAMING TRACK

Flex-Ability Concepts manufactures the Flex-C Trac system, which is a construction product used to build curved metal or wood structures. It can be used to frame curved walls, barrel ceilings, wavy ceilings, s-curves and columns.

Architects like Flex-C Trac because the strength, quality and uniformity of the finished curves are superior. It can be hand shaped on site to make curves of varying radii, or to easily match existing curves. Contractors claim it saves 60 to 80% of the time required to build a curved structure compared to conventional methods and results in a better-finished product.

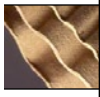
http://www.flexc.com/1.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



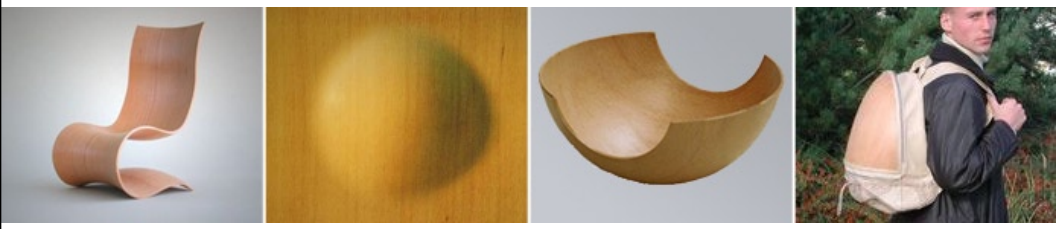
CORRUGATED WOOD BOARD

Rhythm Board is lightweight corrugated board made of 100% wood pulp hot pressed to form the corrugation without the use of an adhesive. It is available in sheets up to 124 x 204 in (3.15x5.18 m) in 3 thicknesses each with different corrugation frequency and amplitude, and in a style called “gamma” that features rectangular corrugations. It can be cut with conventional woodworking equipment. Its original use was as transformerboard but current applications include interior room dividers and sound absorptive ceiling panels.



http://www.well.de/en/en.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



3D MOLDED PLYWOOD

Reholz GmbH develops, produces and sells veneers that can be three-dimensionally deformed to a very high degree for the manufacture of three-dimensional plywood mouldings, for the facing of both profiled and curved edges, and for the coating of three-dimensional surfaces.

In this new technology, traditional veneers of different woods in thicknesses from 0.6-1.5mm are processed mechanically such that they become distortable. This is the basis of three-dimensional deformation, analogous to the deep drawing of metal sheets in which initially plane blanks are deformed to container-like hollow parts. As opposed to metal sheets, 3D-veneers are stable only if several plies are bonded together, preferably with alternating grains. These 3D-veneers can also be bonded to a substrate.

Reholz GmbH

Reholz Website

http://www.reholz.de

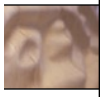
Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

UNDULATING VENEER PANELS

Ply is a wall panel consisting of a solid-wood frame with an undulating birch veneer of 0.4-mm-thick plywood. This new material is so thin that it folds nearly as easily as fabric. Thanks to the wavy surface, the element absorbs sound well. Still in development is a version with built-in lighting and panels thin enough to let light pass through. Panels with an extra backing of sound-absorbing material are another option.

http://www.showroomfinland.fi

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



CORRUGATED GLASS

Like structural glass channels, corrugated glass experienced its first widespread use in industrial buildings in Europe due to its structural integrity and relative economy, and was later adopted by the international design community for aesthetic reasons. Until recently, however, it has been difficult to find a producer of corrugated glass in North America.

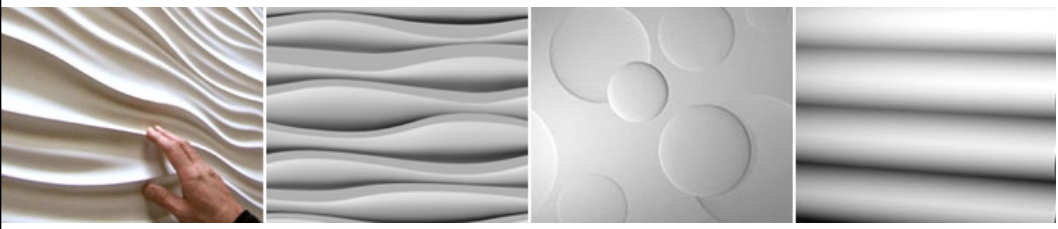
Joel Berman Glass Studios in Vancouver, BC now produces 53" x 118" corrugated glass panels of varying depths, profiles, and colors. The panels may be tempered or laminated, and the corrugations can run in a horizontal, vertical, or diagonal direction. The sides of the panels are flanged to accommodate a variety of framing systems.

Joel Berman Glass Studios

Joel Berman Glass Website

http://www.jbermanglass.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



SCULPTURAL GYPSUM PANELS

modulararts is the result of over two decades of experience in designing and building custom artwork for commercial and residential interiors. With a combination of experienced model-making, casting, and state-of-the-art technologies, modulararts can provide the beauty and subtlety of relief sculpture in modular panels which match up to create seamless, continuous surfaces of any size.

Gypsum, the primary material in modulararts panels, has been favored by architects and designers around the world for its superior fire properties, its similarity to sheetrock in regard to installation, and its relative light weight.

Because modulararts panels are entirely mineral they will not burn. The nature of gypsum acts like a thermal regulator when exposed to flame, also protecting the materials behind it from the heat of the flame for up to two hours. Moreover, modulararts sculptural panels are comprised entirely of nontoxic mineral and are not subject to hazardous polymerization (they do not off-gas like plastics or wood composites).

http://www.modulararts.com/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

BRAILLE TILES

Dennis Lin designed these Braille tiles when he was looking for a way to express a message in a literal, but subtle, way: "If the writing ain't on the wall already, these tiles provide the perfect way to get it up there."

Each 6" x 12"cast polymer tile represents a character of the Braille alphabet, and costs $50. Custom 'tactile messages' may be ordered directly from Totem Design.

Dennis Lin

Totem Design Website

http://www.totemdesign.com/index2.html

TEXTURED PORCELAIN TILE

Italy's Gruppo Majorca has crafted a new line of porcelain tiles in five colors and five atypical textures for use in vertical and horizontal applications. The tiles have integral color, and their edges may be left natural or edge-ground for minimal joint lines.

http://www.majorca.it/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

3D CARPET

With the Clodagh Collection, Lees proves that it can be competitive in the high-design carpet arena. Created in partnership with the innovative designer Clodagh, “these luxurious designs, inspired by Clodagh’s native home of Ireland and her intuitive sense of design, fashion and aesthetics, are translated into highly-styled products with Lees long-standing commitment to performance.”

The Clodagh Collection comprises one running line and three custom broadloom products named Buncrana, Glanmire, Kildare and Lisadell. These three-dimensional, textured offerings, which employ Lees’ next-generation TriAx tufting technology, are constructed of DuPont Antron Legacy nylon, and are 5/64-inch gauge, 40 oz. face weight products. TriAx allows yarn to be manipulated to a three-dimensional level of precision by accurately placing and controlling design and textural elements in unlimited pile heights. This creates intriguing surface textures and color interest through highlighting and refraction, giving depth and loft to plain colors in an unprecedented way; solids look like they are constructed of more than one color.

http://www.leescarpet.com/news/index.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

3D FABRIC

Spacer is a high-tech upholstery fabric with a 3-dimensional look. Visually, it appears to be three separate fabrics that have been connected. This look is achieved by a complex knitting process allowing all layers to be knitted at once which makes it incredibly strong. This structure makes the fabric thick without being too dense. Consequently, Spacer is a very comfortable fabric to sit on.

This fabric is available in 5 bright colors. The bright colors are achieved by digitally printing the color onto the fabric. This also enhances the 3-dimensional look because the color is sprayed through the top surface. Spraying, as opposed to piece dyeing, allows the middle layer to remain white.

Jhane Barnes Textiles

Jhane Barnes Website

http://www.jhanebarnestextiles.com

3D WALLPAPER

Contract October 2003, p. 28

Designed by Jaime Salm and Esther Chung, Tangent is 3D wallpaper that is reconfigurable and made from 100% waste paper. Tiles allow for customization, both acoustically and aesthetically, and are easily recycled. They can also be painted with water-based paints for an additional flair.

http://www.mioculture.com/newtest/tangent.asp

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

TOPOGRAPHIC CEILINGS

The Topo 3D system (pictured left) consists of preformed translucent and opaque Lexan infill panels installed into a curved suspension system. The infill panels are designed in four panel modules to create the appearance of gently rolling curves.

The 2′ x 2′ Geometrix metal ceiling panels (middle) are available in four profiles: flat, wedge shaped, and wedge shaped with either inside or outside corners.

Transparencies (right) is a fully accessible luminous ceiling system which produces the feeling of sunlit glass block with just a fraction of the weight, cost, and installation difficulties of real glass. Panels consist of nine injection molded 8″ x 8″ blocks, factory assembled into a 2 x 2 lay-in panel for fast installation and full accessibility.

USG

USG
Website

http://www.usg.com/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

POLYESTER ACOUSTIC PANELS

Soundwave panel was designed to help control the sound levels in busy interiors. Made from recyclable moulded polyester-fibre, the undulating wave form and the felt-like material of the original Soundwave helps reduce noice levels by absorbing the mid/high frequency range.

"Soundwave came about when we were designing Pravda, a restaurant in Helsinki. It is a big place and we didn't want it to be impossibly noisy. I couldn't find any acoustic products that were good looking and thought there could be a place for something with more character than the technical products.

The material is moulded polyester fibre, the same material used in the vehicle industry to quieten the interiors of tractor cabins and cars.

I liked the idea of 3D wallpaper, playing with light and shadow. Swell 01 panel looks like a natural shape close up but when the panels are joined together they form a much larger geometric pattern. Scrunch 02 panel is much more irrational. The first sketch was made out of scrunched paper and the production mould is a copy of a scrunched aluminium sheet." - Teppo Asikainen

http://www.snowcrash.se/products/sound_wave/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

REPURPOSED

Repurposed materials may be defined as surrogates, or materials which are used in the place of materials conventionally used in an application.

Repurposed materials provide several benefits, such as replacing precious raw materials with less precious, more plentiful ones; diverting products from the waste stream; implementing less toxic manufacturing processes; and simply defying convention.

As a trend, repurposing is important because it underscores the desire for adaptability in industry, as well as an increasing awareness of our limited resources. While the performance of repurposed materials is not identical to that of the products they replace, sometimes new and unexpected benefits arise from their use.

RP




RUBBER SIDEWALKS

Concrete sidewalks are uplifted by tree roots, and trees struggling for air and water develop large and invasive root systems below concrete.

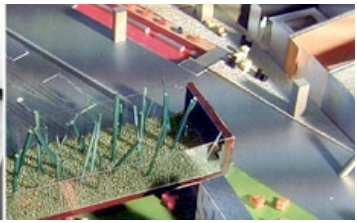
Rubber sidewalks are made of 100% recycled California tire rubber. Each square foot utilizes the rubber from one passenger tire. Tree roots grow less invasively beneath rubber sidewalks, offering a new strategy for sidewalk maintenance. The modularity of rubber sidewalks allows tree roots to be periodically inspected and trimmed.

Easy and economical to install, rubber sidewalks are available in 2' x 2.5' x 1.875" sheets and five different colors. They are pervious, allowing drainage at module seams, are flame resistant, non-toxic, and meet ADA requirements for slip resistance.

http://www.rubbersidewalks.com/index.htm

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com





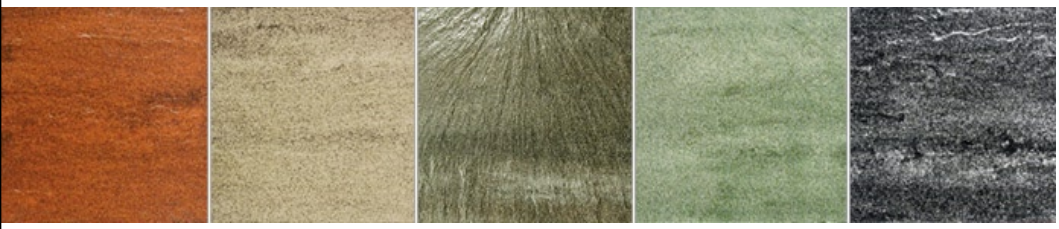
ALUMINUM FLOORING

Conceptually developed by Rem Koolhaas of the Office of Metropolitan Architecture, aluminum flooring has been incorporated in his Bordeaux house and Prada store in Manhattan, and is planned to be included in many future projects.

Aluma-tek is a newly-formed manufacturer established in Chicago which produced the aluminum floor for OMA's IIT student center. According to Aluma-tek, aluminum floor products are custom developed with #5052 alloy aluminum sheets, 3/16-1/4 inch thick, which are cut to specified sizes (2ftx4ft, 2ftx6ft etc.). A choice of three hand finishes are then applied to the surface of the aluminum creating a unique look, and a protective coating of oil is applied to minimize maintenance.

http://www.aluminumfloors.com/index.shtml

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



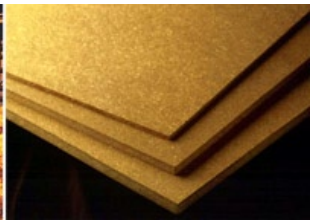
LIGNASIL TILE

Madera solid surface tile is made entirely from Lignasil, which is a high performance bio-composite material made from recycled natural fibers. The integral-color tile is designed for high traffic applications, and is less expensive, lighter-weight, and warmer to the touch than ceramics or stone. Standard Madera tiles are precision molded to 12″ x 12″ x 3/8″, but can be cut easily with typical woodworking tools.

http://www.designbiz.com/web/CompanyWebsiteBrands.asp?CompanyID=84362&BrandID=516

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



STRAWBOARD

Headquartered in Elie, Manitoba, Canada, Isobord Enterprises Inc. manufactures Isobord, a premium engineered strawboard product. Made from finely-chopped wheat straw and non-formaldehyde resins, Isobord is an environmentally friendly product used in the construction of furniture, cabinetry, countertops and case good items.

Isobord Enterprises Inc. began operations in 1998 with the production of 4-foot by 8-foot Isobord panels in a variety of thicknesses. The formaldehyde-free product immediately caught the attention of furniture, cabinetry and countertop manufacturers for use as a component product.

Isobord's ability to hold lamination, paints and veneers has made it a sought-after environmentally friendly product by industries worldwide.

Isobord Enterprises also produces several products that are sold directly to consumers in home improvement retail locations throughout North America. The environmentally friendly products currently available to consumers include Shelfbord shelving products; Storagebord attic storage system panels; and, Isounderlay underlayment panels for flooring applications.

http://www.dow.com/bioprod/index.htm

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

PALM FIBERBOARD

Malaysia supplies 50 percent of the world's palm oil, a raw material in high demand for the food processing and chemical industries. In this country, palm trees flourish on nearly eight percent of the land. Their fruit is roughly the size of a plum and grows in umbels. It is harvested every two months for the production of oil. In addition to the stripped fruit stalks, palm leaves and parts of the tree trunk make up the large quantities of waste left behind in the oil production process. Yet these materials are too valuable a resource to merely throw away or burn. Scientists at the Fraunhofer Institute for Wood Research, Wilhelm Klauditz Institute, WKI, have been cooperating with the Malaysian Palm Oil Board to investigate ways of using this vast volume of fibrous waste. The conclusion: the fibers have been found to be highly suitable for the manufacture of fiberboard for the construction and furniture industries.

"The first experimental investigations quickly showed that the various residual materials have the right attributes for being processed to make medium-density fiberboard - MDF," reports engineer Volker Thole of the WKI. The residual materials are crushed and then pulped into fibrous material in a thermomechanical process. Steam heats the fibers and then the soft raw material is ground in a refiner. Finally, adhesive is added and the material is hot-pressed to achieve the desired density and final solid form of the fiberboard.

http://www.fraunhofer.de/english/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

KIREI BOARD

Kirei board is a new environmentally friendly building material composed of 100% recycled agricultural fiber. Strong and lightweight, Kirei board has nearly unlimited uses in contemporary design.

Manufactured from recycled sorghum stalks and the formaldehyde-free KR Bond adhesive, Kirei board helps to reduce landfill waste and eliminate harmful Volatile Organic Compounds in the ambient airspace.

Sorghum, the principal component of Kirei board, is a drought-tolerant food grain requiring little fertilizer or pesticides to grow. Now, through a revolutionary process, these previously discarded stalks provide the foundation for a strong, delicately grained, lightweight building material.

Ideal uses for Kirei board include: interior architectural surfacing, cabinetry, furniture, paneling, display fixturing, interior wall coverings, office dividers, home decoration, and finished products & accessories.

http://www.kireiusa.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

NATURAL POLYMERS

Cargill Dow has invented a new technology to produce performance polymers entirely from annually renewable resources. Using a patented technology, they start with natural sugars (derived from plants such as corn, wheat, beets and rice) and use fermentation to create lactic acid (a food additive) and some simple refining steps to create polylactide polymers (PLA). The result is the only commercially viable polymer to combine performance and cost competitiveness with outstanding environmental benefits.

Cargill Dow makes polymers from annually renewable resources that can be used in packaging, fibers, and other emerging applications. To meet the demand for PLA from the NatureWorks process, they built a plant in Blair, Nebraska with a capacity of 140,000 metric tons in 2002.

http://www.cdpoly.com/natureworks/default.asp

SOY POLYMER

At first glance you would be forgiven for thinking this is (a petrochemical) plastic. It also behaves similarly to plastic and the manufacturers are currently investigating the potential to vacuum form this range of bio-polymers. There are numerous advantages that this material has over conventional plastics. It comes from a renewable resource, can be processed at lower temperatures, toxin free production and of course its 100% biodegradable. The only downside may be related to durability.

PLASTIC MIRROR

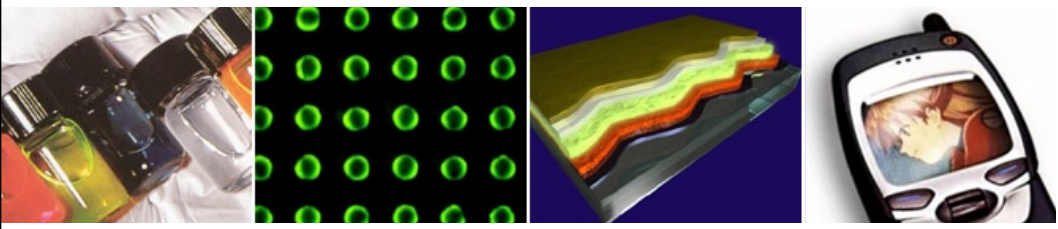
Valerie Cover, *Wired* August 2000, p. 51

Andy Ouderkirk and fellow 3M scientist Mike Weber were zapping polymers with powerful lasers as part of a materials science experiment when Ouderkirk realized he could bind together hundreds of sheets of polymer film to create a highly reflective material. The resulting plastic mirror is much cheaper to produce than the traditional vacuum-coated glass variety. And it reflects light waves from across the spectrum: because the film doesn't absorb infrared, it can be used as an invisible window coating, screening out solar rays without blocking any visible light and radio waves, as metallic screens do.

3M plans to launch its first plastic-mirror products later this year. "There's an incredible breadth of apps," says Ouderkirk. "We're having a good time exploring."

http://www.3m.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



CONDUCTIVE PLASTIC

Michael Behar, "The Next Plastic Revolution" in *Wired* 01/2003, p. 36

You might mistake Alan Heeger for a slimmed-down Jerry Garcia clone - white mane and beard, laid-back attitude, all-black outfit. Ask the UC Santa Barbara physicist to empty his pockets and you won't find guitar picks and a roach clip. But he will produce a handful of transparent vials. Inside each is an ounce of clear liquid infused with invisible flecks of plastic that mimic the molecular structure and behavior of metal. Zap the solution with electricity -or simply expose it to a bright light -and the mixture emits a steady glow.

Neat trick. Heeger and two colleagues won the 2000 Nobel Prize in chemistry for the accomplishment: coaxing conductivity from plastic. (The material in the vials is a luminescent semiconducting polymer.) Now their efforts, and those of a growing number of chemists, physicists, and engineers, are clearing the way for superthin digital screens, polymer computer memory, disposable electronics, and a new generation of smartcards. Conventional plastic is a lousy conductor. Viewed using an electron microscope, its molecular structure resembles a snarl of spaghetti. But arranging polymer molecules into long, straight rods lets electrons flow freely, approximating the conductivity of traditional materials like silicon or copper. Heeger and his co-Nobelists, for example, discovered that oxidizing the polymer polyacetylene with iodine vapors increased conductivity more than a billionfold.

NATURAL FIBER INSULATION

"This is Your Garbage" in *Dwell*, June 2001, p.39

Contents: 85-95% post-industrial denim scraps, 5-15% synthetic fiber to add fluff, and borates for pest and flame resistance.

Use: Thermal insulation - denser than standard fiberglass and keeps out more noise.

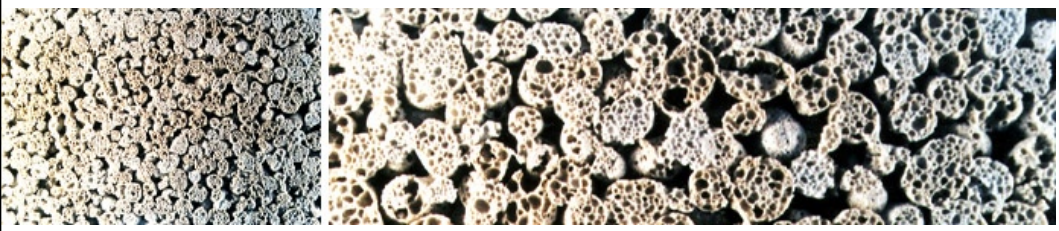
Bonuses: No itchiness, no toxic fumes, despite starched cottony feel and boric smell. Reduces denim waste and uses less energy than fiberglass production. Nice shade of blue. As Liat Margolis, of New York City's Material Connexion, says: "It replaces the conventional material... and nothing out there looks like it. So from a design perspective, it is exciting."

