



The majority of consumer goods go through a world of energy, packaging, transport, chemicals, minerals, fuels and labour.

Let's work together to change how we legislate, educate, manufacture, import, export, purchase, consume, reprocess and reuse.

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Textiles/ Materials/ Manufacturing/ Process/
Optimization/ Waste Reduction/ Analysis/ Testing/
Operations/ Efficiency

Dissecting the material world

The micro and
macro life within
your closet



What do you have in
your pocket or purse?

The birth of your wallet

- Conception and design
- Raw materials selection
- First wallet prototype
- Sample approval or rejection? More samples...
- Approval
- Mill: main fabric and lining
- Trims: zippers, Velcro, snaps
- Factory and Labour
- Shipping and packaging
- Warehouse
- Retailer (bricks and mortar or online)
- Consumer purchase



What is Natural versus Synthetic

Natural:

- of or produced by nature
- not artificial
- true to nature

Synthetic:

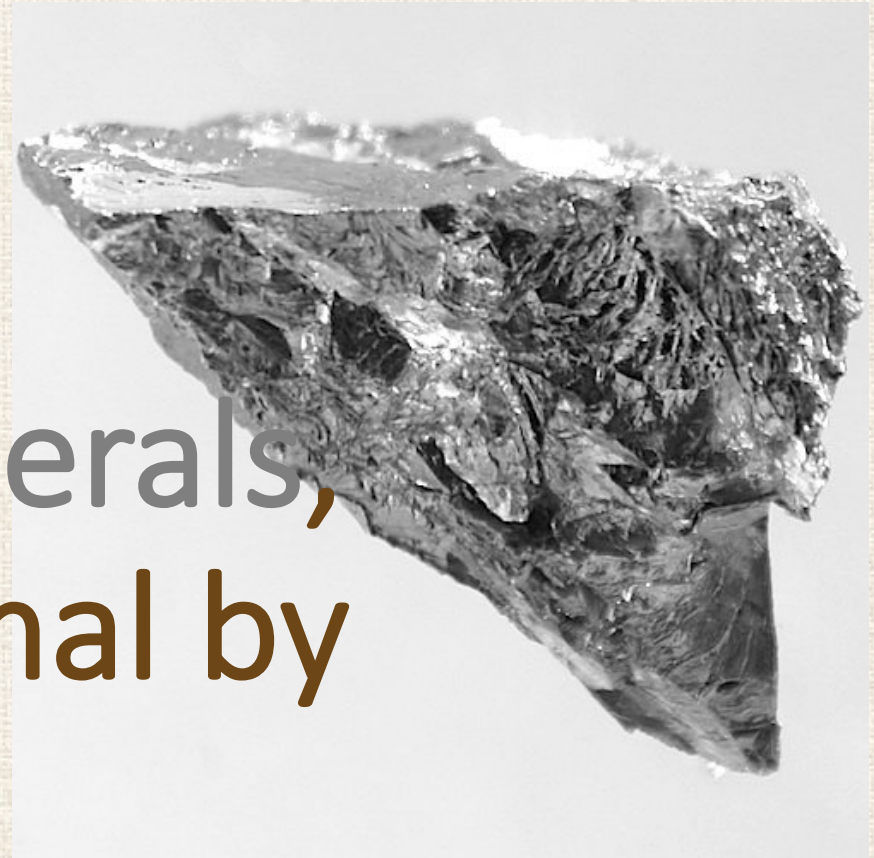
- produced by a chemical synthesis
- Artificial

Synthesis:

- The production of a compound by a chemical reaction



Chemicals, minerals,
plants and animal by
products



Synthetics from Carbon during refinement of crude oil or natural gas

Crude oil by-product (during refining)

Natural gas by-product (during refining)

- Carbon
- Oxygen
- Nitrogen
- Hydrogen

- Manganese
- Sodium
- Cobalt

- Methanol
- Ethane
- Benzene

EXAMPLES: polyethylene terephthalate (polyester), polyamide (nylon), polyurethane (elastane), polyolefins (polypropylene/ olefin), poly methyl methacrylate (acrylic), HDP, LDP

Natural materials processing

- Water
- Fertilizers: potassium, nitrogen, sulfur, potash, phosphate
- Pesticides: boric acid, naphthalene, potassium, copper, zinc
- Livestock, plants/crops or insects, water
- Scouring: sodium, chlorine, soda ash (sodium carbonate), phosphorous, water
- Bleaching: hydrogen peroxide, sodium hypochlorite, sodium chlorite, sulfur, water

EXAMPLES: cotton, hemp, flax (linen), wool, silk, skins (leather), regenerated cellulose (rayon/viscose/bamboo)

Colourants

All products that have a colour require a manipulation of nature. Using chemicals, water, heat, pressure, energy, time and combinations of the aforementioned we impart the appearance of colour onto materials.

Different materials take colour in different fashions. There are different degrees of affinity, quality, performance and resilience.

Both natural and synthetic dyes have an effect on the environment if considered for large scale consumer goods production.