Problems: The plastic fiber and borates aren't recycled.

Price: About 30% more than typical fiberglass insulation.

http://www.bondedlogic.com/insula.htm

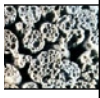
Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



RECYCLED GLASS INSULATION

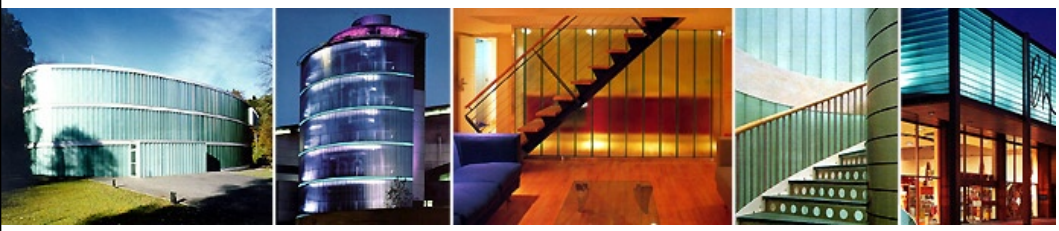
Insulation materials used for sound insulation, as thermal cladding and in fire prevention play an important role in modern building. Ever since asbestos and a number of other building materials were identified as hazardous, demand has continually grown for non-fibrous building materials that do not present any risk to health. Researchers at the Fraunhofer Institute for Building Physics IBP in Stuttgart have developed the fiber-free material, REAPOR. It is waterproof, fireproof, and even resistant to acid attack. It is extremely stable and at the same time light in weight, it insulates against heat and cold, and absorbs sound. Furthermore, it is extremely environment-friendly. It is made of 90% recycled glass, and can itself be recycled in its entirety. To round off its merits – it is easy to machine, to saw or to drill.

REAPOR's basic material is the granular expanded glass Liaver, a spherical and lightweight building material made from recycled glass. It has already found uses in building, for example as an additive to mortar or plaster to reduce material density and thereby weight. In the production of REAPOR, the granular expanded glass is sintered. The tiny spheres of glass are heated and certain agents added. At the points where the Liaver spheres touch, extremely stable bonds or sintering necks are generated.



http://www.fraunhofer.de

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



STRUCTURAL CHANNEL GLASS

Pilkington Profilit is a translucent cast glass structural glazing system which consists of a series of self-supporting glass channels within an extruded metal perimeter frame. The system is relatively cost-effective, and well-suited for exterior and interior curved wall applications. The long, sweeping wall of Steven Holl's Museum of Contemporary Art in Helsinki, for instance, is comprised of Pilkington Profilit.

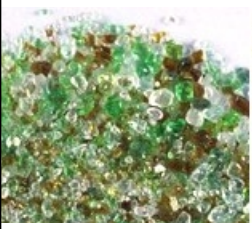
The U-shaped glass channels are formed by computer-controlled furnaces, and are inherently strong enough to be installed without additional vertical or horizontal supports. A high-quality translucent silicone sealant which matches the natural tint of the glass must be used at all joints to make the system weather-tight.

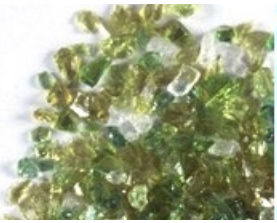
http://www.reglit.com

RECYCLED GLASS BRICKS

Hot Recycled Glass in Bellingham, Washington manufactures glass bricks using 100% recycled glass. The bricks are perfectly clear, which is unusual given that recycled glass has a greenish tint following the second processing.

The bricks are 7 7/8" x 4 1/8" x 7/8" in size, and are available in a range of surface textures and patterns, each of which manipulate light in different ways.






FRIT

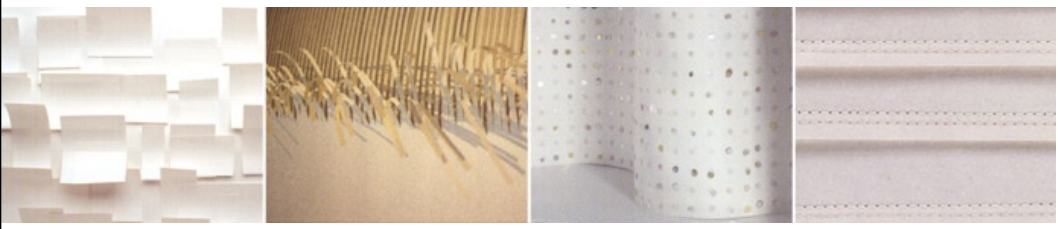
Frit is the trade term used to describe recycled glass once it has been ground down into a fine sand. Generally 'Frit' is seen as a midway stage in a longer manufacturing process and is normally supplied as a raw material for making tiles or even recycled glass bottles. However, Frit has an aesthetic all of its own and can be used in a variety of ways which don't involve melting or pressing.

TriVitro in Seattle makes specially sized and colored chips of recycled glass for use in terrazzo flooring, tiles, counter tops, concrete pavers, wall finishes and exposed aggregate surfaces. Available in a variety of colors and sizes, frit is excellent for any project seeking to maximize green building practices and LEED criteria.

Trivitrio

Trivitrio Website

http://www.trivitro.com/index.html



TEXTILE WALLPAPER

Shonquis Moreno, "Paper Magnet" in *Metropolis*, October 2002 p. 44

Gathering unexpected inspirations, Tracy Kendall rethinks wallpaper. Tracy Kendall's wallcoverings generate their own patterns from shadow and light. They have textures that sigh audibly in a breeze or click like ice cubes in a tumbler. Using hand-sewn sequins and crystals, hand-cut paper, and bold but simple graphics, the London designer has become a pivotal figure in the current renaissance of British wallpaper. "Tracy's work is moving in a new direction entirely," design historian Lesley Jackson says, "treating paper more like a textile, weaving it, or creating 3-D effects by manipulating and involving the paper. That in its own right is completely new."

http://www.tracykendall.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

ACOUSTICEL

Acousticel is an acoustic insulation material made from 100% recycled rubber. The rubber comes from old car tires and is broken down into small strips to make this non-woven sheet material. The insulation is supplied in 10mm thick rolls for floors and 1 m2 panels for walls.

Sound Service Ltd.

Rematerial-ize Website

http://www.soundservice.co.uk/Acousticel%20M20AD.htm

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

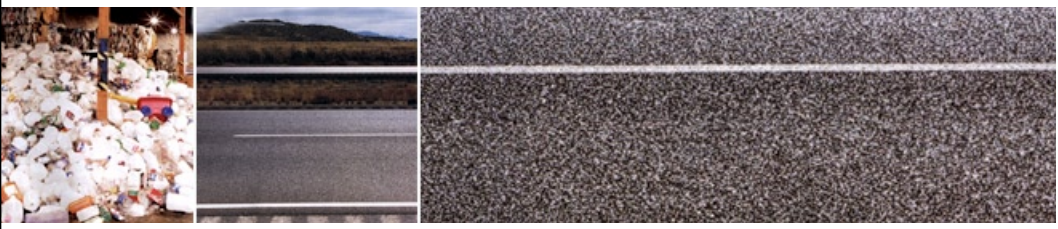
RECOMBINANT

Recombinant materials consist of two or more different materials which act in harmony to create a product that performs greater than the sum of its parts. Such hybrids are created when inexpensive or recyclable products are used as 'filler'; when a combination allows for the achievement of multiple functions; when a precious resource may be emulated by combining less precious materials; or when different materials act in symbiosis to accomplish high-performance characteristics.

Recombinant materials have long proven their performance in the construction industry. Reinforced concrete, which benefits from the compressive strength and fire-proof qualities of concrete and the tensile strength of steel, is a classic recombination. New hybrids include plascrete, glare (glass-reinforced metal), phenolic resin panels, and polyal (polystyrene aluminum).

The success of recombinant materials is based on their reliable integration, which is not always predictable. Moreover, recombinant materials are often comprised of downcycled components which may be difficult if not impossible to re-extract. However, the continued value exhibited by many such hybrids is evidence of a growing trend.

RC



PLASPHALT

Michele Pentz, *Wired* February 2002, p. 25

Along with pitch, lime, and gravel, this 2-mile stretch of I-25 in New Mexico is reinforced with another ingredient: plastic. Purple flecks from a toothbrush here, a bit of green tubing there. Gary Fishback and Erik Bowers of Albuquerque's TEWA Technology are paving the nation's roads with plasphalt - a proprietary mix of asphalt and recycled plastic. Though plasphalt costs 10 percent more than the straight alternative, it lasts 25 percent longer. Plus, it diverts 27 percent of all waste from landfill to highway. Right now, TEWA's best local suppliers are Philips Semiconductors, Intel, Coca-Cola, and Sandia National Laboratories.

TEWA

Wired

http://www.wired.com/wired/archive/10.02/eword.html?pg=5




PLASCRETE

Plascrete, a substitute for concrete products in various applications, is a structurally robust, environmentally friendly new industry based on Plasagg; the ideal substitute for mineral aggregate.

Plascrete is a novel cementitous composition comprising plastic (preferably a heterogeneous mix of plastic diverted from the waste stream) with, or in certain compositions without, sand bound together with ordinary portland cement.

Plascrete is between one third to one half the weight lighter than concrete of the same mix. The density of Plascrete is in the range of 0.9 to 1.9 tons per cubic meter while the density of standard concrete is in the range of 2.4 to 2.8 tons per cubic meter. Some Plascrete compositions give a density of less than 1.0 ton per cubic meter. This composition will float on water.

The unconfined compressive strength of Plascrete is essentially the same as standard concrete. Plascrete has strong flexural strength.

Plascrete has superior impact and shatter resistance. Plascrete can be nailed using standard nails, drilled with standard drill bits (not hardened), and is easier to cut using conventional concrete cutting methods.

http://www.plascrete.co.nz/menu.htm

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

SYNDECRETE

Syndecrete is a solid surfacing material (precast lightweight concrete material) developed by Architect David Hertz at Syndesis, Inc. as an alternative to limited or nonrenewable natural materials such as wood and stone, and synthetic petroleum based solid and laminating materials.

Syndecrete is a restorative product, reconstituting materials extracted from society's waste stream to create a new, highly valued product. The advanced cement-based composite contains natural minerals and recycled materials from industry and post consumer goods which contain up to 41% recycled content. Such materials include metal shavings, plastic regrinds, recycled glass chips and scrap wood chips to name a few. These materials are used as decorative aggregates, creating a contemporary reinterpretation of the Italian tradition of Terrazzo. Syndecrete is less than half the weight with twice the compressive strength of normal concrete and is available in a variety of densities ranging from 35 - 100 lbs/c.f.

For more information about concrete and the environment, read *A Material for a Finite Planet*, a paper presented to the Portland Cement Association conference on sustainability in Las Vegas, 1994 and the Architects, Designers and Planners for Social Responsibility conference on ecology in 1995 held at SCI-Arc, the Southern California Institute of Architecture.

http://www.syndesisinc.com/index-syndecrete.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

FLY-ASH CONCRETE

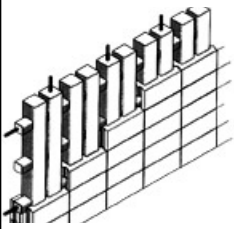
"This is Your Garbage" in *Dwell*, June 2001, p.41

Contents: 50% fly ash, 50% cement

Use: Building-walls, foundations

Bonuses: Fly ash, produced in abundance by coal-burning power plants, replaces a high volume of cement, which is third on the top ten list for CO2 emissions.

Problems: Rutherford-Chekene's structural engineer Afshar Jalalian, who created this mix for U.C. Berkeley's Wurster Hall seismic retrofit project, says: "The concrete dries at a slower rate; this is really not a problem but builders will need to adapt." Also, fly ash (a mixture of alumina, silica, unburned carbon, and metallic oxides) is extremely toxic, though it may be that the concrete immobilizes its impurities.



INSULATING WOOD-CEMENT FORMS

Faswall wall-forms are used as the forms for poured concrete walls, yet left in place to provide permanent insulation around concrete structures as well as a durable surface to apply whatever surface finish is desired. No additional insulation, exterior sheathing, bracing or "wrap" is needed. Not only are material costs reduced, but labor costs for installation are eliminated as well.

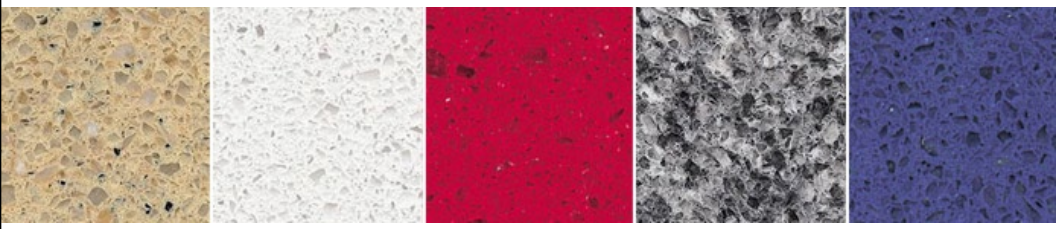
This system allows almost any fibrous material, including waste woods, green timber, and even agricultural by-products to be successfully combined with cement into strong and durable products. Instead of wasting space in landfills, waste wood can now be recycled efficiently and inexpensively into a strong, durable building system.

The K-X system uses a two-stage mineralization process to preserve the wood. The ionization between the wood fibers and the K-X minerals makes a permanent chemical bond that allows the fibers to become an integral part of the concrete, not just be coated by it.

Faswall forms are unlike other blocks made of foamed plastic, and will not burn, rot, or allow vermin and insects to invade. The forms are made out of 85% K-X Aggregate (treated recycled woodchips) and 15% portland cement. Fly ash can replace 3% cement if desired.

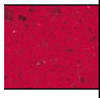
http://www.faswall.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



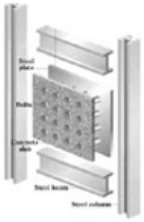
QUARTZITE STONE

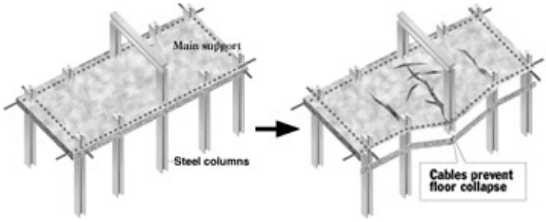
Cambria manufactures engineered quartzite stone which is 93% pure quartz crystal united with a polyester resin binder. Cambria quartz requires no sealing, polishing or conditioning, and costs roughly 20% less than stone. Using natural pigments and advanced technology allows the manufacturers of Cambria to produce a wide range of color choices not available in natural granite and marble tiles extracted from the earth.



http://www.cambriausa.com/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com





COLLAPSE-PREVENTING STRUCTURE

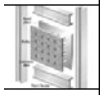
Usha Lee McFarling, "Forging Hope from Ruins," *L.A. Times*, Saturday, November 24, 2001

Not everyone believes building performance can be improved greatly. The actions that took out the World Trade Center were so damaging and unexpected that many engineers have said there was no way to protect against them. Bombproofing buildings, they argue, would be too expensive and would allow only forbidding, cavelike structures. Nonsense, Hassan Astaneh, a Berkeley civil engineering professor said. "Are you going to say, 'If the Sears Tower is attacked, there's nothing we can do. It's too bad?' " Cost-effective ways exist to build stronger buildings and to retrofit existing buildings, he said.

The secret: Lengths of steel cabling of the type that holds up suspension bridges could be placed in building floors before concrete is poured. Although the concrete might shatter, the cables will hold it in place. If the concrete Murrah building — which Astaneh calls "a house of cards" — had contained such technology, Astaneh said most lives could have been saved.

The engineer also is developing and testing a new shear wall, lightweight concrete bolted to steel, that can absorb much of a bomb's blast. In tests using extreme force, the concrete crumbled, but columns holding up the building held.

http://archives.seattletimes.nwsource.com/cgi-bin/texis/web/vortex/display?slug=engineer24&date=20011124&query=astaneh



RECYCLED ALUMINUM SOLID SURFACE

Alchemy is a new recycled solid material designed for decorative furniture and counter top surface applications. A result of blending salvaged aluminum waste, fillers and pigments in a monomer base, it is a product of beauty, strength and durability.

Alchemy is offered in 1/2" or 3/4" thickness and is produced in custom sheet dimensions up to 36" by 120". The standard surface is textured. Sheets may be cut, shaped and sanded to achieve a variety of finishes from dull to high gloss, similar to other conventional solid surface materials.

As Alchemy is currently being tested for product rating and classification, it is only recommended for use as furniture and other decorative surface applications. Test results and classification data will be provided as soon as available.

http://www.cabinart.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

CORRUGATED ALUMINUM PANELS

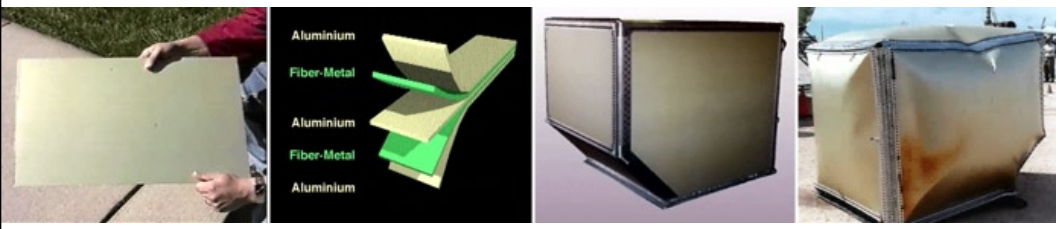
Doluflex panels consist of a corrugated aluminum plate machined with a cold forming system and laminated between various materials. Doluflex 1 is a flexible panel used to produce bent elements, and Doluflex 2 is an extremely stiff sandwich panel. Shaped structural panels are also manufactured using Doluflex 2.

Traditionally used in the ship-building industry, Doluflex panels possess high chemical-physical resistance which make them suitable for building facade systems. Doluflex can be worked with normal carpentry tools, and is classified non-combustible according to RINA, Lloyd's Register and Det Norske Veritas.

The Doluflex 2 panel has a total thickness of 5 mm, a transversal resistance to bending stress E x I = 2.48 x 106 and longitudinal resistance to bending stress E x I = 1.97 x 106, with a total weight of 8.1 Kg/m².

http://www.donatigroup.it/isolnord/indice_isolnord.htm

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



BOMBPROOF FIBER-METAL

David McMullin, "Lockerbie Insurance" in *Scientific American*, January 2002, pp.15-16

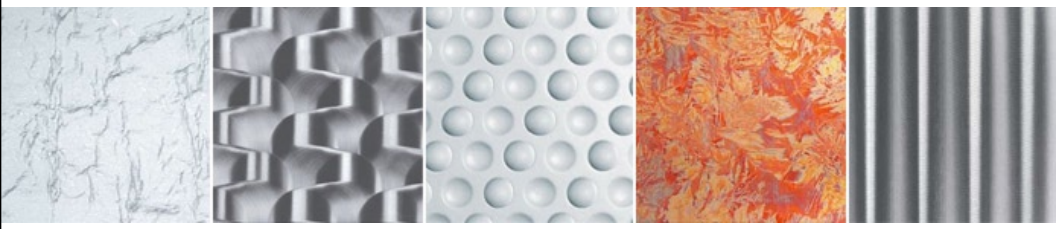
After a bomb went off in 1988 on Pan Am flight 103 over Lockerbie, Scotland, killing all 259 passengers onboard, the Federal Aviation Administration created standards that industry would have to meet if it chooses to deploy luggage containers capable of withstanding such a blast. During the 1990s, the FAA tested 10 hardened luggage containers made from a variety of materials, including reinforced aluminum, fiberglass, aramid fibers and polymers.

Only one container - concocted from fiber-metal laminates developed originally by the Delft University of Technology in the Netherlands - passed the FAA's test and received certification. The material, called Glare (short for glass reinforced), consists of multiple aluminum layers interspersed with layers of fiberglass and adhesive bonding that are supple yet strong. When used in fabricating luggage containers, Glare can absorb bomb blasts without breaching.

As Glare expands with a blast, it absorbs the explosive energy and redistributes the impact load to the adjacent surface area rather than to one specific weak spot. The bomb blast leaves a sizable deformation in the container's surface, but it remains intact. Moreover, whereas other FAA-tested containers were also able to contain the bomb blast, Glare could resist the subsequent luggage-fueled fire inside the container.

http://www.galaxyavsec.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

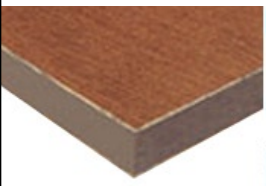


HIGH PRESSURE METAL LAMINATES

Germany-based Homapal has developed a line of specialized high-pressure metal laminates. They offer aluminum, stainless steel, copper, and brass-clad laminates with a wide variety of reliefs and surface finishes for use in interior vertical applications. Typical panel dimensions are 244 x 102 cm and weigh 1.6 kg/m^2.

http://www.homapal.de

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com




STRATIFIED WOOD PANELS

Parklex is a timber that has undergone a physical and chemical process that creates a material with excellent thermal and mechanical performance levels. The Parklex line includes: Parklex 1000 - Stratified panel; Parklex 500 - Stratified panel for internal use; Parklex 2000 - Floating floor; Parklex 3000 - Raised floor finish; and Parklex Encimeras - Bathrooms and Kitchens.

The Parklex 1000 is a stratified high-density timber panel, formed internally with kraft paper or wood fibres treated with phenolic thermoset resins and compressed at high pressure and temperatures. Parklex 1000 may be used externally or internally, and is generally fastened onto a metal or timber batten structure, providing a decorative finish that also acts as a rain screen.

The surface is always 100% natural wood and has been developed to withstand the special demands of environments exposed to the elements, where it is subjected to the action of atmospheric agents such as rain, extreme sunlight, wind, snow, etc.

http://www.parklex.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com




WOOD-FACED PANELS

Prodema S.A. offers natural wood-faced external cladding products which have evolved from the manufacture of composite boards developed in the 1960´s from paper, resins and wood.

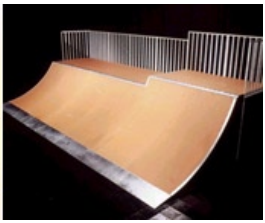
They have a variety of high-density panels composed of a thermosetting phenolic resin-bonded cellulose fiber core, faced with natural wood that has been coated with an acrylic resin-PVDF protective finish, which ensures a panel colour fastness of 3-4 after a 3000-hour xenon lamp test.

Prodema panels are also specially designed to resist attacks by chemicals (anti-graffiti).

http://www.prodema.com/Ingles/Presentacion.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



SKATELITE

Rainier Richlite produces phenolic sheets for aerospace tooling, commercial food service, marine, materials handling, and skateboard ramps. Their products Richlite, Whalelite, and now Skatelite, consist of many layers of paper from certified managed forests impregnated with a low-v.o.c. phenolic binder. The result is an incredibly dense, smooth, and durable product which may be modified with conventional woodworking tools.

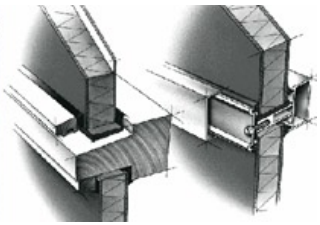
The aircraft industry was the first to capitalize on Richlite as a superior tooling material, and the food service industry broadly acknowledges that Richlite makes the world's best cutting boards and work surfaces. Growing demand in the boating industry for non-rotting, stronger materials precipitated a venture into the marine market with Whalelite.

Skatelite has been recognied as the long-sought solution to problems of wear, rot, heat, maintenance, performance, etc. in high-wear exterior applications such as skateparks. Skatelite is available in 5' x 12' panels and has a 30,000 psi compressive strength. Logos may be printed directly onto the material and will not wear off. Skatelite is fire resistant and self-extinguishes even under intense flames. Skatelite is also is unaffected by paint thinners and chemicals, and maintains its smooth finish even after graffiti removal. Skatelite is long-lasting despite excessive use and punishing weather conditions.

http://www.skatelite.com/home.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



PHENOLIC ARCHITECTURAL PANELS

Trespa Meteon is an extremely weather resistant panel material, unaffected by sunlight, rain - including "acid rain" - or moisture. The phenolic-based material is also highly impact resistant, and the surface of the panel has a closed structure, which does not attract dirt and makes deliberate defacing difficult. The fire behavior of the panel material is safe - it does not melt, drip or explode and retains its stability for a long time. Furthermore, Trespa Meteon is easy to work with and simple to maintain. There's no need to paint, finish or cover the surfaces or cut edges. Sawing, drilling and tooling can be carried out with standard hardwood tools.

Trespa Meteon is available in more than 50 colors, ranging from primary to metallic colors, with a decorative surface on one or both sides. Trespa Meteon is supplied in three standard sheet sizes and four thicknesses. There is also a choice of grades: standard with a black core and fire retardant (FR) with brown core.

http://www.trespa.com

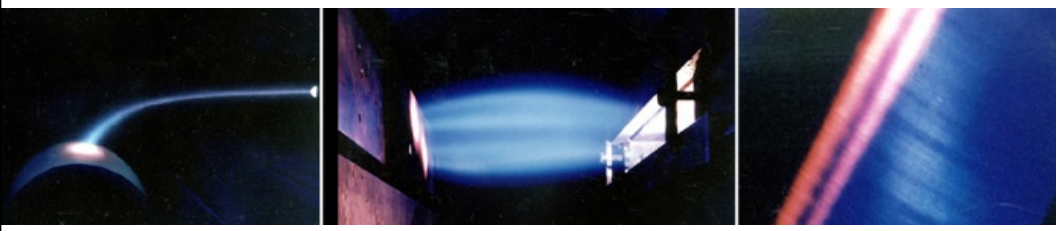
Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

LIQUID WOOD

Renewable raw materials ease the burden on the environment. Researchers from the Fraunhofer Institute for Chemical Technology ICT in Pfinztal near Karlsruhe, led by Prof. Peter Eyerer and Dr. Norbert Eisenreich, are developing a thermoplastic material – deformable under heat – based on natural resources. The unusual thing about this material, which is known as Arboform is that although it possesses similar properties to wood, it can be cheaply injection-molded like a plastic. This can be a major advantage in production, for example, in the manufacture of molded parts for the automobile industry.

One of the raw materials used in Arboform is lignin. This is the substance that gives wood its rigidity. Lignin is the second most frequently occurring polymer in nature. Every year millions of tons of it are produced as a by-product in the paper industry. Up to now lignin has mainly been burned in order to produce energy, but this renewable material can also be used in a different way: when lignin is mixed with natural fibers, the thermoplastic material Arboform is formed. This can be used in many applications as a substitute for synthetic materials derived from oil. “We have been working for two years on the optimum composition of natural polymers and natural fibers,” Helmut Nägele and Jürgen Pfitzer of the ICT report. The scientists are working on ways of making Arboform more malleable and more heat-resistant.

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



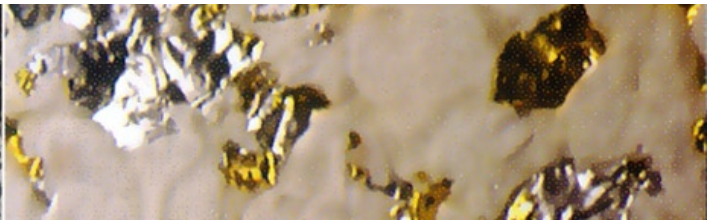
GLASS-COATED PLASTIC

Plastics come in many forms. They are used to make boats, magnifiers, skis and all manner of household items. Transparent plastic sheet panels would be ideal in the manufacture of windows or headlamps of cars, for example, and tinted plastic foils could more readily be used to protect against the sun – if only the material was not so easily scratched. Researchers at the Fraunhofer Institute for Electron Beam and Plasma Technology FEP in Dresden have presented a process by which plastic sheet panels and foils can be rapidly coated with a scratchproof glassy layer at moderate costs.

There are various means of applying a transparent scratchproof coating to plastic materials: liquid coatings such as paint or sol-gel applications - or methods such as plasma chemical vapor deposition, sputtering or electron-beam evaporation, whereby the coating is applied in a vacuum. Liquid coatings are relatively inexpensive, but do not ensure such a hard and wear-resistant surface as do vacuum coating processes. High-rate electron-beam evaporation is comparatively the least expensive vacuum coating process. To achieve coatings of extreme hardness and resilience it is necessary to apply an intensive plasma during the evaporation process.

http://www.fhg.de

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



POLYAL

Polyal is produced from manufacturing overruns that were once discarded directly into landfills. The extra polystyrene and aluminum (hence the name Polyal) from the production of yogurt containers are heated and compressed into a solid sheet. As the sheet hardens, the aluminum slivers begin to stratify and impart rigidity to the material. The resulting solid surface material is attractive, tough and weatherproof. It is ideal for tabletops, shower surrounds, transaction counters, and any application that is appropriate for solid surface material. It is heat resistant and food-safe.

Polyal is available in several colors and thickness. Each piece is unique because the foil and original flavor of the container determine its characteristics. Polyal can be cut, drilled and shaped like any other solid surface material. For furniture and tabletops, it can be supplied to size in rectangles, rounds and boat shapes as well as having various edge treatments effected at the factory.

http://www.wertstofftechnik.de/home.htm

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

TRANSLUCENT INSULATED GLAZING UNIT

Solera is a glass-based insulated translucent glazing unit manufactured using a proprietary honeycomb transparent insulation material. This semi-rigid insulating core is mounted between two layers of glass, similar to the way that conventional insulations such as rigid foam or glass fiber fill the gap inside a wall.

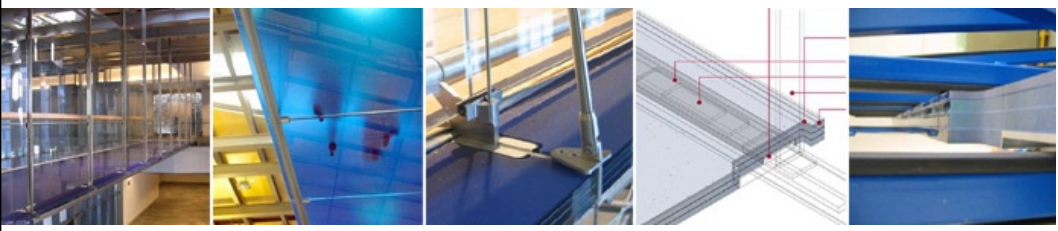
Solera provides insulation value by suppressing convection and thermal radiation in the space between the glass layers. At the same time, the honeycomb structure of the core ensures that light striking the cell walls is reflected forward through the material to the interior of the building.

A choice of translucent veil material used in conjunction with the insulation core provides the opportunity to “dial in” light transmittance values from 22% to 73%.

Solera delivers both maximum insulation value as well as high light transmittance, which cannot be achieved by using conventional fiber-reinforced plastic construction.

http://www.advancedglazings.com/H_index.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



IONOPLAST INTERLAYER GLASS

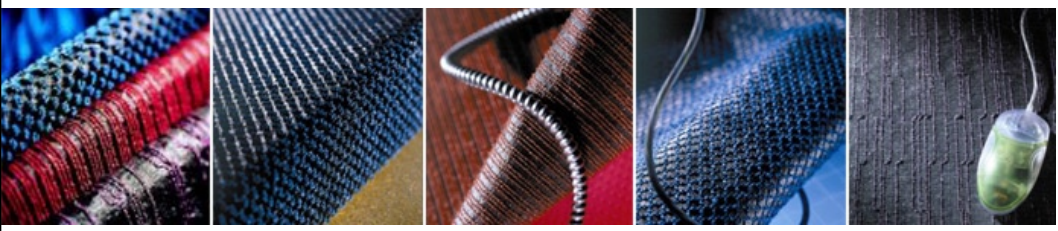
On James Carpenter's Blue Glass Passage at Seattle's new City Hall, fully exposed edges and the "lack of cumbersome fixtures" give the glass bridge the look of a "transposed slice of water." New DuPont SentryGlas Secure technology enabled aluminium inserts to be laminated directly into the bridge's glass floor, giving an innovative technical solution for the aesthetic look the designers wanted.

In the first application of DuPont SentryGlas Secure technology worldwide, James Carpenter Design Associates (JCDA) of New York has created a striking, cobalt blue, laminated glass bridge, 20 m long, over which Seattle City Hall council members walk to enter the building's chambers.

The patented DuPont technology was designed to enable architects to design with a robust new generation of laminated glass applications that meet stringent security – or seismic – standards worldwide. Its inventors at DuPont Glass Laminating Solutions Central Research & Development have said: "SentryGlas Secure technology utilizes the engineered properties of SentryGlas Plus ionoplast interlayer with astonishing results." This is based on the fact that SentryGlas Plus ionoplast interlayer bonds well to a range of materials beyond glass, meaning that enhanced performance can be 'engineered in' to the overall construction.

http://www.dupont.com/safetyglass/lgn/stories/2601.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

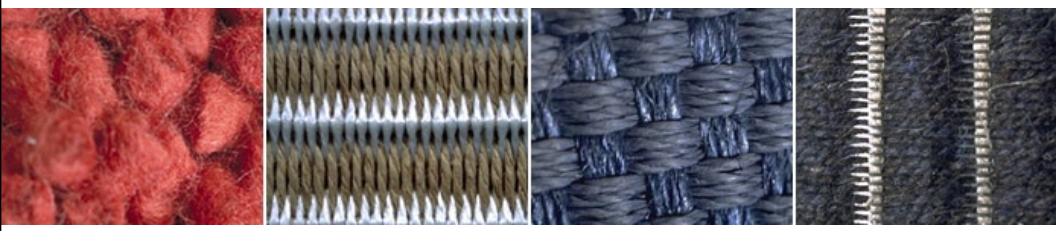


METAFLOOR

Metafloor is a hybrid floor covering: carpeting that offers the advantages of a hard surface. Inspired by the attractive lustre of nylon in a carpet sample, the designers revealed the core of carpeting by exposing the backing material. The Collaborative Voice line pictured here comprises four 12-foot-long products with a variety of textured finishes, all of which display the synthetic substrate.

http://www.leescarpets.com/collections/MetaFloor/MetaFloor.htm

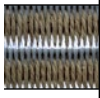
Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



HYBRID CARPET

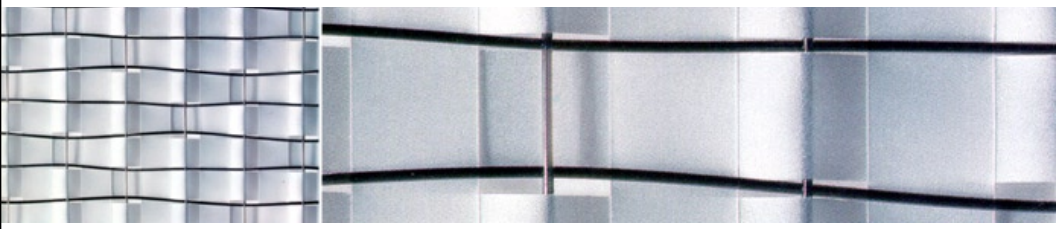
Rukstuhl has developed a range of carpeting utilizing innovative materials such as linen, steel cable, paper, goat hair and felt in innovative ways. Available in widths up to 2 m (6.5 ft) and in area rugs, wall to wall and residential applications.

Piu: woven cut pile 100% felt wool. Element: 30% wool, 30% goat hair, 40% high grade steel. Shine: 70% paper, 30% viscose. Capra: 40% paper, 30% wool, 30% goat hair. Monochrome: 70% sisal, 30% paper. Canapa: 52% linen, 36% jute, 12% linen.



http://www.ruckstuhl.net

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



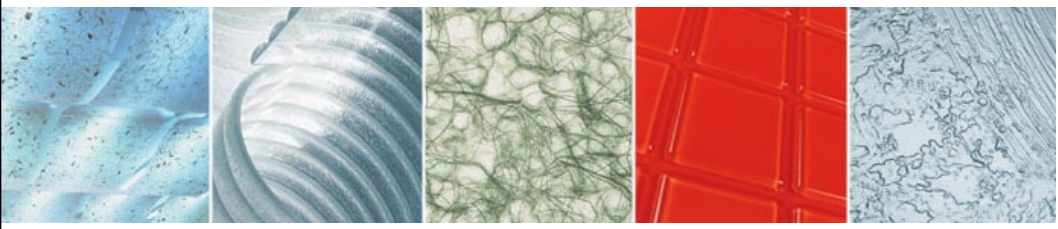
REPEAT TEXTILES

Repeat by Hella Jongerius introduces new dimension and context to upholstery textiles. Comprised of a series of patterns of singular theme seamlessly flowing into one another over the course of several yards, Repeat Classic is a ribbon of archetypal jacquard motifs, while Repeat Dot unfurls into a modernist sequence of varied circular forms.

In Repeat Classic Print and Repeat Dot Print, Jongerius embellishes further, celebrating the industrial vocabulary of the weaving process through a layer of technical nomenclature in white lacquer overprint. Repeat Classic, Repeat Dot and their overprinted variations are each available as panels in unique colorations. A series of four elements drawn from Repeat Classic and Repeat Dot is offered in a range of colors, providing the opportunity to mix, match or mismatch. Through the unexpected use of pattern and exaggerated scale, Repeat creates random order as fabric meets furniture with a predictable yet uncertain result.

Repeat patterns are sold in full repeat increments only, while all Repeat elements are available by the yard.

http://www.maharam.com/maharam.html



VARIA

3form's Varia encapsulates colorful hand-made papers, metal screens and woven mesh within specially engineered, high-performance translucent resin, which itself can be embossed with a variety of molds.

A green product from the beginning, Varia is produced in a clean and environmentally friendly process and is a recyclable material—fire rated for use in interiors with half the weight and 40 times the impact strength of glass. Varia also outperforms all acrylic resin-based products—it will not shatter, crack or discolor and can be contour heat-draped to any form. Sheets can be easily drilled and custom cut to size and shape on site, saving time and money on fabrication and installation.

Varia can be used for partitions, cladding, tabletops, and even flooring. With full in-house fabrication and rapid prototyping capabilities, 3form gives designers fast sampling and technical support.

http://www.3-form.com/default.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

IMAGO

KnollTextiles created Imago, a revolutionary hard surface material that marries the best qualities of glass, fabric and high-performance resin. Developed by Suzanne Tick, creative director of KnollTextiles, Imago is a family of products made through a patented process that encapsulates fabric in an engineered resin for use in both vertical and horizontal applications.

Like a frozen fabric, Imago changes with the amount and direction of light cast upon it, and also affects perception of space beyond. The name itself is defined in Latin as “image,” referring to the material’s ability to transform space through varying levels of transparency and translucency.

The inspiration for the development of Imago came from a scientist who perfected the patented encapsulation process and who was looking for a way to develop aesthetics that would match the great performance of this new material. Tick, always searching for new technologies to take textiles to a new level, was intrigued with this process and immediately began experimenting with different types of fabrics.

http://www.knoll.com/index.jsp

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

SUSPENSIONS

Suspensions is a new product which consists of layers of handmade translucent wall coverings and fabrics that are suspended within panels of clear high-impact polyester resin. Each layer is hand laid and finished with a variety of textures, and thus each piece is unique. The panels can be used for everything from walls, furniture and case goods to lighting fixtures and window treatments.

http://www.cannonbullock.com/suspensions/index.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

LITECORE

David LaChappelle, *CityNY* August 1999

When architects Christian Mitman and Emmanuelle Bourlier were unable to find a lightweight, translucent material for a project they were working on, they halted their search and took a different approach to solving the problem: they invented one.

Hence the birth of liteCORE, translucent honeycomb panels that are not only perfect for sliding walls, screens and tables, but this sleek material is also sturdy enough to be used for a ceiling or a floor. With such demand for the panels (both residential and commercial,) Mitman and Bourlier's company has expanded to the West Coast.

LiteCORE consists of a bonded composite sandwich construction in which the structural aluminum honeycomb core provides a high strength to weight ratio and excellent resistance to deflection. The fiberglass-reinforced polyester facings require low maintenance and are scratch and weather resistant.

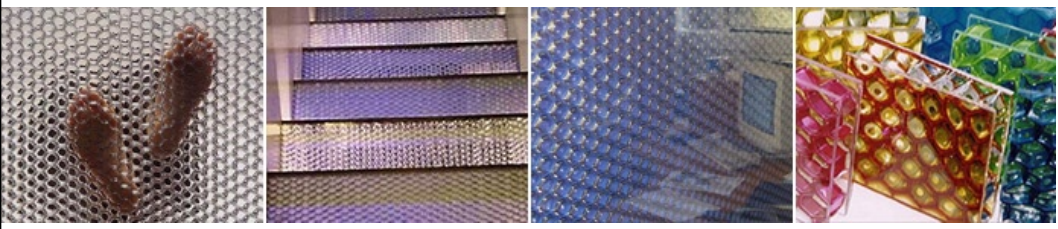
LiteCORE can be drilled, machined, and framed using standard woodworking methods. LiteCORE panels are 3/4" thick with a 3/8" honeycomb cell size, and come in standard 4' x 8' and 4' x 10' sheets. However, Panelite will soon be offering a range of core and facing options so that you can design your own sandwich.

http://www.litecore.com/index.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

Panelite

CityNY,
Litecore
Website

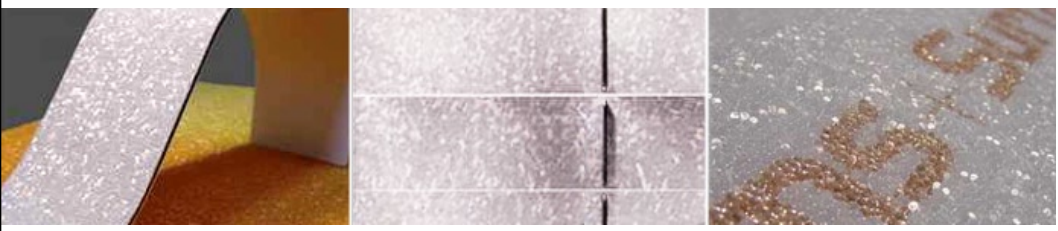


HONEYCOMB PANELS

Cellbond manufactures translucent honeycomb panels comprised of an aluminum honeycomb core sandwiched between toughened glass or polycarbonate skins. The use of a bonded sandwich results in a high strength-to-weight ratio and provides excellent resistance to deflection. The honeycomb core also provides rigidity with very low density.

Cellbond manufactures honeycomb panels which may be used as decorative partitions, as well as durable flooring and vandal-resistant panels.

http://www.cellbond.com/index.html



SILVER SCREEN

Silver Screen is a new architectural material comprised of a two-millimeter layer of technical quality glass beads adhered to an aluminum composite material that is painted with a durable fluorocarbon white topcoat.

The reflective glass spheres can be underlaid with custom colors, logos, or graphics.

The standard sheet size is 60" x 108" x 3/16", and panels may be framed in an anodized aluminum extrusion.

http://www.forms-surfaces.com/products/silver_screen/index.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

WOVEN RESIN

Arlene Hirst, "Take Note" in *Met Home*, Mar/Apr 2002, p. 31

Xorel Surfaces are woven high-tech resins that look like textiles but are durable and as easy to clean as laminates. Created by thermofusing PETG (a polyester resin) with Xorel, the end result is a tactile, hard surface that is durable, cleanable and environmentally sound with no chlorine content or plasticizers.