Tie-dying one t-shirt for a party is significantly different than imparting consistent colour for 10,000 products.



Dyes and pigments= Colorants

Dye- soluble coloured compounds which are applied to materials from solution in water

Pigment- insoluble compounds incorporated by a dispersion process into materials, paints, printing inks, plastics

Soluble: capable of being dissolved in a solution (such as water)

Dissolve: to melt; to become liquid

All colorants come from either one or a combination of :plant, mineral, metal, carbon or animal by product.

Components used in coloration: iron (oxides), charcoal, carbon, oxygen, hydrogen, nitrogen, magnesium, copper, cobalt, chromium, oxygen, phosphorous, chlorine, aluminum, plant/tree leaves, roots, bark, animal bone, animal feces, insects, berries, flowers, molluscs and blood.



TRIMS

Trims are the additional components in accessories, apparel, footwear, etc. that are not part of the base or main fabrics/materials.

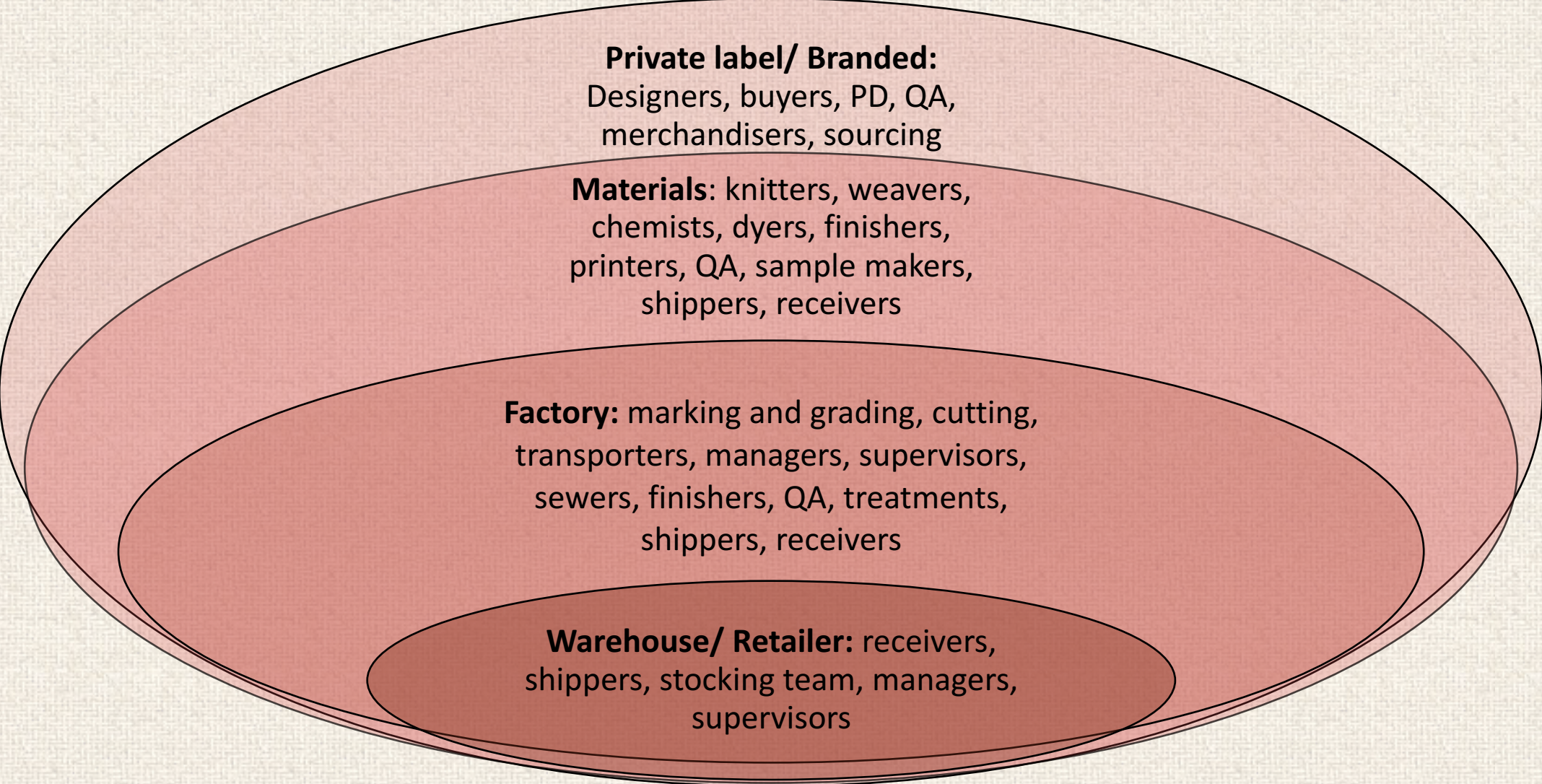
Trims: buttons, zippers, Velcro, snaps, toggles, drawstrings, cords, elastic, labels

Compositions: metals, plastics, paints, dyes, cotton, rubber, polyurethane, silicone

Processing: heat, energy, labour, testing

Generally trims are not recycled...