Because the textile is the surface, each pattern and color is as vibrant, tactile and dimensional as the fabric it is crafted from. Depending on the pattern chosen, it can be translucent or opaque and the surface can be embossed or textured with different patterns. The material itself can be drilled, cut, bent, tapped into and heat draped, and comes in 4' x 8' sheets in six gauges, with pricing ranging between $416 and $960.

http://www.carnegiefabrics.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

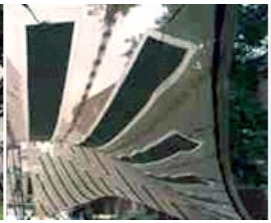
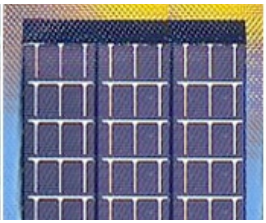
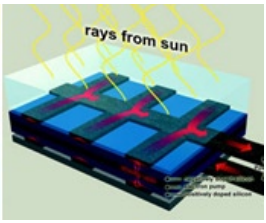
METALLIC LAMINATED GLASS

A remarkably tough protective interlayer, also known as polyvinyl butyral or PVB, is the high-performance component in laminated glass. Laminated architectural glass is produced by bonding the PVB based interlayer between two or more panes of glass under heat and pressure. The result is durable, adaptable, high-performance glazing which, if broken, tends to retain glass fragments and reduces the risk of injury or property damage.

While exploring the possibilities of creating a metallic interlayer for glass, Solutia's technology team discovered a way to add texture to the glass at the same time. The effect is glass that appears to have a rich, almost fabric-like appearance, while incorporating subtle shimmering elements. To add color, this special metallic interlayer can be combined with Solutia's range of ten foundational Vanceva Design color hues to achieve jewel-like brilliant color or softer shades. For a more custom look, various palette colors can be combined to create up to 62 different colors.

http://www.vanceva.com/design/en/html/default.asp

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

THIN-FILM PHOTOVOLTAICS

Photovoltaic (PV) modules, also called "solar panels," have come a long way since the '80s, when the best words to describe them were: clunky, heavy, rigid, and awkward. Today, PV modules have evolved to become graceful, flexible, elegant architectural design elements. This evolution has been driven by new thin film PV material technologies.

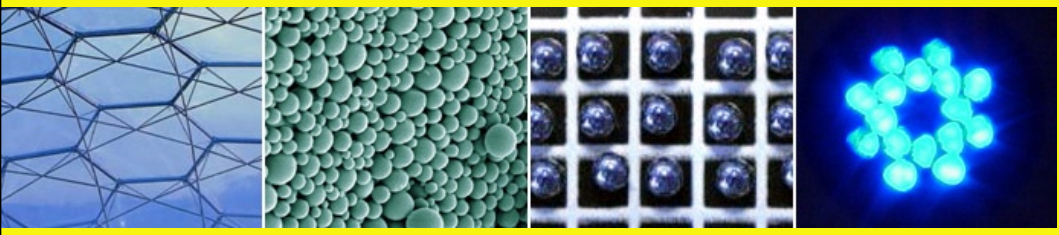
Crystalline silicon PV is the standard technology for producing solar electricity. Each cell contains doped silicon material which captures light wavelengths to convert sunlight into electricity. Silicon sheds electrons when exposed to sunlight, creating an electrical charge that can be "harvested" and used.

A new breed of PV solar module, produced exclusively by Iowa Thin Film Technologies using DuPont Tefzel high performance thin fluoropolymer film as an encapsulant, is helping architects explore ways to integrate this technology into their structural designs.

Architect Nicholas Goldsmith, FAIA, of FTL Happold, New York, recently incorporated the aesthetic and environmental advantages of Solar power-producing systems into a tent-like pavilion with a thin film PV membrane which diffuses sunlight into fine, speckled patterns, and allows air to vent. Goldsmith believes this is the first time solar cells have been used in a tensile structure.

http://www.dupont.com/teflon/films/next-gen.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

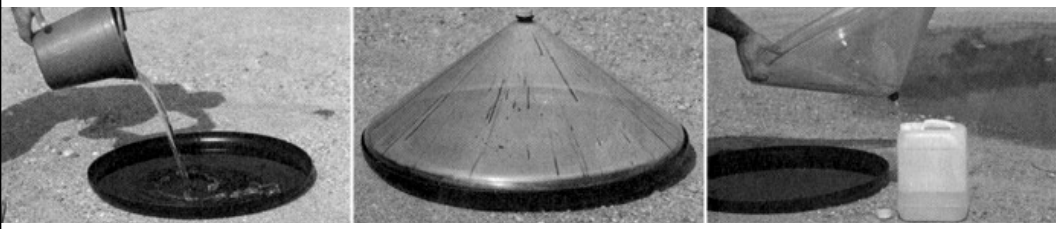


INTELLIGENT

'Intelligent' is a catch-all term for materials that are designed to improve their environment and which often take inspiration from biological systems. They can act actively or passively, and they can be high-tech or low-tech. Many materials in this category indicate a growing focus on the manipulation of the microscopic scale.

Intelligence is not used here to describe products which have autonomous computational power, but rather products which are inherently smart by design. The varied list of benefits provided by materials featured here includes pollution reduction, water purification, solar radiation control, natural ventilation, and power generation. An intelligent product may simply be a flexible or modular system which adds value throughout its life cycle.

Intelligent materials are significant because their designers and manufacturers are acknowledging the importance of increased social and environmental stewardship, not to mention the desire to improve upon old models.



WATERCONE

Phil Patton, "Distillation to Go" in *ID* magazine, November 2003

When on vacation from his job as a designer for BMW in Munich, Stephan Augustin enjoys traveling around Africa. On one such trip seven years ago, he was struck by how many people were in desperate need of water. He noted the huge amounts of energy consumed by desalination and purification plants in Third World countries and learned that an estimated 2.5 billion people on the planet lack consistent supplies of clean drinking water.

In the years since, Augustin has been perfecting the Watercone, his invention for purifying water by the oldest method known: distillation. A cone of clear plastic set on a black tray base, the Watercone is entirely solar powered. Sunlight evaporates the water, leaving impurities behind, and the moisture that condenses on the inner surface of the cone runs down its curved edges. Flip it over and the Watercone becomes a funnel with a screw lid. If the cap gets misplaced, no worry: The lid is compatible with any standard plastic soda-bottle cap.

Augustin calculates that at the latitude of Casablanca, one Watercone can provide about a liter of water a day. Several could be laid out as a miniature water farm, one for a household, hundreds for a village system. Eight Watercones stack into a standard box and two boxes fit on a Euro shipping pallet.

http://www.watercone.com/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

ADVANCED STRUCTURAL FABRICATION

TriPyramid was founded in 1989 to bring new technologies and materials to architectural projects, in response to a growing desire for structural tension elements that are elegant, unobtrusive, strong and efficient.

TriPyramid's founders had significant design and metallurgical experience from their work on America's Cup yacht rigging, and have applied these technologies and aesthetics to glass walls, sculptures, skylights, stairs, memorials, and residences. TriPyramid's clients are architects, structural engineers, contractors, and artists. TriPyramid's engineers work in close collaboration with the client in developing solutions that will realize and enhance the architect's vision.

TriPyramid's clients are architects, artists, and structural engineers. On a specific project, TriPyramid enters a collaborative design relationship with the architect/artist and his structural engineer, before the manufacturing phase. TriPyramid then manufactures the stainless steel and other hardware as called for in design specifications.

TriPyramid's impressive portfolio includes work on the Tokyo International Forum, the New York Museum of Natural History Planetarium, the Corning Glass Center, and several of glass artist James Carpenter's designs.

http://www.tripyramid.com/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com




POLLUTION-REDUCING CEMENT

John Harrison, an Australian inventor, has developed a new cement which is based on magnesium carbonate rather than calcium carbonate, and absorbs carbon dioxide from the atmosphere. One ton of concrete made with the cement can absorb about 0.4 tons of carbon dioxide as it hardens, and tower blocks built with it could become as important as natural carbon sinks like forests and grasslands.

New Scientist reports that cement-making is responsible for around 7% of total man-made CO2 emissions worldwide. Harrison says his cement mixture is made at much lower temperatures - halving the amount of carbon dioxide it produces during manufacture. He also claims his version is cheaper and more durable and, during setting and hardening, a process called carbonation reabsorbs CO2 from the air.

Harrison says that “The Kyoto Protocol was a good effort but it got things wrong when it assumed that trees were the only things that could absorb carbon from the air. The opportunities to use carbonation processes to sequester carbon from the air are just huge. It can take conventional cements centuries or even millennia to absorb as much as eco-cements can absorb in just a few months.”

John Harrison/ TecEco

Ananova Website

http://www.tececo.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

FIBER CEMENT FACADE SYSTEM

Eternit Switzerland is the leading European manufacturer of fiber cement facade systems for rainscreen cladding and ventilated facade applications. Swisspearl's unique formulation and revolutionary coloration processes were pioneered by Eternit Switzerland. They are the foundation of a wide facade panel range, which offers great creative freedom in the design of the facade.

Swisspearl Carat is an integrally colored sheet available in several shades. Swisspearl Natura is a fiber cement sheet with a translucent coating. The smooth and semi-matt surface finish and the visible natural texture of the fiber cement impart an unrivalled expressiveness to the material. Swisspearl Xpressiv is a grey cement panel with a vivid fiber cement structure. Swisspearl Tectura has an opaque acrylic coating to resist harsh weather conditions and ultraviolet rays.

http://www.swisspearl-architecture.com/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

TERRA-COTTA FACADE SYSTEM

Argeton Ziegelfassade is a terra cotta rain screen system developed by the German manufacturer Moding. Generally speaking, the product is a panelized brick curtain wall, and has been most visible in the recent work of Renzo Piano. Designers of the system recognized the fact that brick is currently used in building façades more often for its durability and weather protection than for its traditional qualities as a load-bearing material.

The factory-produced panels consist of reinforced, stacked bricks (no grout) within zinc-hardened aluminum frames which are fastened to a back-up wall that has been previously insulated and sealed. The system is designed to shed water while allowing the cavity to 'breathe,' maintaining a consistent air pressure between the cavity and the exterior.

Moding

Argeton Website

http://www.argeton.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

SOLAR SHADING SYSTEMS

The intensity of direct sunlight through windows can reach 700watts/m2 of glass area, causing overheating and affecting building occupants' comfort level, which can lead to reduced productivity as well as higher mechanical operating costs.

Dasolas' Unisun System is designed to deal with overheating problems in new and existing buildings, and is manufactured from high grade extruded profiles using modular construction techniques. The system may be used vertically or horizontally as well as on sloping facades, with a wide selection of blade profiles.

Unisun is designed to reflect diffused light through shaded windows, and the amount of diffused light depends on the color selected for blade profiles. Unisun saves on mechanical costs, with the option for the system to be motorized and linked with building mechanical services.

Unisun is designed and manufactured in compliance with relevant local building codes, and Dasolas provides full design, construction or consultancy services if needed.

http://www.dasolas.dk/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

TEXLON ROOF SYSTEM

The Texlon Foil System is an intelligent and dynamic cladding system that has the capability to adjust its shading, thermal, and aesthetic characteristics as the sun moves across the sky, responding to specific program and climatic requirements. Made of fluoroplastic film, Texlon is self-cleaning and will not deteriorate with UV exposure. It is designed to withstand local snow and wind loads, in addition to hail.

The Texlon foil elements are stabilized by a slight overpressure between the individual layers. The air-filled elements prevent the sheets from becoming slack. Moreover, the air-filled chambers provide the roof system with its excellent thermal insulation properties. However, the system is not part of the structural system, as is the case with air-inflated buildings, where a breakdown in the air supply would cause the entire structure to collapse. With the Texlon Transparent Roof System, a breakdown in the air supply would only affect insulating properties, and the building would remain intact.

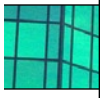
http://www.foiltecna.com/eng/main.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

VENTILATED CURTAIN WALL

To date, improvements in curtain wall weather protection have relied on attempts to develop perfect seals and multiple defenses against inevitable leakage. The result of this approach is that virtually every curtain wall will leak; it is only a matter of when, where, and what it will cost to fix.

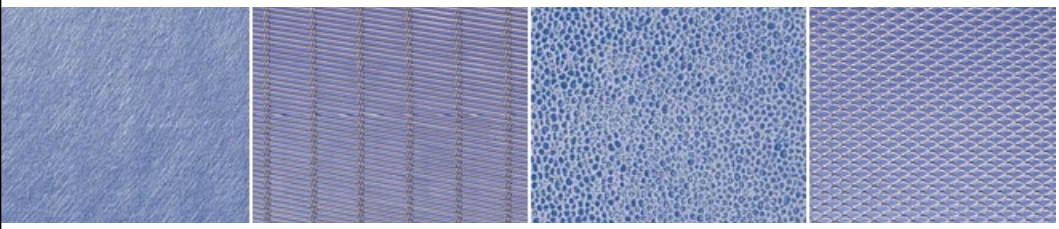
Developed by Dr. Raymond Ting, TingWall utilizes an “air loop” principle to neutralize the effects of both wind and rain by incorporating separate air and water seals. The result is a curtain wall system that can tolerate imperfect seals anywhere in the system and still not leak. TingWall has surpassed the most rigorous AAMA standards in multiple tests, and can withstand greater seismic and wind loads than a conventional system. TingWall is designed to allow for the use of multiple facing materials without edge conflicts, and is cost competitive with so-called “stick” systems.



Tingwall Website

http://www.tingwall.com/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



LIGHT-DIFFUSING GLASS

OKALUX produces even room illumination without hard shadows. The light-diffusing property of OKALUX is based on a light-fast capillary plate located in the space between the panes. OKALUX can also be produced as curved glass or as OKALUX look-alike opaque panels.

OKATECH is an insulating glass in the intermediate space of which many different designs of wire mesh are integrated as design elements with variable functions. The use of wire mesh focuses attention not only on functional but also on aesthetic aspects.

KAPILUX is an insulating glass with an integrated capillary slab consisting of a large number of honey-comb structured thin-walled transparent or white capillaries. This capillary slab can be integrated into the most different kinds of insulating glass, resulting in a very good light diffusion.

OKASOLAR is a light-directing solar control insulating glass incorporating a panel of highly reflective louvre blades within the unit cavity. Depending on the technical requirements of the project, different louvre positions can be selected. Depending on the geographical orientation and inclination of the glass panes, solar control can be achieved according to the time of year and the time of day.

http://www.okalux.de/Okalux_2003/englisch/frames_e.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

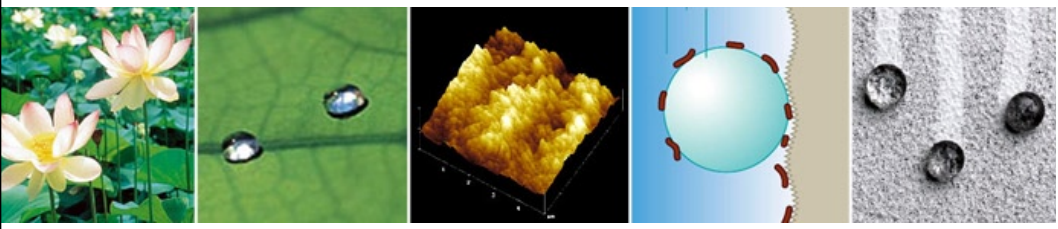
POROCOM

Porocom - short for 'porous construction material' - is an environmentally friendly product that reduces noise pollution. It consists of granules of recycled materials (sintered coal ashes, clay, glass shards, eco grid and so forth) heated to about 200°C before being brought into contact with thermosetting powder paint, a residue of the manufacture of coatings.

The paint quickly covers the granules, but does not completely harden at this point. The coated granules, a semi-manufactured product, are marketed as Porocom. The end product is made by sintering the granules in a mould, causing them to stick together and achieve maximum hardness.

http://www.tenbergecoating.nl/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



WATER-REPELLING PAINT

The leaves of the lotus flower are water-repellent. After a shower of rain they immediately appear dry and clean, as water runs off them like marbles off a glass plate. Lotusan has duplicated this effect, one of nature's own inventions which has proved itself over millions of years, in a new silicone facade paint.

Lotusan combines the well-known water-repellent properties of silicone paints with a surface micro-structure based on the lotus leaf. This considerably reduces the contact area for water and dirt, and adhesion is also greatly reduced. The result is that dirt is repelled by water droplets and facades stay dry and clean - even highly stressed weather-exposed facades.

The lotus effect was discovered by Prof. Dr Wilhelm Barthlott of Bonn University, a scientific achievement in the field of biology which created a worldwide sensation.

Lotusan

bhsn
Website

http://www.bhsn.com/rejmo.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

SMOG-FIGHTING PAINT

Jenny Hogan, "Smog-busting paint soaks up noxious gases" in NewScientist.com, February 04, 2004

A paint that soaks up some of the most noxious gases from vehicle exhausts will go on sale in Europe in March. Its makers hope it will give architects and town planners a new weapon in the fight against pollution.

Called Ecopaint, the substance is designed to reduce levels of the nitrogen oxides, collectively known as the NOx gases, which cause respiratory problems and trigger smog production.

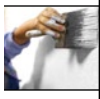
Patents filed last week show how the novel coating works. The paint's base is polysiloxane, a silicon-based polymer. Embedded in it are spherical nanoparticles of titanium dioxide and calcium carbonate 30 nanometres wide. Because the particles are so small, the paint is clear, but pigment can be added. The first paint to go on sale will be white.

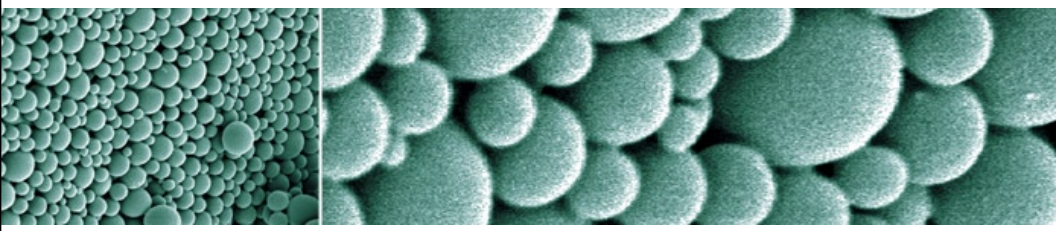
The polysiloxane base is porous enough to allow NOx to diffuse though it and adhere to the titanium dioxide particles. The particles absorb ultraviolet radiation in sunlight and use this energy to convert NOx to nitric acid.

The acid is then either washed away in rain, or neutralised by the alkaline calcium carbonate particles, producing harmless quantities of carbon dioxide, water and calcium nitrate, which will also wash away.

http://www.newscientist.com/news/news.jsp?id=ns99994636

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com





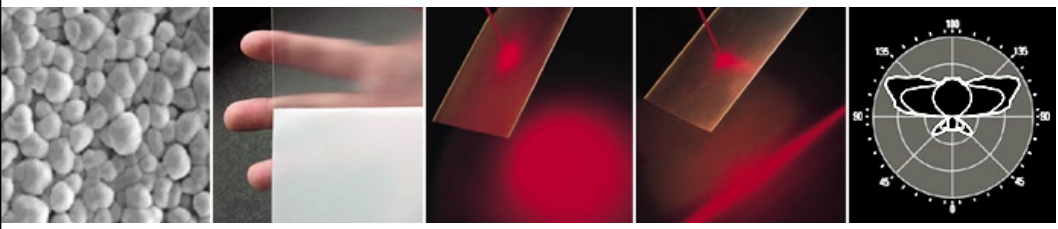
MICROPARTICLES

It's maybe a bit too expensive to use for the baubles on a Christmas tree, but it's already available for car owners who like to "be different": a paint that shimmers in a myriad of colors like an oil slick on a wet road. The appearance of all the colors of the rainbow is created by the interference pattern of extremely thin films applied to minute flakes. These microparticles measure less than a tenth of a millimeter across. The special properties of these tiny particles make them increasingly popular, because they can give products undreamed-of capabilities. Three Fraunhofer institutes have joined forces in the strategic alliance "Microstructured Composite Particles." Its aim is to improve the methods used to produce the tiny objects.

Microparticles are used to give many materials additional, unusual properties: like the screws that stick fast when they are tightened, because the thread is coated with microcapsules containing adhesive. A familiar product is the carbonless paper used for multiple copies of forms - they contain minute encapsulated particles of ink. There are plastics with incorporated hard microparticles, which can be shaped like any other plastic but offer unusual resistance to impact. Altogether, experts estimate that the world market for micro-encapsulated products is worth around five billion US dollars per year.

http://www.fraunhofer.de

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



MESOOPTICS

Ledalite's MesoOptics technology delivers advanced optical control utilizing holographically recorded microstructures. MesoOptics can replace conventional optics in a wide range of luminaire types and lighting applications.

Just as a hologram is a three-dimensional image recorded in a two-dimensional medium, MesoOptics are three-dimensional luminous distributions, or optical control effects, that are recorded holographically and reproduced as patterns of "microstructures" on the surface of a flat plane element. When light interacts with these microstructures, the recorded optical control effects are "replayed."

Viewed under an electron microscope, the microstructures that form a MesoOptics diffuser appear like minute beads. As light passes through or is reflected off the microstructures, it is diffused and modified to produce controlled beam patterns ranging from circular to linear.

MesoOptics microstructures are applied to the surface of a suitable substrate such as acrylic, polycarbonate or glass using conventional holographic manufacturing techniques. A reflective metallized coating is applied for MesoOptics reflectors.

http://www.ledalite.com/products/meso/index.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

RECYCLABLE PARTITION SYSTEM

According to Preform Manufacturing, Decato is the most environmentally sensitive interior partition product available on the market. Over 80% of the product is from recycled, bio-based, or sustainable materials, and is virtually 100% recyclable. Core materials are totally non-toxic. Furniture component parts are available from Environmentally Friendly Industries, featuring 100% recycled content core materials and finished with biodegradable low VOC finishes.

Moreover, the panels are available in any height or width, and the system is designed to accommodate almost any other manufacturer's components, including cantilever brackets, worksurfaces, shelves, upper cabinets, and paper organization systems. The system is engineered such that panels can be added or de-mounted in two minutes or less without electrical or communication interruptions.

With regard to materials, Decato achieves a high tech appearance with a variety of panel materials and textures. The system makes a broad statement with its generous use of aluminum. Panel types include Acoustic, Non-Acoustic, Plexiglas, Graphic Plexiglas, Perforated Metal or Wood, and Ribbed Aluminum. Doors include Sliding Glass, Conventional Glass or Solid Core Doors - all with locksets . Privacy elements do not have to be panels - they can be Canvas Sails, or Silk Screened Images.

http://www.preformpanels.com/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

UNIVERSAL SHELVING SYSTEM

The 606 Universal Shelving System was designed by Dieter Rams in 1960 for Vitsoe and has been produced continually ever since. (It was the sixth design concept in 1960 – hence '606'). At the outset, the intention was to achieve easy assembly and the greatest possible variability from the efficient manufacturing of a small number of identical parts. The object of the original design intent was to create a truly timeless product. This demanded that fashion, style and taste were to be ignored in favor of simplicity and flexibility.

By virtue of its simplicity, 606 possesses a butler-like ability to fade into the background but to be there when needed. More than forty years later, some argue that the objective is still being fulfilled. It's a straightforward concept: when you move, you take a simple, adaptable product with you; you re-plan it to suit its changed environment or your changed requirements. You might even add few extra parts - they are available from stock. It dawns on you why the initial outlay was worth it: you started with less; took it with you; and added more.

http://www.vitsoe.com



GETSET DESK SYSTEM

"Getset is an extension of our work reflexes. Our work habits and patterns change almost daily and this system allows us to intuitively adapt our working environment: emotional ergonomics."- Arik Levy

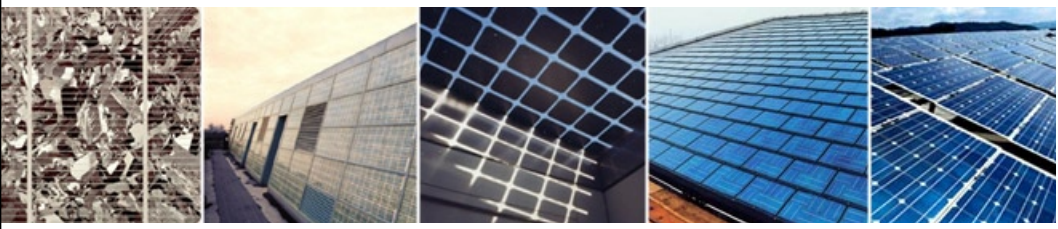
Getset is a desk and storage system assembled from component parts to articulate individual requirements. Equally comfortable in office, studio or home, the versatile workstation can easily adapt and grow as needs change.

Arik Levy

Snowcrash Website

http://www.snowcrash.se/products/getset/index.php

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



SOLAR PV TECHNOLOGIES

As global warming accelerates and our energy demands continue to rise, we have to adopt cleaner, more sustainable sources of energy. Solar PV generates electricity directly from light, whatever the weather. If every suitable roof had PV, we could generate 10,000 times more energy than the world currently uses.

All PV cells have at least two layers of such semiconductors: one that is positively charged and one that is negatively charged. When light shines on the semi-conductor, the electric field across the junction between these two layers causes electricity to flow - the greater the intensity of the light, the greater the flow of electricity.

Facts:
If we covered a small part of the Sahara desert with PV, we could generate all the world's electricity requirements.

If you install a solar PV tiled roof, you could prevent over 34 tons of greenhouse gas emissions during its lifetime.

Today all TV and communication satellites are powered by PV. The earth receives a continuous power input from the sun of 200 x 1015 Watts - an unimaginably huge amount of energy which completely dwarfs the capabilities of fossil fuels or nuclear fission....and it's clean and free.

http://www.solarcentury.co.uk/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

SOLAR WALL

The Solarwall system is based on a metal (aluminum or steel) cladding that is installed on the south-facing wall of a building. The system operates in a very simple manner using economical and environmentally-benign solar energy to heat buildings.

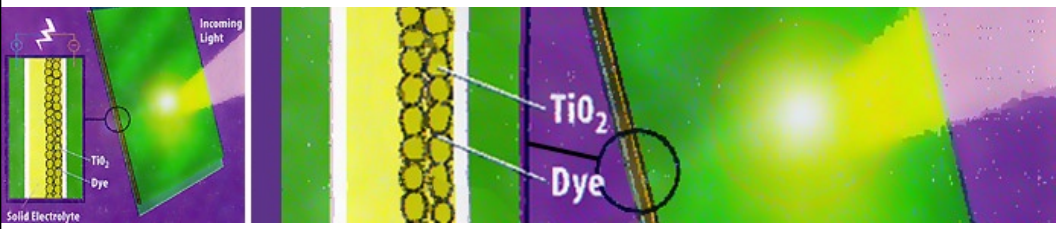
Solarwall also reduces building heat loss during the winter. All buildings lose heat to the outdoors. On the south-facing wall, heat lost to the cavity between the metal panels and the building is captured by the incoming air and returned to the building along with the heated fresh air from the Solarwall. Even at night, a Solarwall acts to reduce building heat loss.

Solarwall provides summer cooling by preventing solar radiation from striking the south wall of a building. Warm air between the Solarwall and the building rises and is ventilated through holes at the top of the cladding. This reduces cooling loads in the building. Fresh ventilation air is drawn directly into the building via bypass dampers.

Solarwall has an operating efficiency of up to 75% (rated by both the Canadian and US governments). On a sunny day, the Solarwall can raise the air temperature by 30 to 76 degrees F depending on flow rate. The cost of a Solarwall solar heating system in new construction is usually less than the cost of a brick wall or even a metal-clad wall.

http://www.solarwall.com/sw/solarwall.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



TRANSPARENT SOLAR CELLS

Mark Dwortzan, "Something New Under the Sun?" *Technology Review* September/October 2000, p. 30

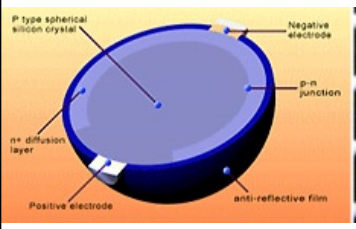
Imagine a smart credit card that not only stores electronic money and records your transactions but also has its own energy source. Or a sun roof that delivers electricity to your car battery. Imagine each powered by flexible, ultra-thin, see-through solar panels.

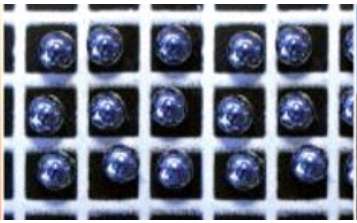
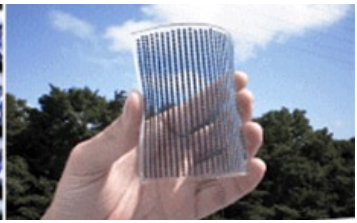
These scenarios may not be far off, thanks to a photovoltaic cell production process unveiled by Toshiba scientists in May at the 16th European Photovoltaic Solar Energy Conference and Exhibition in Glasgow, Scotland. The Toshiba design is an improvement to the Graetzel cell, a new type of solar panel that relies on titanium dioxide nanocrystals coated with a dye. When struck by light, the dye "injects" energized electrons into the semiconducting titanium, which generates electrical power. Graetzel cells' advantages over conventional silicon solar panels include transparency, low materials costs and the ability to operate efficiently under cloudy skies.

Shuzi Hayase, a chief research scientist at Toshiba's Power Supply Materials & Devices Laboratory in Kawasaki, says the cells achieve a respectable 7.3 percent solar-energy conservation efficiency and should be easy to manufacture. "We do not need expensive production lines and sophisticated vacuum systems currently employed in the manufacture of silicon-based cells. The new cells could be manufactured by [silk-screen] printing technologies."

http://www.toshiba.com/tai-new/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



SPHERICAL SOLAR CELL

The spherical micro solar cell is superior to the conventional plate type for its higher conversion ability and assembly flexibility.

High photoelectric conversion efficiency is obtained because incident light from every direction can be utilized for the generation of electricity. Also, the cell has excellent strength and durability, with the advantage that it can be easily interconnected, which enables assembly in various modular configurations.

The spherical micro solar cell is assembled in a special plastic seal. Potential applications include traffic communication, such as in vehicles; rechargeable batteries; and power supply for residential houses.

Kyosemi

Kyosemi Website

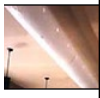
http://www.kyosemi.co.jp/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

FABRIC AIR DISPERSION

DuctSox Fabric Air Dispersion Products present an interesting alternative to metal ductwork in open ceiling architecture applications. Manufactured in Dubuque, Iowasince the early 1980's, DuctSox can be used in virtually any environment with open architecture and an exposed ventilation system. Facilities of all types benefit from DuctSox innovative fabric air dispersion including: retail, commercial, educational, athletic, static-free, warehousing, food processing facilities and more.

Because each of these facilities have different air throw requirements, DuctSox fabric air dispersion products are designed within the parameters of three air delivery methods utilizing a variety of fabrics (comfort-flow, low-throw, and high-throw). Each method is then customized to meet the specific needs of an application.



http://www.ductsox.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

TURBOGENERATOR POWER SYSTEM

Imagine a typical summer afternoon. Your business is using electricity from the utility company to light your interior, run your climate control system, and power your equipment. At the same time, everyone else is doing the same thing. To handle peak demand periods like this, the power company's costs go straight up. So they charge you peak demand rates.

This is where the Parallon 75 from Honeywell makes all the difference in the world. It's a simple, quiet generating system. It doesn't replace your local power company, and it doesn't ask you to get into the power business. Instead, it works along with the power company, as a second source of power--we call it Parallel Power--that's ready to help whenever it's needed. This self-contained system has controls that monitor the grid around the clock, and determine exactly when to start saving you money. Whenever this system can generate electricity for less than the utility company, it starts up automatically, and replaces electricity from the grid with electricity that costs much less.

The Parallon 75 uses an advanced new technology that makes it the most efficient source of power. It's low-cost, fuel-efficient, low in emissions, and almost maintenance-free. There's no gearbox, and almost no internal friction. As a result, it can generate an amazingly high amount of power for a system this size: 75 kW.

http://www.parallon75.com/index.html

IN

16

Honeywell

Parallon75 Website

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

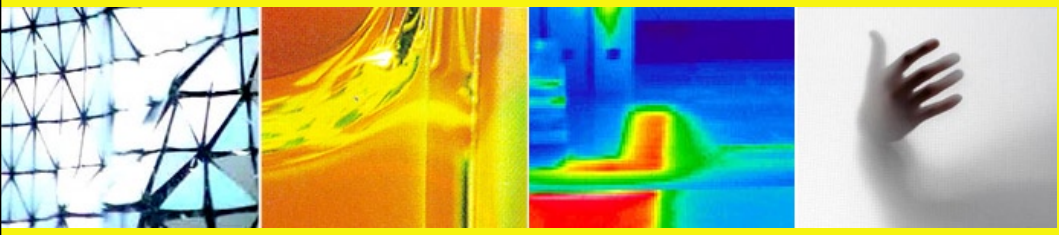
LOW-VOLTAGE L.E.D. LIGHT

A light emitting diode is an electronic component that converts electrical energy into light or infrared radiation in the range of 550 nm (green light) to 1300 nm (infrared). An LED is made of semiconductor material, such as gallium arsenide phosphide, that glows when electricity is passed through it. (The first digital watches and calculators had LED displays, but many later models use liquid-crystal displays.)

Although LED technology has not historically possessed the necessary intensity appropriate for lighting applications, Bruck has developed a low-voltage fixture powerful enough for accent or display lighting. The benefits of LED light include: 1) little or no heat emission and 2) color control superior to neon or fiber optics. When this technology becomes commercially competitive with other forms of lighting, we may see why the president of Bruck Lighting believes it will replace other popular technologies in the near future.

http://www.brucklighting.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



TRANSFORMATIONAL

Transformational materials undergo a physical morphosis based on environmental stimuli. This change may occur automatically based on the inherent properties of the material, or it may be user-driven.

Like intelligent materials, transformational materials provide a variety of benefits, including waste reduction, enhanced ergonomics, solar control, illumination, as well as interesting phenomenological effects. A subset of this group is considered transformational in terms of its functionality, including tables that become light sources and art that becomes furniture.

Transformational products are important because they offer multiple functions where one would be expected, they provide benefits that few might have imagined, and they simply make us view the world differently.

INTERACTIVE INK

Founded in 1993, Chromatic Technologies, Inc. is a privately held corporation that creates offset, flexographic, and screen inks which change color with heat and cold (thermochromic) or sunlight and darkness (photochromic). CTI was the first to develop a thermochromic offset ink and holds several U.S. and Canadian patents for this technology. CTI also makes a Glow-in-the-Dark ink.

Thermochromic Inks come in three standard temperatures: 15C (Low temp), 31C (Body temp) and 45C (High temp). The 'Low Temperature' ink is used for applications in the refrigeration temperature range, like beverage labels. 'Body Temperature' ink is designed to show color at normal room temperature and to change when rubbed with the finger or by breathing on it. It is used on documents and security packaging. The 'High Temperature' formulation changes color just below the pain threshold temperature for skin, and is used on safety labels and hot beverage labels.

Photochromic Inks are invisible unless UV light, e.g. sunlight, hits them. Once UV light hits the ink, it blooms into color. This special brand of ink is great for everything from high-security documents and products to interactive advertising and direct mail pieces.

Chromatic Technologies Inc.

Chromatic Technologies Website

http://www.ctiinks.com/index.htm

TECHNOGEL

Technogel is a breathable, dimensionally stable, polyurethane-based gel that is shock absorbent and distributes pressure equally. Technogel is flexible and elastic with good recovery properties. It does not contain plasticizers or other volatile components so it is stable and retains its properties over an extended time. It can be stamped or cut into shaped sheets, individually molded into shapes, directly laminated with decorative materials during manufacture, or bonded later with standard polyurethane glue. It comes in a variety of colors.

Technogel is applied to seating, footwear, sports equipment, furniture, wheelchair cushions and automotive interiors. The pressure relieving properties of the gel make it particularly well suited to cushioning for paraplegic, dystrophic and elderly patients.

Technogel Italia

Material Connexion Website

http://www.royalmedica.it

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

BIODEGRADABLE PLASTIC

"Say Good-Bye to Plastic" by Todd Woody, *Wired* 07.2002, p. 40

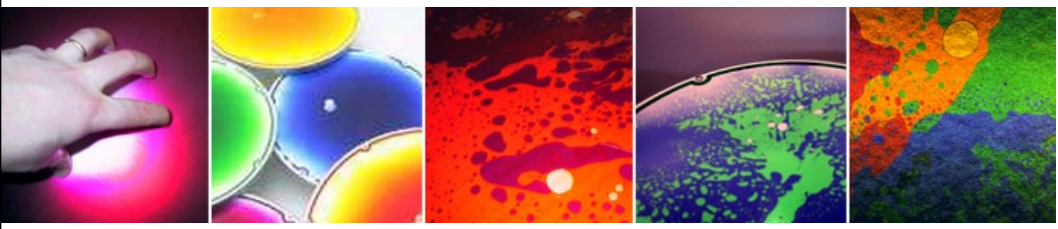
It could be the biggest thing since sliced bread was wrapped in cellophane: biodegradable food packaging that's cheap enough to compete with conventional plastic. Once used, it can be thrown onto the compost heap or even eaten. This year, startup Plantic Technologies will roll out a cornstarch-based bioplastic that can be molded into everything from Twinkie wrappers to cracker trays.

The technology, developed by the Australian government, could help usher in a 21st-century green revolution. Cornfields rather than oil fields could satisfy much of the enormous demand for plastic. A huge chunk of the 24 million tons of plastic that Americans toss each year would end up in backyard com-posters instead of landfills. And then there's the carnage that would be avoided if the plastic polluting the world's oceans dissolved rather than killing sea turtles, fur seals, and other wildlife.

The road to ecologically safe, consumer-friendly bioplastic is littered with expensive failures and technological dead ends. But those problems are now being overcome, spurred in part by stringent recycling regulations in Japan and Europe. In 100,000 German households, for instance, chemical giant BASF is testing food bags and packaging made from its Ecoflex bioplastic, which contains a biodegradable petrochemical polymer.

http://www.plantic.com.au/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



LIVING GLASS

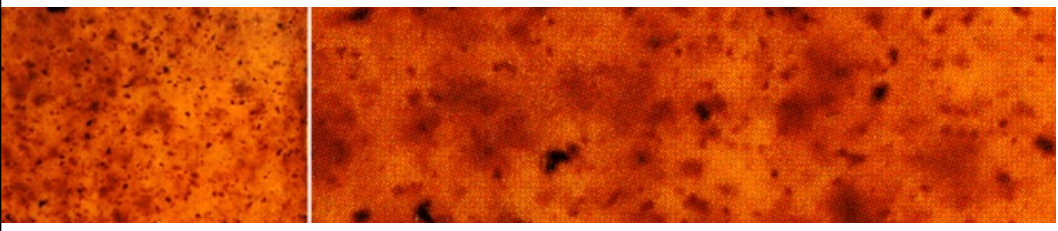
B.Lab has created a line of products consisting of layered acrylic panels which contain a pigmented membrane. This membrane actively transforms based on touch and vibration, enabling one to move and mix colors at will. This technology is currently available in B.Lab's so-called Flex-Interactive tables and is being developed in a line of floor tiles.

B.Lab

Living Glass
Website

http://www.livingglass.it

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



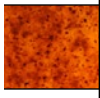
REGENERATIVE PLASTIC

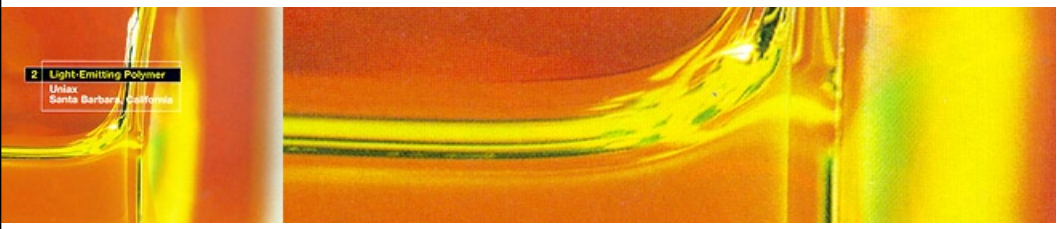
Jennifer Kabat, "Plastic Surgery" in *Wired* June 2001, p. 56

Scott White wants to make obsolescence obsolete. After nearly a decade of research, the associate professor of aeronautical and astronautical engineering, along with fellow scientists at the University of Illinois at Urbana-Champaign, has developed a plastic that heals itself like skin (translation: self-repairing PDAs, cell phones, garden hoses). When the polymer splinters, invisible capillary-like microcapsules filled with a liquid agent called dicyclopentadiene flow into the crack. As the liquid comes in contact with the powdery catalyst (black spots) embedded throughout, the two chemicals coagulate and harden, as in the center-fractured test polymer shown here.

The whole process is triggered by a fracture no more than 100 microns in length. Once repaired, the plastic regains up to 75 percent of its original strength. The regenerative material will hit the market in two to three years, showing up first in the sporting goods and automotive industries, then the aerospace, microelectronics, and medical sectors, where every component is mission critical. The next challenges are to extend the technique to substances such as ceramic and glass, and to develop a scheme that mimics the body even more closely. "Presently, once the capillaries in one area have broken open, the whole thing is over, and it's like any other plastic," says White. "So we're experimenting with a circulatory system that will pump in replacement fluid automatically."

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

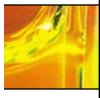




LIGHT-EMITTING POLYMER

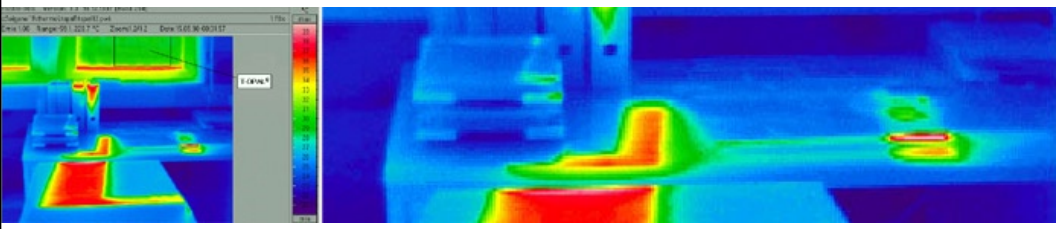
David Pescovitz, "Stuff Love," *Wired* (January 2000), p. 184

Make way for the dawn of light-emitting plastics. Twenty years in development, conductive and semiconductive polymers are coming out of the lab. Polymer emissive displays promise full color and high contrast at a very low price. First app: Organic LED cell phone displays fast enough to support full-motion video.



http://www.uniax.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



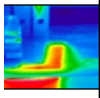
THERMOTROPIC CAST RESIN GLASS

Our longing for summer and sunshine has not been answered too often this year. But no sooner do the sun's rays make their way through the clouds, complaints abound about the heat and dazzling light this generates in our modern glass buildings. Venetian blinds, shutter blinds and curtains are rolled up and down, pulled from left to right. A markedly more elegant and less bothersome solution is provided by windows that automatically produce their own shade. Researchers at the Fraunhofer Institute for Building Physics IBP, Stuttgart, under contract to industry, are developing window panes which transform to a milky white when temperatures reach a certain level, thus serving as protection from the sun.