LABOUR



Private label/ Branded:

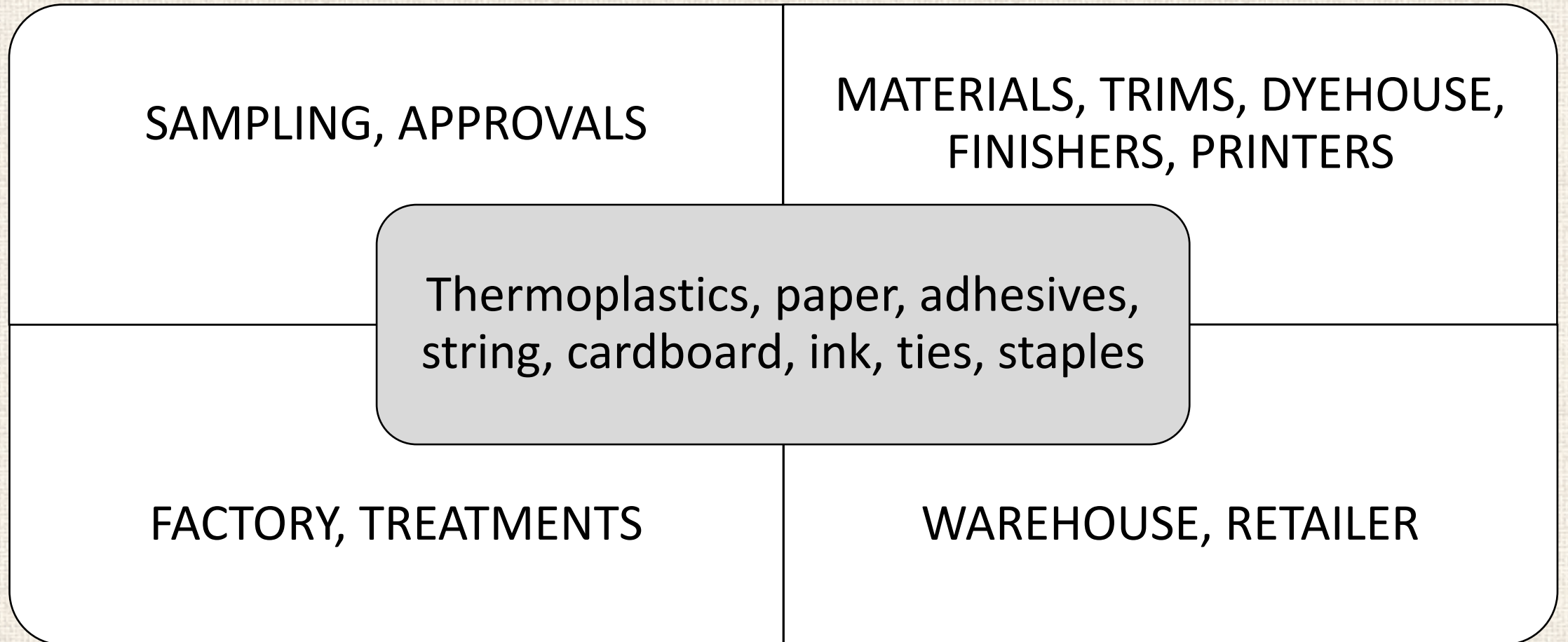
Designers, buyers, PD, QA,
merchandisers, sourcing

Materials: knitters, weavers,
chemists, dyers, finishers,
printers, QA, sample makers,
shippers, receivers

Factory: marking and grading, cutting,
transporters, managers, supervisors,
sewers, finishers, QA, treatments,
shippers, receivers

Warehouse/ Retailer: receivers,
shippers, stocking team, managers,
supervisors

PACKAGING



SHIPPING

Throughout the entire consumer goods process; prototypes, materials, chemicals, trims, finished goods and even packaging itself is being moved around the globe.

Design: samples and approvals

Materials: raw materials- spinners- knitters/weavers- dyehouse- printers- specialty treatments facilities

Trims: raw materials- converters- paints/dyes/finishes (chemicals)

Factory: receipt of all components needed- packaging- treatments- warehouse (often by boat or air; then by rail and/or truck)

Warehouse: off to the retailer or for online to the end consumer (rail, truck, carrier vans, air)



Dissecting the material world: the micro and macro life within your closet

**The majority of consumer goods go through a world of energy,
packaging, transport, chemicals, minerals, fuels and labour.**

The NEXT STEPS: Refine our waste processing and work towards globally unified approaches.
Break apart our products at end-of-life and allow greater primary materials recycling.
Pull out the elements for re-use: think about quantum physics, pico and nano scale, chemical recycling, gasification, mass spectroscopy, atomic bombardment and metal separation.

THE COSTS WILL BALANCE IF THIS IS DONE CORRECTLY.

Let's work together

QUESTIONS AND CONTACT DETAILS

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