Dr. Holger Gödeke, an engineer at the IBP, explains, "The goal of our work was to find a thermotropic system that could be easily produced and thus compete with conventional mechanical sun-shade installations." The outcome is T-OPAL®, a cast resin glass with an integrated polymer layer. "Cast resin glass has long been used in fire and sound insulation. In order to provide protection against the sun, the production method is slightly altered," Gödeke explains. "The polymer is poured between two panes of glass as a thin liquid mass. When exposed to UV rays the polymers turn into a solid mass."

http://www.fhg.de/english/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



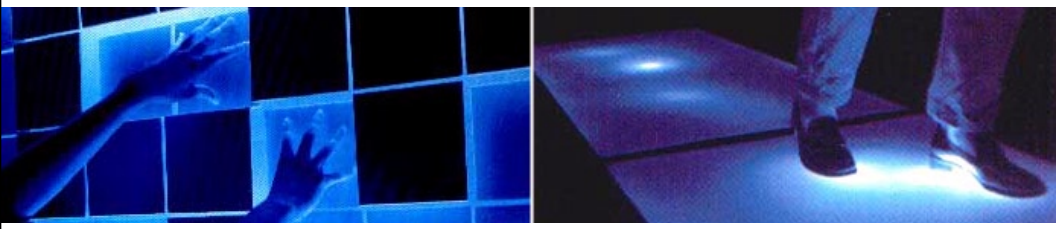
SMARTGLASS

Suspended Particle Device (SPD) technology is a "switchable" light-control technology that has numerous performance and cost advantages over other technologies. SPD-Smart products allow you to instantly and precisely control how clear or dark glass or plastic is, and to easily adjust the light transmission of the product manually or automatically. This is made possible by a thin, flexible SPD film invented by Research Frontiers.

Available as a film or already incorporated into glass, SPD film can be easily adapted to a variety of products that people use every day, such as architectural windows, automotive windows, sunglasses, display screens for laptop computers, cellular telephones, instrument panels, electronic games and point-of-purchase and advertising displays, billboards and road signs.

http://www.refr-spd.com/

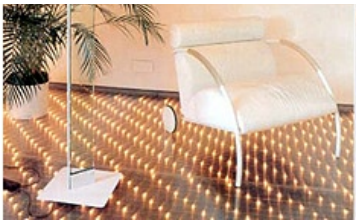
Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



ILLUMINATED TILES

Rogier Sterk has developed two products which consist of illuminated tiles, Tiled Wall and Lightfloor. The Tiled Wall consists of basic ceramic tiles and fluorescent lighting. A mechanism behind each tile allows the tiles to be pressed and depressed, one at a time. A tile left untouched conceals the light behind it, except around its edges. Pushing in a tile allows the light to shine across its surface and thus to emit a reflection into the surrounding space. The abundance of tiles provides an opportunity to create countless patterns of light.

So far the design is unique and production is limited, which means it is custom made. The design is modular so basically there are no limitations to wall size. You can use any tile, with a preferable standard size of 15 x15 cm, in any color. Total costs for a square meter with mechanisms are estimated at 1150 euro, excluding installation cost. It is also possible to make a fixed light pattern, leaving out the mechanisms, making the design more affordable.



ILLUMINATED FLOORING

Munchen-based Leuchtboden has unveiled an extra-thin, heavy-duty illuminated floor with long-life 12V lamps. Ideal for retail, exhibition, or entertainment applications, one meter of illuminated flooring can carry 4 tons. The floor material is available in 60 x 60 x 2 cm modules, and the bulbs last 50,000 hours.

http://www.stiers.de/frame_lb.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

MEMORY FOAM

Like many high-tech devices, an emerging style of fancy office chair stuffed with "memory foam" owes its existence to NASA.

The National Aeronautics and Space Administration invented the foam more than 30 years ago, when it had to develop comfortable seating for astronauts who had to first withstand stiff gravitational forces, then spend several days sitting in a tiny space capsule.

The soft, pliant material, which molds to the body of the user, failed in space. But today the foam is used in a growing array of consumer products, from mattresses to bicycle seats, and now office chairs.

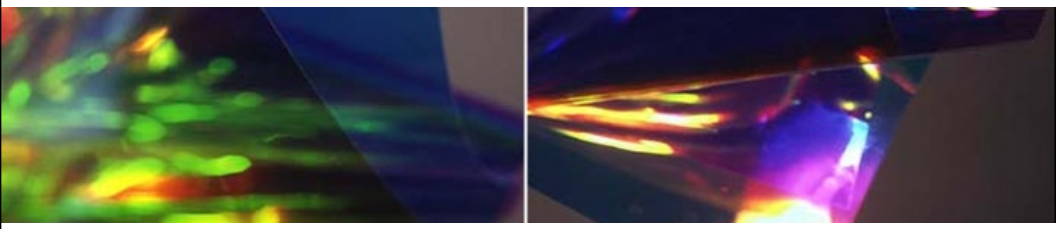
"Memory foam didn't work well in space because it's temperature-sensitive and space is very cold, so it got very firm," said Kevin Berg, store manager at Relax the Back, which specializes in products using memory foam. But for the average desk jockey working at home or in a heated office, memory foam works well.

Danielle Starkey, "Nasa failed 'memory foam' finds new mission" on the *San Francisco Business Times* website, 09/24/2001

NASA

SF Business Times
Website

http://sanfrancisco.bizjournals.com/sanfrancisco/stories/2001/09/24/focus3.html



RADIANT COLOR FILM

3m has introduced flexible, non-metallic, reflective color films which are made by combining precise multi-layers of polymer materials that have different reflective properties (with outer layers of polyester).

They can be tailored to produce vivid colors in both reflection and transmission, which are so bright that objects made of these films appear to be lit from the inside, and are available in two versions that change color according to the angle of observation: cyan/blue/magenta and blue/magenta/gold.

They can be laminated, printed, embossed or crimped, slit to make fiber and yarn that can be woven or knit into fabrics, dyed, die-cut and precision cut, coated with adhesive or to be heat sealable, and extruded in plastics; for uses such as gift wrap, glitter, signage, ornaments, labels, etc.

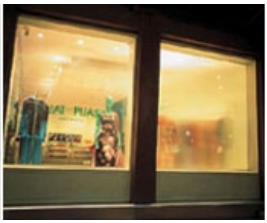
3m

Material Connexion website

http://www.3m.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com






LUMISTY FILM

Lumisty first drew widespread attention when it was used on the windows of Pleats Please, Issey Miyake's clothing boutique in SoHo. Since then many of the world's top designers and architects have opted to put the film at the service of their own rich imaginations, and the results have been stunning. Lumisty's applications range from museums, hotels, banks, restaurants, and bars, to storefronts, conference rooms, trade show exhibits-and even bathrooms.

If you've seen Lumisty in action you've experienced the unexpected visual sensation it creates. Upon first encountering the product, people are often struck by what they think is an optical illusion. Walking past a window with Lumisty applied, a perfectly clear, transparent glass surface becomes, in a step or two, partially fogged. Two or three steps later, the same window is completely fogged. Walk backward or forward, and it's clear again. As the viewer's angle shifts, so does the transparency or translucency of the film.

http://www.lumistyfilm.com/lumisty.htm

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

MOVEABLE PARTITIONS

Flexibility and communicative working environments are the determining factors in office design for the future. Moveable partitions from Hüppe Form offer “maximum flexibility and practicality combined with top quality.” Scales range from room-in-room systems for shopfloors or versatile office layouts to giant mobile-walls for foyers or auditoria. Hüppe Form claims “there are virtually no limits to individual design in terms of shape, material and color. All the usual interior surfaces are possible, and individual design ideas can be turned into reality.”

http://www.hueppeform.de/english/index.htm

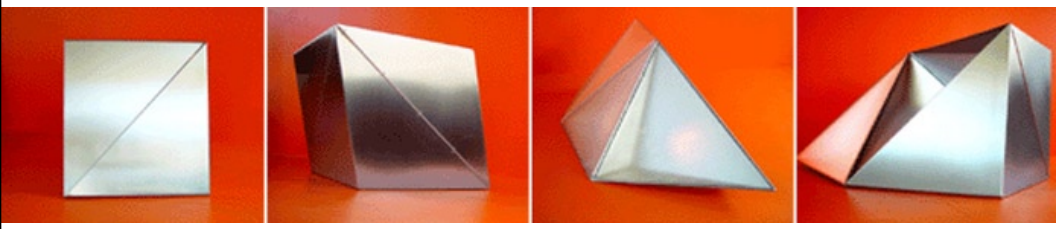
Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

SOFT WALL

Made of felt, the Soft Wall is a partition and storage element in one. The Soft Wall can be used in both the home and office. It rests on a frame with a glossy chrome finish. Dimensions (in cm): W 250, D 20 H 207.

http://www.vagonews.com/issue01/products4.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



SPLIT BLOCK LIGHT/TABLE

Although at first sight the stainless-steel Split Block looks like a cube, it splits open to reveal a gleaming interior. The box can serve as a table, light or simply a sculpture.

http://www.korbanflaubert.com.au/split_block.htm

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

ILLUMINATED FURNITURE

Coffee tables, lamps or stools with light? Luceplan has created a new family of luminous objects in order to serve a wide variety of needs in domestic lighting.

Zio, Zia and Nipotino are table and floor lamps made of injection-moulded white polycarbonate. These new “support lamps” take a fluorescent bulb housed underneath the top. This creates an indirect light and produces a graphic play of visually restful effects.

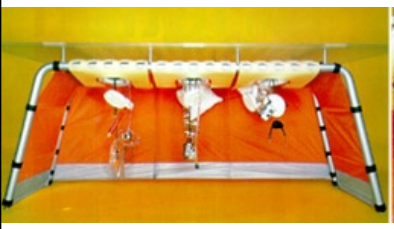
Of the three members of this family, Zia is the lamp best fitted to support “substantial” loads. It can in fact safely bear the weight of a person, even though it is not designed as a seat.

The dimensions of the Zio are designed to allow the lamp to be placed with ease on a desk without taking up too much room. Its top can in fact comfortably accommodate a sheet of typing paper and the sort of documents normally associated with a workstation.

The Nipotino also can be used in innumerable different ways: from its ideal placement next to the computer keyboard, to its function as a discreet luminous presence.

http://www.luceplan.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



UNDERCOVER TABLE

Wired January 2001, p. 68

"There isn't necessarily a problem with a regular table," Thom Faulders admits. But the principal at Berkeley-based Beige Design reengineered the coffee table all the same. Containers suspended underneath the Undercover Table hold oxygen, water, a whistle, a paper jumpsuit, a radio, a space blanket, a photo album, and a book - totemic survival gear in the earthquake-prone Bay Area. The frame serves as a roll-cage shelter, and its removable polycarbonate top doubles as an emergency stretcher. "We were trying to take something very everyday and banal," says Faulders, "and create this whole world inside of it."

http://www.beigedesign.com

SCULPTURE FOR SEATING

The 1991 Ocean Series consists of large functional works in redwood and bronze. The 18 ft. to 22 ft. long, 4 ft. high pieces have been used by Foster and Partners at the Al Faisaliah Center Riyadh in Saudi Arabia and in a high school designed by Kajioka Yamachi Architects in Maui. Custom designs and sizes may be commissioned, and various colors of patina can be selected. Production time is six months.

BODY PROPS

Body props are five soft forms moulded in expanded polyurethane, with elastic varnish finish, created as an extension of the body to support it in all its different postures. “I thought of living in a house as a physical exercise,” relates creator Olivier Peyricot. “In sport the body offers an increasingly unbelievable performance. Body props are an invitation to conquer space as in a sport competition.” Body props are supports for lying on the ground, propped on one elbow or in a comfortable kneeling position, or to use a bed like a work surface, to kneel in order to relieve the pressure of the spine.

Four have ergonomic forms whose symmetry derives from that of the body. The fifth item is like a comma and tempts a more personal use. The project was developed in collaboration with VIA (valorisation of furnishing innovation) in Paris and introduces a new philosophy of comfort that embraces the floor as a living space.

Olivier Peyricot

IDSland Website

http://www.idsland.com/q.php?prj=32

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com




CLOUD

CLOUD is a portable room for rest, meeting or concentration. A space of its own that can be used within any space or outdoors, cloud instantly defines an area and a mood apart.

Easily transported from place to place, when it is unpacked a silent fan inflates the chamber and keeps it inflated as long as required. The room inflates in less than three minutes, and it folds away into a bag. CLOUD is entered and exited via a self–closing slit door.

“Whenever I fly on a plane I wonder what it would be like to step inside a cloud. I started to research clouds and came across the cumulus. It is called the happy cloud and forms from moisture in the air, rising in the morning and disappearing in the evening. This is exactly how I imagine the cloud room – it goes up in the morning and then it disappears when you leave at night. It is very simple to use and takes up no space when it isn’t inflated. It is a place where you can totally escape, but it has no rules as to how you use it.“ - Monica Förster

http://www.snowcrash.se/products/cloud/index.phtml

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

INTERACTIVE SURFACE

The Aegis project consists of an interactive mechanical surface which deforms in real-time based on various environmental stimuli, including the sounds and movements of people, weather, and electronic information.

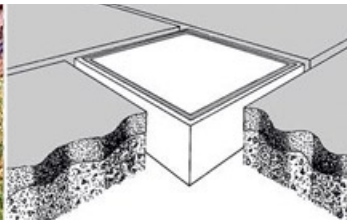
This hyposurface is comprised by a matrix of actuators which are given positional information via a highly efficient bus system, as well as an array of electronic sensors used to trigger a variety of mathematical deployment programs. The hyposurface effectively elevates a highly responsive pneumatic mechanical system to a level of articulate and fluid control through its interception by a highly performative digital control.

dECOi Architects' goal for the Aegis Hyposurface is "to utterly radicalize architecture by announcing the possibility of dynamic form, and to then explore the cultural possibilities afforded by this new traumatic medium. It is, of course, a harbinger of nanotechnology - the intersection of information and matter itself."

http://www.hyposurface.com/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com





SOLAR LIGHT

"Imagine ... A city square by night, the paving is scattered with hundreds or thousands of tiny lights. Each light is set into the paving and sparkles and shimmers. Walking across the square is like walking over a magical glowing sea of sparkly lights." - SVA

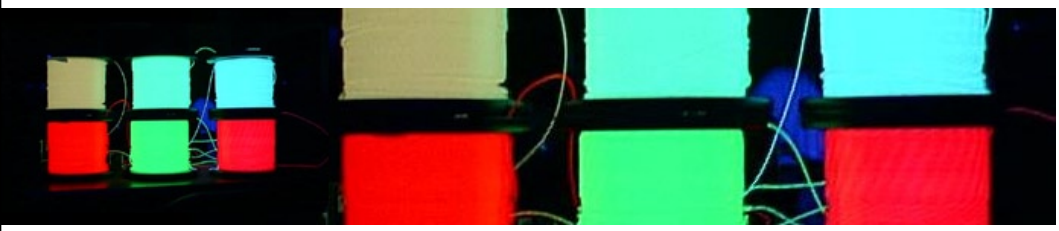
The Tsola is a light-tile that works on sunlight. Measuring 20 x 20 cm, the tile contains a solar cell. The tile is illuminated by sunlight during the day and emits light for approximately eight hours at night. Its major advantage is that it needs no wiring; hence, it is less likely to mal-function. Applications include parks, walks, car parks, steps, and drives.

The lamp inside a Tsola Light is available in a range of colours and has a life of twenty years. The light can also be made to shimmer or even flash like a camera.

The light looks like an unobtrusive glass panel measuring about 200mm or 8 inches square. It can be set flush with paving, lawns or flower beds, or it can be turned on its side and set into walls.

http://www.sva.co.uk

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



ELECTROLUMINESCENT WIRE

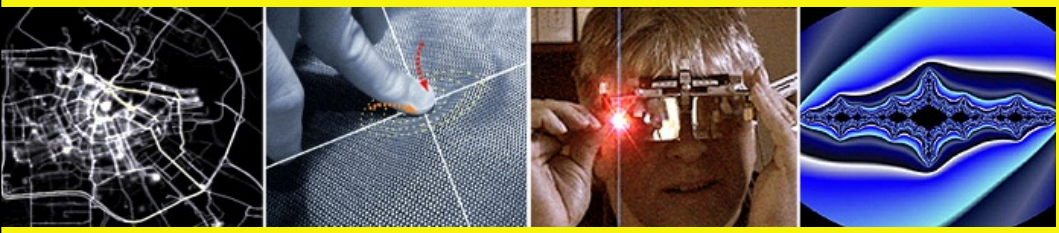
Electroluminescent Wire consists of a concentric series of layers, each performing a different function. In the center is a solid copper conductor, which is coated with an electroluminescent phosphor. Two very fine wires are wrapped around the phosphor. A clear or colored plastic sheath comes next, and a second plastic sheath surrounds the first. The functions of each of these layers are as follows:

The center copper conductor and the two fine wires together supply power. The copper conductor also provides a small amount of mechanical rigidity, and is used as a substrate upon which to deposit the phosphor. The phosphor is the key element of Elwire; it emits light when subjected to an AC field. The inner plastic sheath protects the phosphor and in some cases is used to filter the light produced by the phosphor, emphasizing certain colors. The outer plastic sheath provides further protection. Many phosphors are highly sensitive to moisture; the two sheaths together provide good protection against infiltration.

EL wire can be driven by any AC source. Power is applied between the inner conductor and the two outer wires (which are tied together). This applies an AC field across the phosphor, causing it to glow. A high voltage in the range of 100V is required to make the wire glow brightly.

http://www.elwire.com/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

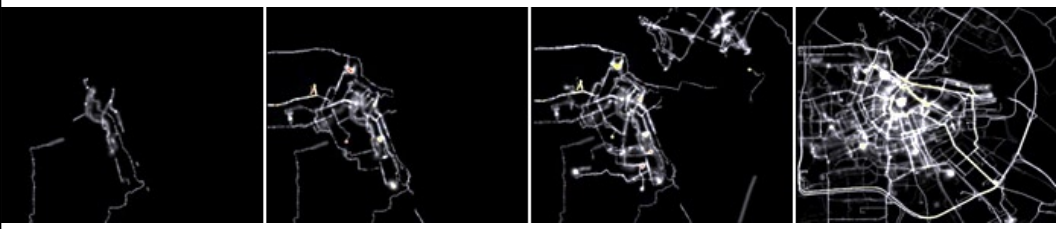


INTERFACIAL

The interface has been a popular design focus since the birth of the digital age. As we spend increased amounts of time interacting with virtual tools and environments, the bridges that facilitate the interaction between physical and virtual worlds are subject to increased scrutiny.

Interfacial materials, products, and systems navigate this bridge between the two realms. They may be physical instruments which control virtual space, or virtual tools onto which physical structures are projected. These tools are significant because they provide unprecedented capabilities, such as time-mapping urban environments, rapid-prototyping complex shapes, integrating digital imagery within physical objects, and making the invisible visible.

Interfacial materials are also relevant because they employ the latest computing and communications technologies, and therefore are indicative of society's future trajectory. Like the hardware and software glitches we know too well, interfacial materials are not infallible, but they expand our capabilities into uncharted territory.



AMSTERDAM REALTIME

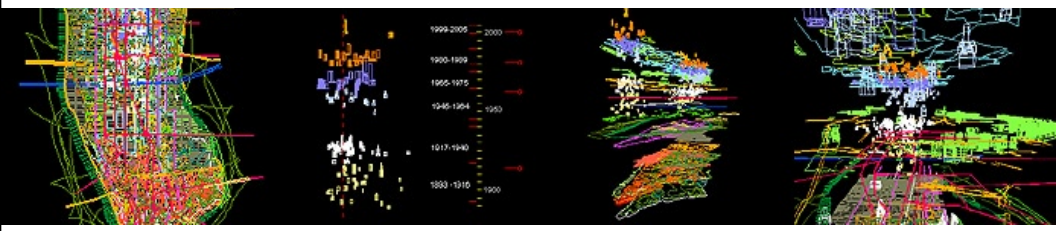
For the exhibition Maps of Amsterdam 1866-2000 at the Amsterdam City Archive, Waag Society and Esther Polak set up the Amsterdam RealTime project.

Every inhabitant of Amsterdam has an invisble map of the city in his or her head. The way he or she moves about the city and the choices made in this process are determined by this mental map. Amsterdam RealTime attempts to visualize these mental maps through examining the mobile behaviour of the city's users.

During two months, all of Amsterdam's residents are invited to be equipped with a tracer-unit, which is a portable device developed by Waag Society equipped with GPS technology. Using satellite data, the tracer calculates its geographical position. These tracers' data are sent in realtime to a central point. By visualizing this data against a black background traces, lines appear. From these lines a (partial) map of Amsterdam constructs itself. This map does not register streets or blocks of houses, but consists of the sheer movements of real people.

When the different types of users draw their lines, it becomes clear to the viewer just how individual the map of amsterdam can be.

http://www.waag.org/realtime/



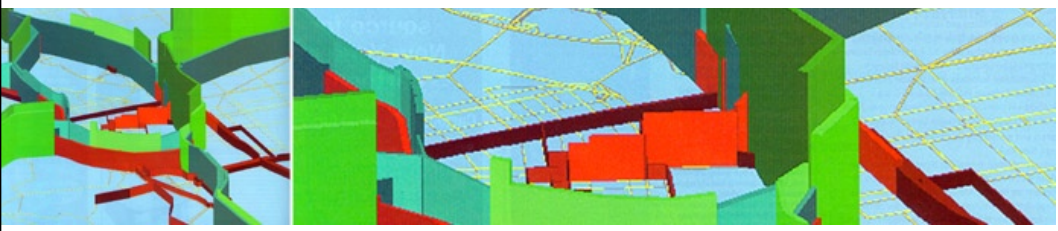
MANHATTAN TIMEFORMATIONS

Andrew Blum, "Worlds Apart" in *Metropolis*, January 2001

Brian McGrath, a professor of architecture at Columbia University and Parsons School of Design, recently completed "Manhattan Timeformations," a project that holds a critical lens up to the convergence of spatial database and 3-D–modeling technology by using aspects of both to examine the construction of high-rise office buildings in downtown and midtown Manhattan. Intended for display in New York's Skyscraper Museum and on its Web site (www.skyscraper.org), McGrath's model invokes the history of both cartography and the city as a means of questioning the insistent focus of groups like DOITT and Urban Data Solutions on realism, accuracy, and data.

The Manhattan Timeformations website displays the dynamic relatonships between various layers of urban information including geologic formation, settlement patterns, landfill, transportation and communications infrastructure, zoning laws and real estate cycles.

http://www.skyscraper.org/timeformations/intro.html



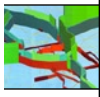
TRANSIMS

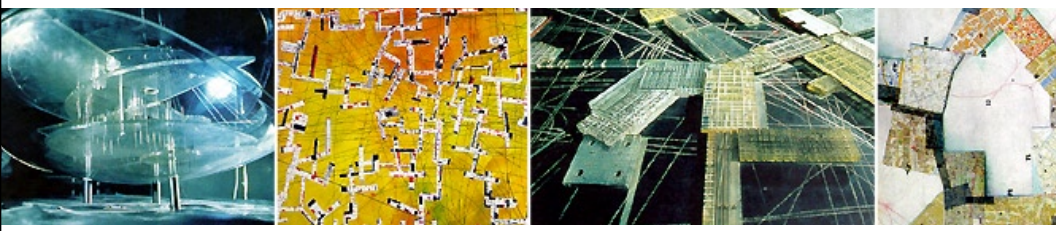
The Transportation Analysis and Simulation System, or TRANSIMS, is an integrated system of travel forecasting models designed to give transportation planners accurate, complete information on traffic impacts, congestion, and pollution. Los Alamos National Laboratory is leading this effort to develop new transportation and air quality forecasting procedures required by the Clean Air Act, the Intermodal Surface Transportation Efficiency Act, and other regulations. It is part of the Travel Model Improvement Program sponsored by the U.S. Department of Transportation, the Environmental Protection Agency, and the Department of Energy.

TRANSIMS models create a virtual metropolitan region with a complete representation of the region's individuals, their activities, and the transportation infrastructure. Trips are planned to satisfy the individuals' activity patterns. TRANSIMS then simulates the movement of individuals across the transportation network, including their use of vehicles such as cars or buses, on a second-by-second basis. This virtual world of travelers mimics the traveling and driving behavior of real people in the region. The interactions of individual vehicles produce realistic traffic dynamics from which analysts using TRANSIMS can estimate vehicle emissions and judge the overall performance of the transportation system.

http://transims.tsasa.lanl.gov

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



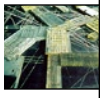


NEW BABYLON

Metropolis December 1999, p. 99

New Babylon sits on columns that rise 60 feet above Paris - or Amsterdam, or any other metropolis - and, growing like a creeping vine, eventually covers it and renders it obsolete. The new city expands in self-contained units called “sectors,” which contain living quarters, warehouses, classrooms, factories, libraries, and everything else its residents need. Most of the building elements are mobile - lightweight walls, bridges, and floors that can be picked up and moved by any New Babylonian who feels the urge to do so - as are the roads, heliports, and runways, so that spaces never become fixed or limit behavior. Because all services are automated and mechanized, no one works. Instead, residents devote their time to play.

According to Dutch painter and architect Constant Nieuwenhuys, who invented New Babylon, it is only through play that people can be creative - and it’s only through creativity that they can truly be free. Constant began work on New Babylon as a member of the Situationist International, a small but influential group of European intellectuals and artists who, between 1957 and 1972, advocated the integration of the arts into everyday life as a way of affecting revolutionary social transformation.



http://www.metropolismag.com

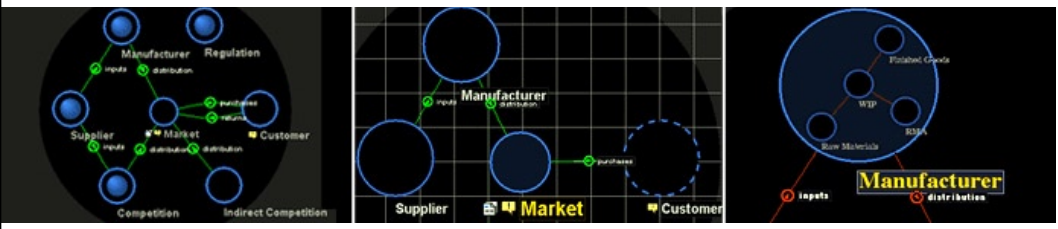
CITY OF NEWS

Since William Gibson, in his visionary science-fiction novel called Neuromancer, described "the Matrix," i.e. the new informational network, as Los Angeles seen from five thousand feet up in the air, the idea of mapping the informational wasteland of the web to a metroscape has become an urge more that an invention. City of News is a dynamically growing urban landscape of information. It is an immersive, interactive, web browser that takes advantage of people's strength remembering the surrounding three-dimensional spatial layout. Starting from a chosen "home page," where home is finally associated with a physical space, our browser fetches and displays URLs so as to form skyscrapers and alleys of text and images through which the user can "fly."

The City is organized in urban quarters (districts) that provide territorial regrouping of urban activities. Similarly to some major contemporary cities there is a financial district, an entertainment district, and a shopping district. In addition to these areas we have created other functional groupings by creating a mapping between modern newspaper layout and city planning. Hence the name "City of News" for this designwork.

http://vismod.www.media.mit.edu/~flavia/CityOfNews.html

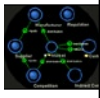
Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



KNOWLEDGEMAP

KnowledgeMap software allows users to visualize complex systems and organize information relevant to those systems. KnowledgeMaps can depict business models, supply chains, environmental sustainability studies, competitive landscapes or any other type of system. A KnowledgeMap can contain facts, ideas, resources or any other content. That content can be linked within your Map — allowing it to be structured according to a system, process flow or hierarchy.

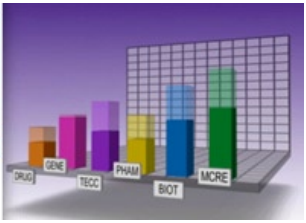
There are four editions of KnowledgeMap software: you can have organizational connectivity with KnowledgeMap Server Edition, full individual capabilities with KnowledgeMap Pro, simple presentation and information management ability with KnowledgeMap Lite, and the ability to view maps for free with the KnowledgeMap Free viewer Edition.



http://www.datafusioninc.com/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



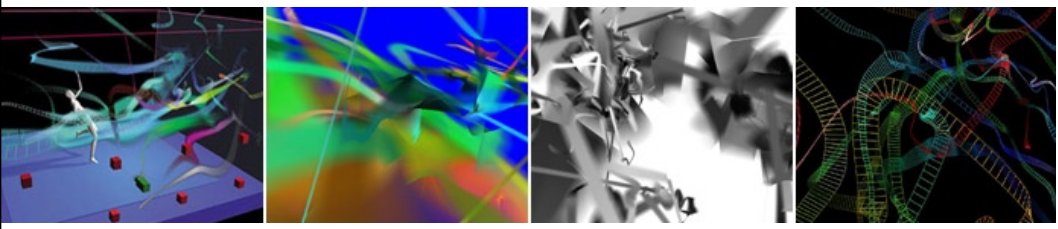



METASTREAM

MTS3 is the latest version of a unique visualization technology that streams 3D content over the internet and scales the resolution for optimal performance on any computer or connection speed. The primary component of the technology is a browser plug-in that allows online consumers to interact with a virtual product on an e-commerce site, much as they might in a store. Other features of MTS3 include hyper-realistic rendering, with physically correct lighting, reflections, and shadows to provide accurate product representations. It also features a comprehensive integration layer so that other web media types and content can interact seamlessly with MTS3 content to provide significantly more informative and compelling product presentations. MTS3 employs a combination of wavelet technology and procedural textures and materials, producing files that are dramatically smaller yet comparable in quality to 2D image formats.

http://www.metastream.com/index.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



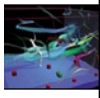
BODY BRUSH

Kristie Lu Stout, "Body brush' paints on virtual canvas," *CNN* March 29, 2002

In the brief history of modern art, the paint-brush has been replaced by mixed-media collage, the silk screen, even naked models covered in blue paint. Now, the tools of the trade are due for a digital upgrade. Researchers in Asia have developed a new tool that enables artists to paint on a three-dimensional canvas. So instead of holding a wooden handle with bristles at the end, the artists themselves are acting as the brush.

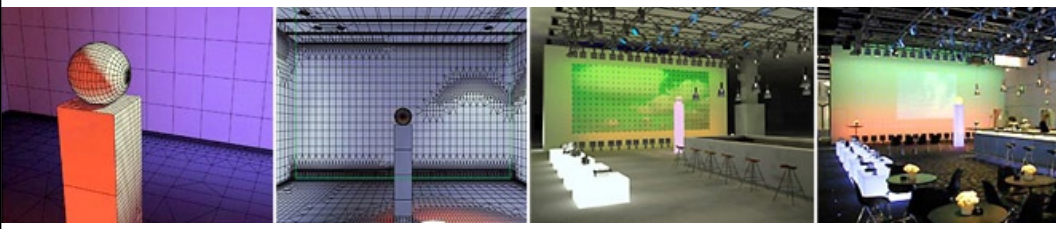
Enter the "body brush" -- an interface that maps the movements of an artist in a 3-D space, translating action into art. Hong Kong artist Young Hay developed the body brush with professor of computer science Horace Yip of Hong Kong's City University. Together, they learned how to capture movement with infra-red illumination sensors, which interact with advanced motion-analysis software.

"This interface treats the body as a brush," says Hay. "Traditionally, we rely on the hands to use the tools to apply the paint on the can-vas, but with this interface we can treat the body as a whole as a dynamic brush."



http://www.cs.cityu.edu.hk/~bodybrush/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



WEB-BASED LIGHT SIMULATION

Web-based light simulation enables designers and consultants to develop lighting concepts interactively, in order to verify their effect and communicate them efficiently to clients and partners in the design process. ERCO supports this new digital workflow by providing application research and luminaire data in different formats. Comprehensive information on light simulation with interactive displays and downloadable software is available on the ERCO Professional Site.

http://www.erco.com/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

VIRTUAL CITY ROUND TABLE

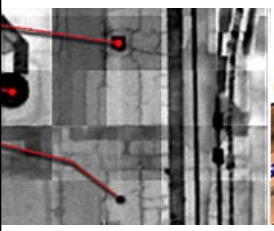
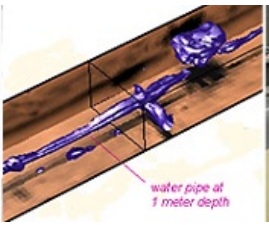
With pride, the architect presents his scale model of the planned shopping center. Around the table, planners, builders and co-workers examine and discuss the design, which quickly reveals that scores of changes are required. Incorporating these modifications into a new model costs time, delaying development of the center.

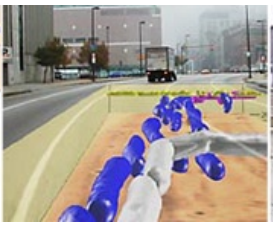
Not so with ARTHUR. “With the Augmented Round Table for Architecture and Urban Planning system, ad-hoc modifications to the virtual model are possible, even from several reviewers simultaneously,” explains Dr. Wolfgang Broll from the Fraunhofer Institute for Applied Information Technology FIT in describing the multiuser collaboration system. “Proposed modifications can be visualized at once, enabling each reviewer to see how changes affect the model at the same time.” Tedious, conventional modeling methods become a thing of the past.

ARTHUR starts with AR - Augmented Reality. This technology enriches real world environments by adding virtual sensory information such as graphics. ARTHUR uses a building blueprint to create a virtual 3D model. With special eyeglasses and networked computers, reviewers can visualize the computer-generated model at the same time. All participants immediately witness how the changes affect the model.

http://www.fraunhofer.de/english

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com




COMPUTER-ASSISTED RADAR TOMOGRAPHY

Witten Technologies, Inc. provides advanced underground locating and imaging services for the construction and utility industries. The Company's long-term mission is to provide accurate digital maps of the world's underground infrastructure.

WTI has developed a new mobile ground-penetrating imaging radar (GPiR) that generates precise three-dimensional (3D) images of buried objects, such as electric lines, gas pipes, telecommunications cables, water lines and tunnels. WTI's CART Imaging System can conduct virtual digs ahead of excavation, enhancing job productivity, reducing costs and accidents, and increasing worker safety.

The science behind the CART Imaging System is geophysical diffraction tomography - a kind of CAT scan for the underground - which Dr. Tony Devaney invented while working at Schlumberger in 1982. The CART Imaging System combines a new ground-penetrating radar array with advanced signal processing to provide precise 3D images of the subsurface. The unique radar array in the CART spreads 16 standard GPR channels over a 2-meter swath on the ground and collects enough data in a single pass to make a full 3D image beneath the vehicle as it moves at speeds up to 2 km/hr.

http://www.wittentech.com/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

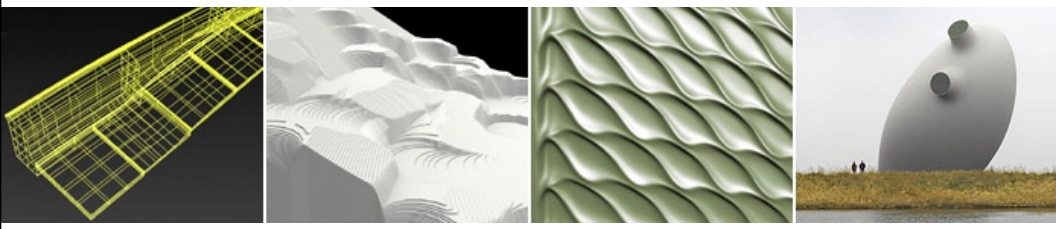
LIQUID AUDIO

Jonah Brucker-Cohen, "Liquid Audio" in *Wired* July 2001, p. 41

Sound and voltage join forces in Protrude Flow, an exhibit which premiered at Siggraph in 2001.

To conjure spike-filled noisescapes like the one pictured above, Sachiko Kodama and collaborator Minako Takeno from Tokyo's University of Electro-Communications hang a microphone from the ceiling of an installation room and record ambient noise, including viewers' voices and footsteps. The frequencies are then relayed to a computer that converts the audio into electro-magnetic signals. The louder the sound, the higher the charges of the magnets inside the acrylic tank.

A molasses-like mixture of oil, iso-paraffin, and superfine ferro-magnetic powder pulses, vibrates, and mutates to the beat. "With the computer," says Kodama, "it happened that the fluid itself began to live, and started to move like a creature."



COMPUTER-DRIVEN ARCHITECTURAL SURFACES

Texxus creates 3D surface forms and textures for architectural, industrial & consumer products. Using advanced modelling and production software, Texxus creates surfaces at any scale, and produces them in suitable materials using computer controlled manufacturing technology. Texxus creative design enhances the appearance, performance and value of surfaces.

The Texxus design studios support architects, designers and manufacturers with a seamless group of four services:

SurfaceStructure: designs and manufactures large organic morphologies and freeform structures for architecture and sculpture.

SurfaceDetail: designs and manufactures architectural ornament.

SurfaceMotif: designs relief textures, patterns and motifs for industrial and consumer applications.

SurfaceView: is a visualisation and rendering service for designers using Surface products.

http://www.texxus.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com




OFFICE INNOVATION CENTER

The future of work is being researched, lived and demonstrated at the Fraunhofer Office Innovation Center (OIC). Experts from five Fraunhofer institutes work out prototypical solutions for the office world of tomorrow. The federal government, the government of Baden-Württemberg and numerous enterprises support this project, which is unique in Germany.

The OIC anticipates a working environment in which electronic interaction is increasingly multimodal: video-conferences combine image and sound, holographic effects combined with audio and video sensors allow a telepresence, exoskeletal systems with data gloves, artificial robotic limbs, an “intelligent 2nd skin” etc. will be able to feel touching and to transmit this to haptic output devices. Research activities leading to miniaturized electronic products, which can be replaced and worn with ease and which are connected to a person’s organs by exonerves are still a vision. All individual personal electronic devices like headphones, mobile phones, satellite navigation systems, medical monitoring systems, etc. are seamlessly woven into a wireless body network.

http://oic.fhg.de/englisch/index.htm

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

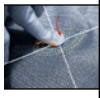
INTELLIGENT FABRICS

Today's switching and sensing technologies are basically rigid or semi-rigid. This results in extensive limitations on their applications and new product design becomes constrained by their physical inflexibility.

ElekTex is the combination of conductive fabric structures and data processing. It is the first technology to have been developed to enable a new generation of consumer products with soft, flexible and lightweight interfaces.

By designing new fabric structures that include conductive fibres, ElekTex offers lightweight switching and sensing technology that can conform to 3D shapes, is durable, cost effective, washable, wearable, and above all, desirable.

Numerous variations of ElekTex can be designed and manufactured to provide a varied level of responsiveness and data output. The main emphasis is currently XY position and pressure sensing.

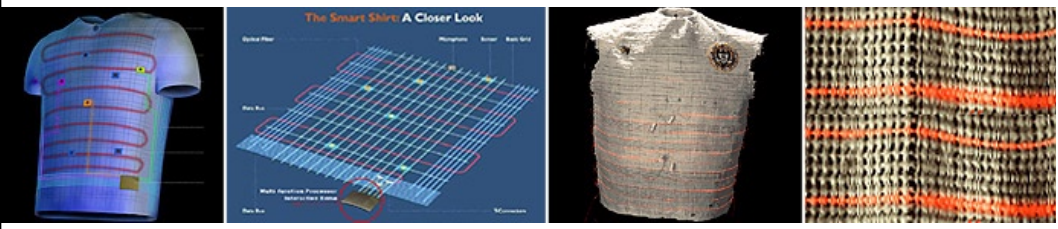


Elektex

Elektex Website

http://www.elektex.com/home/index.htm

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



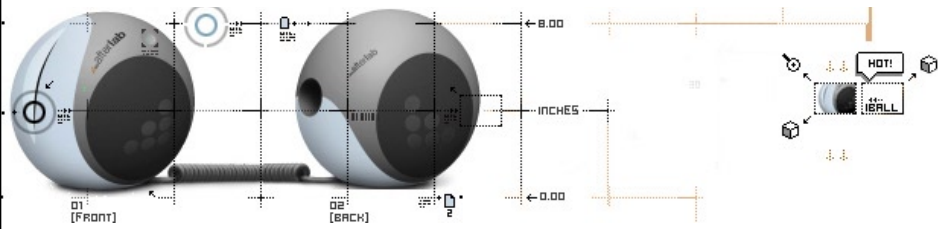
SMART SHIRT

The Sensatex Solution utilizes a groundbreaking electro-optical textile, the Wearable Motherboard Smart Shirt, to seamlessly incorporate sensory capabilities with radio and computing devices, representing a highly effective and unobtrusive means of integrating broad-based sensors with the human body.

By supporting voice and data communications from multiple sensory locations through one wireless backbone, the Sensatex Solution provides an extremely versatile framework for a host of biomedical monitoring applications. The Smart Shirt eliminates the need for loose wires and discomfort experienced by many current patient monitoring devices, while also reducing the false alarm rates associated with their use. Its dependable and unobtrusive monitoring environment remains virtually transparent to the patient, while improving communications with remote monitoring locations, maintaining quality of patient care, and reducing healthcare costs.

http://www.sensatex.com/company.htm

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



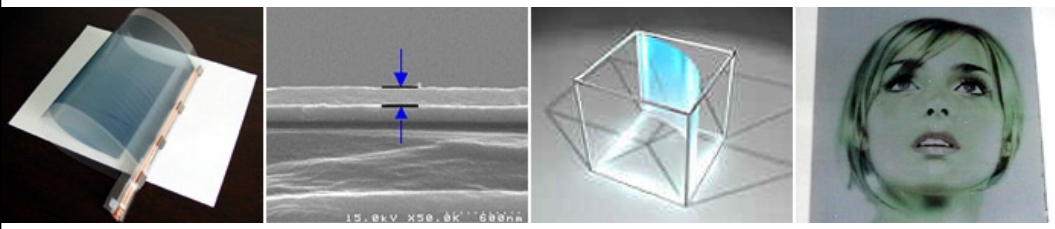
SPHERICAL COMPUTER

Afterlab has introduced a new line of desktop computers developed for the Latin American consumer market. Iballs are totally implacable supercomputers ingeniously engineered into elegant eight-inch balls, yet maintaining maximum computing power, high-velocity and outstanding reliability. Iball's spherical form is a symbol of the endless possibilities and omnipresence of computer technology.

"The Iball is a work of art. It is a thing of beauty. I want to make love to it." John Plough, *Design Capital Magazine*

http://www.afterlab.com/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



FILM SPEAKER

Q-TI has produced a speaker which is as thin as paper, transparent as glass, light as vinyl, and can be rolled up like tape. The speaker emits audio in all directions, and can be printed or painted with any image.

Film Speaker is made of a piezoelectric coating bonded with PVDF (Poly Vinylidene Fluoride). Previously, it had been very difficult to adhere any material to a PVDF surface. However, a new surface modification technology makes it possible to form electrodes on the PVDF surface with strong adhesion

After the polymer surface is irradiated by a low energy ion beam in a reactive gas environment, polar functional groups can be formed on the surface and change into a hydrophilic state. This IAR treated polymer can be easily printed with strong adhesion. Ultra flat and uniform film can be obtained using a P&I coating technique (PICT).

Electrical signal from audio source, such as tape or CD player, is transmitted to a speaker via electric wire or wave. Then a diaphragm vibrates air and reproduces the original sound. A simple sandwich structure is created by forming polymeric electrodes on both sides of the surface-modified PVDF film. Sound can then be generated from a sheet of film without any thermal treatment and additional process.

http://www.q-ti.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

FREE STYLUS

Modern product development is increasingly taking place within virtual environments. The keywords are rapid prototyping, rapid tooling and rapid manufacturing. Behind them lie various technologies that speed up the manufacture of prototypes and functional parts, particularly in low-volume batches. Rapid prototyping can be employed in very early phases of product development. When used in virtual applications, it provides a useful backup to physical rapid manufacturing techniques.

One highlight is a wireless stylus that enables the free-hand sketching of objects inside a virtual space. This new input tool, designed for developing products in cyberspace, was created in collaboration with the Barski Design Studio, Frankfurt. “When children want to move a cursor towards the top of the screen, they lift up the computer mouse,” notes designer Olaf Barski. Dr. André Stork of the Fraunhofer Institute for Computer Graphics Research IGD adds: “The cyber-stylus emulates this natural three-dimensional urge.”

Rapid technologies, which allow physical objects to be built up layer by layer directly from 3D CAD model data, were first conceived over 15 years ago. Meanwhile, there are more than 7,000 different rapid systems deployed worldwide, creating as many as 3 to 4 million objects each year.

www.rapidprototyping.fhg.de

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

DIGITAL WHITEBOARD INTERFACE

Mimio is a unique collaboration tool that captures everything you write or draw on a whiteboard, in color and real time, and then transmits the information directly into your computer. You can then revise, print, share, export to HTML, or drag-and-drop your whiteboard notes into any windows application.

Mimio attaches to any standard whiteboard, connects quickly to your computer, and uses sophisticated infrared and ultrasound technology to track the position of your marker stylus and eraser on the board. Mimio streamlines the transfer of information so everyone on a team can contribute to a whiteboard session, whether they're in a different room or a different time zone.

Mimio is inexpensive, lightweight, and durable. It fits in a briefcase, attaches quickly to different sized whiteboards, and is easy to set up and use.

http://www.mimio.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

WEARABLE DISPLAY DEVICES

The Bothell, Washington-based company Microvision has targeted three principal categories of applications for personal displays that span a broad range of fields of use, ranging from defense and public safety to consumer electronics and entertainment.

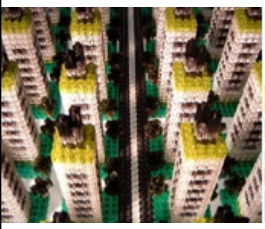
Wearable “augmented reality” displays Incorporated into eyeglasses, goggles or helmets, Microvision’s technology will display an image that doesn’t block the user’s view but will instead superimpose a high-contrast monochromatic or color image on top of it. This ability can enhance the safety, precision and productivity of professionals performing complex tasks.

Wearable three-dimensional / interactive displays Microvision’s technology can be incorporated into eyeglasses, goggles or helmets to create a stereoscopic, 3-d effect. These compact, high-resolution displays can further enhance the visual realism of the interactive experience to make the simulated environment more engaging.

Hand-held two-dimensional displays Microvision’s technology will be integrated into cellular phones and pagers, allowing users to tap into business networks or the Internet to view e-mail, web pages, faxes and files as if on a full-size desktop monitor.

http://www.mvis.com/default.htm

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



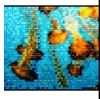
PIXELBLOCKS

Conventional construction toys are modeled after objects in the physical world such as stone bricks, wooden beams, and metal girders. PixelBlocks are the first “digital-age” construction toy in that they are modeled on the world of the computer screen - pure light and color.

PixelBlocks come in a single shape, featuring a peg-and-hole combination for stacking top-to-bottom, and a unique tooth-and-groove combination on the other four sides. The unique shape allows PixelBlocks to be connected in three versatile ways that enable one to build effortlessly in 2-D or 3-D. The blocks themselves are approximately 3/8” (0.9 cm) translucent cubes.

PixelBlocks come in 20 carefully chosen colors. Used in combination, PixelBlocks can express any mood from the vibrancy of childrens’ toys to the subtle shading of a photograph.

Digital Stained Glass is a PixelBlocks feature that lets one turn any photo or artwork into a permanent translucent creation made from PixelBlocks. The finished creation resembles glittering stained glass - catching sunlight and changing moods throughout the day, and makes an intruiging window display in any room.



http://www.pixelblocks.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

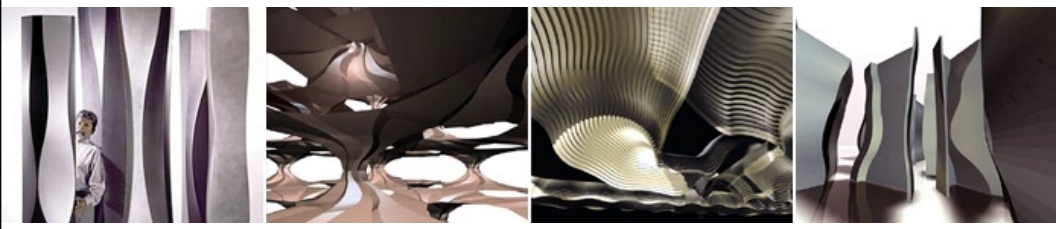
METAL LAMINATED TOOLING

Gazing through a car showroom window, have you ever asked yourself how they manage to make such a variety of different models? One thing's for sure: The days of "any color as long as it's black" and one model for all have gone forever. The new buzzword not only in the car industry is mass customization - still mass production, but incorporating a maximum of personalized features. Quite apart from the logistics, this trend also challenges manufacturers by requiring them to rapidly build new presses and forming tools and integrate them in production lines. Rapid technologies are ideal for tool-making. What sets them apart from traditional methods like casting and milling is that the chain of steps from the first CAD drafts to the final part should be almost entirely an electronic one.

One of the youngest members of this "rapid" family bears the name MELATO, or Metal Laminated Tooling. Dr. Anja Techel, project manager at the Fraunhofer Institute for Material and Beam Technology IWS in Dresden, describes the first step in this process: "Like a salami slicing machine, the computer first divides a model of the tool into thin layers. Using a software program developed by our industrial partner, it then virtually arranges the individual slices in an optimum layout, and a laser cuts them out from a real sheet of metal."

http://www.fraunhofer.de/english/press/pi/pi2002/index_11_t5.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



ALGORITHMICALLY SHAPED METAL

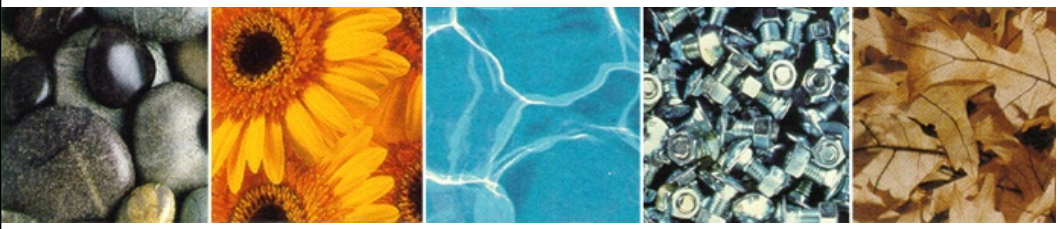
Milgo/Bufkin can bend complex shapes in metal, providing solutions to the most demanding problems. These shapes are economical alternatives to extrusions and roll forming.

Just as our genetic code permits each of us to be unique, so too AlgoRhythm Technologies generates a wide range of unique forms from its genetic code. AlgoRhythm Technologies offers a wide range of curvilinear structures with fluid movements mirroring the flows of nature. Material flows under its own weight and other forces according to morphologic laws that pertain more to fluid motion than to static objects. By freeing the elements of construction from their rigid geometries, AlgoRhythm Technologies unfolds infinite opportunities to model a new architecture. The undulating look of these structures results from the behavior of sheet metal under force. The forms are non-deformational, thereby maintaining the integrity of the metal.

Dr. Haresh Lalvani, architect-morphologist and inventor of these new forms, states: AlgoRhythms proceed from the "bottom-up." Columns, walls and ceilings, the first series of products introduced here, are based on morphologically structured information (meta architecture) that permits endless variations on a theme.

http://www.milgo-bufkin.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



PHOTOGRAPHIC TILE

Imagine Tile has developed a process of applying glazes to ceramic tile in much the same way that a printer applies ink to a page, but when the tiles are fired at extremely high temperatures, glaze and tile literally fuse; the design becomes a permanent part of the tile.

Imagine Tile's advanced technology opens up many possibilities: the reproduction of textures, patterns, photos, illustrations, even three-dimensional images on a single tile or as a mural.

The tiles can be used indoors or out, on walls or floors, are frost and waterproof, unaffected by UV, and abrasion and chemical resistant.

The images shown are from a stock series, but designers are encouraged to provide their own images conforming to three sizes: 8"x8", 12"x12", or 16"x16".

http://www.imaginetile.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

GLASSFRESCO

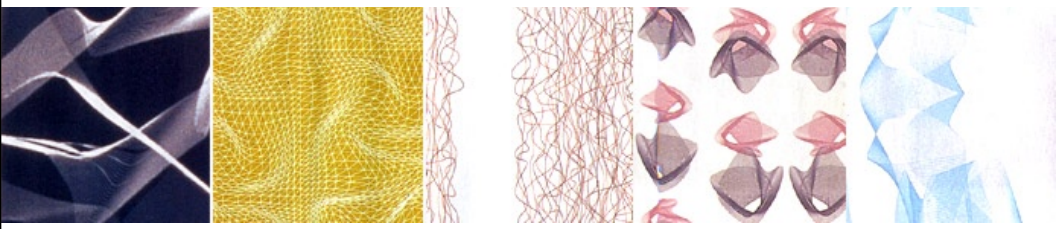
GlassFresco is an innovative new product that combines continuous-tone color imagery with Cesar Color's proprietary interlayer technology. Working from photographs, slides, digital-data files or customer provided artwork, it is possible to create dramatic architectural glass products in opaque, transparent or translucent compositions. As shown in Amanda Weil's three-sided shower design above, fine art and photographic images can now be used as design elements achieving effects not previously possible.

Processed under heat and pressure, Cesar Color's tough and resilient thermoplastic laminating interlayer permanently bonds two lights of glass. The completed product is a laminated safety glass which complies with all major building codes and industry standards. Laminated glass resists penetration by impacting objects and is almost impossible to cut from one side. GlassFresco offers significantly greater resistance to forced entry than ordinary monolithic glass.

Cesar Color's design staff assist specifiers by facilitating the transfer of artistic expressions within the glass medium. Custom applications and designs are encouraged.

http://www.cesarcolor.com/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



DIGITAL WALLCOVERING

Danine Alati, "Manmade Matters" in *Contract*, June 2002

When Marybeth Shaw, creative director at Wolf-Gordon, met Karim Rashid at a MoMA party during ICFF last year, she approached him about designing a wallcovering collection that references nature. Rashid jumped at the opportunity, but put a spin on the concept. "Nature can be dull," Rashid says. "It's a given; it's already created. I am much more interested in what we can create." So he proposed Digital Nature, which takes two-dimensional wallcoverings and makes them appear to come alive. "I tried to get a complexity that makes them appear 3D with abstract forms so that one can read things in them that have to do with nature."

The five patterns allude to distinct natural aspects, from the pairs of bud-like shapes of Rosetta, to Zenith's tentacles that rise the height of the wall, to the irregular grid of Space Warp with its avian-influenced forms. "But none of the patterns in this collection are actually Cartesian - no real grid," Rashid continues. "All are very organic, very human. You look at them and see all organic forms: Legs, birds, waterfalls, when in fact all are digitally produced. I like that diametric."

http://www.wolf-gordon.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

DIGITAL PRINT LAMINATES

Abet Laminati's high-pressure laminates (HPL) stand out for their exceptional properties of strength and resistance to any type of stress, their workability and surface quality.

Abet Laminati now presents its DigitalPrint range. These digitally printed laminates represent a direct and immediate link between the designer's computer and the production of laminate surface.

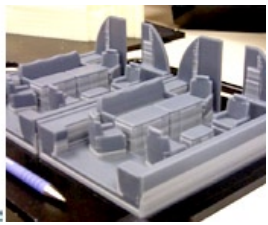
The designer's concept can now be transferred digitally and directly using internet technology, to the company plotter, which can produce even just one sheet of any product type.

This printing technique offers countless advantages: it is a simple process; no minimum quantities are required; any decor or optical effect can be created on flat or curved surfaces, the sizes of which are only limited by the supporting structure; there is excellent colour quality: the image that is obtained is practically identical to that requested; production times are reduced; and this printing technique can be used on a variety of product types and finishes, without altering technical characteristics.

http://www.abet-laminati.it/english/digitalprint/presentazione.htm

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



THERMOJET PRINTER

3D Systems' thermojet printer generates three-dimensional models directly from 3d cad data using multi-jet modeling technology and thermo-polymer building material. The thermojet printer can create models up to 10" x 7.5" x 8" at 300 x 400 x 600 dpi resolution and in three colors: neutral, gray, or black.

"The ThermoJet printer allows CAD designers the freedom to quickly 'print' and hold a 3-dimensional model in their hands. This is not virtual reality - this is physical reality, and the applications and opportunities go beyond one's imagination" - Mervyn Rudgley, Sr. Director Product Management

http://www.3dsystems.com/products/multijet/thermojet/index.asp

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

TRANSPARENT PROJECTION SURFACE

HoloPro is a transparent surface for rear projection, which is almost completely unaffected by the surrounding light and can be used indoors and outdoors.

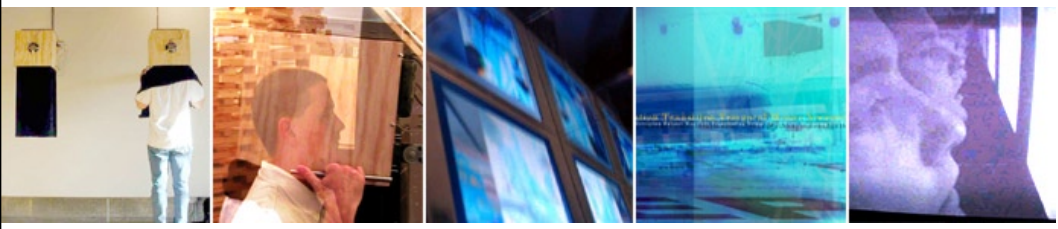
HoloPro is a hologram, i.e. a film irradiated with a refraction grid. This film is laminated between two special plates of glass. HoloPro consists of several holographic optical elements (HOE), which are arranged on one level, and is irradiated by a projector.

The projection on the HoloPro screen is made from a specific angle, and as a result only light from this stipulated angle is visible.

With this direction-oriented projection, the surrounding light which shines on the HoloPro screen from any other angle has almost no effect on the picture quality. Compared to other projection surfaces, HoloPro screens have “an eye-catching brilliance.”

http://www.holopro.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



HEADSPACE

Headspace is a cranial box that creates a point-blank audio/visual experience in a blurring of real versus virtual perspectives, the expansive versus implosive qualities of current media, and the frenetic versus smooth cadences of our zeitgeist. Intimate responses within Headspace are captured and projected remotely, shifting the roles between subject and object, and clouding the distinction between public and private realms.

On display in the 2002 Blurred show at the Center on Contemporary Art, Seattle, Headspace was created by NBBJ's Dan Ayars, Joseph Bausano, Blaine Brownell, Eric Philips, and Craig Matheny.

http://www.cocaseattle.org/blurred/web_photos/pages/abbp.htm

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

ILLUMINATED DOORBELLS

Spore designs “elements that flow into society, settle into environments, and enhance life.” Examples of such elements may be seen in their three lines of provocative illuminated doorbells, which use very efficient light emitting diodes (providing a life of 11.5 years). The doorbells are designed to be flush-mounted and use traditional 8-18 volts AC.

http://www.sporeinc.com/basicsite/index.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



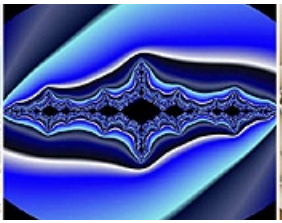
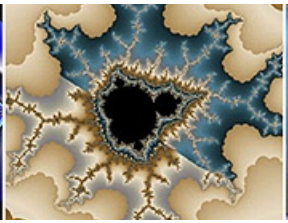
ROOMWARE

For many people, it is difficult to imagine a work routine without conferences or team meetings. The disadvantage for many participants is that they spend a great deal of time at their computers adding the newly developed ideas and models to their personal records. This practice can be avoided, as a pilot project being carried out at the Swiss Federal Institute of Technology ETH in Zurich demonstrates. In the Vireal Lab at the Institute of Pharmaceutical Sciences, the staff already communicates with each other via video conference and they are able to discuss the latest research results in real time. What's more, they can work interactively in small groups, store their results directly on digital media and transfer them to their own computers.

This is made possible through Roomware: desks, chairs and interactive presentation walls with integrated hardware and software. The item of furniture can be linked simply and directly to a standard computer. Users interact with documents with either a pen or their finger, while processes and results are projected from the work display onto an interactive wall, allowing all participants to view information.

http://www.ipsi.fhg.de/ambiente/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

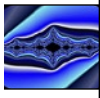





FRACTAL-INSPIRED FABRICS

In 1992, Jhane Barnes began employing computer-generated algorithms to create mathematically-derived visual patterns for her clothing and textiles. Of recent interest are Jhane's fractal-inspired designs.

Fractal geometry is often called "the geometry of nature" because so many naturally occurring shapes resemble fractals. Unlike the more familiar Euclidean geometry, which deals with straight lines, arcs, circles, and polygons, fractal geometry deals with irregular shapes. However, fractals are neither random nor chaotic. They obey rules that keep them from being totally chaotic or totally orderly. In 1980, Benoit Mandelbrot helped to discover the order in fractals when he found the self-similar characteristics in his fractal sets.

When Jhane creates designs with fractals she introduces a "fractal seed," a simple shape which is converted into a fractal by applying a rule which complexifies the seed shape. This in turn generates a seed with an even more complex shape and so forth. She modifies the patterns on the computer by adding color, visual depth, and other design elements. The finished product, which might be a shirt, a sweater or an upholstery fabric, is a one-of-a-kind design.



http://www.jhanebarnes.com/frame.html?body=about/about_lvl2.html

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

DIMENSION ELEVATOR

The Dimension Elevator serves as a publicly accessible forum for immersive art. Environments are realized through synchronized video projections on four walls accompanied by four-channel audio. Imagine four large video screens arranged to form a room for up to 20 people. Vivid panoramic imagery and sounds surround and engage you. The focus of the installation is to provide a new level of viewer experience and encourage creative explorations for both new media artists and the viewing public.

While immersive experiences have long been available in venues such as IMAX theatres, rides at theme parks, and arcade hall videogames, the Dimension Elevator is different in that it is accessible to both artists and art viewers. Rather than requiring a company to spend a year creating a show that is highly strategized and targeted so that it can be economically successful, a single person can create a unique sensory experiment in an afternoon.

http://www.dandelion.org/dimensionelevator/

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com

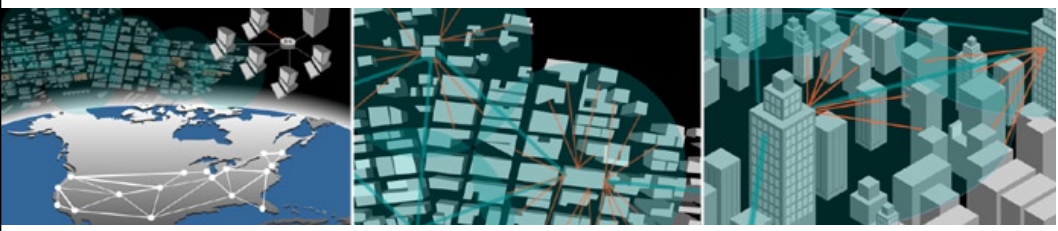
CUSTOM COMMUNICATION SYSTEMS

Although security has become a number one concern in buildings, most security systems compromise the aesthetic qualities of a building. A building's communication system should fulfill the same requirements as its architecture.

In the case of an office building with a representative function and a flexible utility concept, this means it has to blend in with the formal and aesthetic framework of a building and has to be capable of adapting to the varying needs of changing tenants. Siedle secures buildings with custom door communication systems which are elegant and reliable, utilizing the latest technology.

http://www.siedleusa.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com



FIBERLESS OPTICS

The nation's wide-area network backbones are dramatically increasing bandwidth through innovative fiber optic technologies. The bandwidth of local area networks is also increasing. In spite of these advances, the first and last mile connection between the corporate LAN and the nation's broadband fiber networks remain slow and very expensive. The problem with the bottleneck isn't limited to low-bandwidth at expensive prices. Provisioning times are also slow. Securing street construction permits, digging, trenching, and laying the physical media often take months to accomplish. Clearly, another approach is needed to break the access bottleneck.

Terabeam networks has already developed a response to low-access bandwidth. Its first-mile technology extends the bandwidth of 100 megabit and gigabit ethernet LANs directly to the nation's broadband backbones with deployment times and costs that are a fraction of existing services. These advances are possible because terabeam's IP service is based on fiberless optics. It provides the speed of fiber optics without the fiber. Deployment times are short and costs are minimized because fiberless optic networks do not require trenching and laying underground media. Moreover, since terabeam is able to connect its IP core backbone directly to the corporate LAN through a window on the customer's premises, there are no building roof rights to manage.

http://www.terabeam.com

Blaine Brownell **TRANSMATERIAL**
http://transstudio.com