

# The Truth About Textiles Workshop Notes

Byron Sher Auditorium

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Welcome by Tracey Harper. Overview of agenda, housekeeping (safety, restrooms etc.). TH's role is to set the baseline. World café – questions we will be working on in groups and coming up with recommendations that will be used to develop strategy moving forward. This is only the beginning of tackling this issue, will take everyone in this room to get this done. Thank you for being here

## **Overview: The Environmental and Social Impacts of Textiles (TH)**

Slides:

- \$3 trillion global industry, 150 billion garments
- Environmental impacts:
  - Water pollution from dyeing, microfibers
  - 10% of global carbon emissions
  - 1800 gallons of water to make a single pair of jeans
- Fast Fashion
  - “An approach to the design, creation and marketing of clothing fashions that emphasizes making fashion trends quickly and cheaply available to customers”
  - 12 items of clothing per year vs. 68 items now, only lasting half as long
  - Little value on secondhand market
  - Picture on “Fast Fashion” slide of Emma Watson demonstrating garments with recycled content fabric – fabric from plastic bottles, zippers from recycled material. Pieces of it can be reworn
- Textiles: Imports
  - US is the largest importer of textiles (98%)
  - Average \$2k/year/person (highest average is in Manhattan)
- Impacts: Social
  - Mostly in Bangladesh
  - Human cost – wages far below a ‘living wage’
  - Dangerous working conditions
  - See “The True Cost” 2015 documentary film showing conditions in which clothing is made and more about the garment industry
  - Example: Rana Plaza factory collapse, deadliest garment factory disaster, 1,134 workers killed
- CalRecycle definition of textiles: Items made of thread, yarn, fabric or cloth. Does not include furniture, mattresses, leather products.
- 6<sup>th</sup> most prevalent material type in the waste stream

- 95% of disposed textiles were reusable or recyclable
  - Once commingled, not usable
- Current Donation System
  - Charity can only sell 10-15% of what they get
  - Brokers buy 80%
- New digital start-ups are fueling recommerce
- Secondhand clothing sells are expected to double by 2023
- Trends
  - Voluntary take back programs
  - Extended Producer Responsibility
- Maxine Bedat: CEO of Zady – “The clothing we choose to wear everyday has an enormous impact on the planet and its people. Our clothing can either continue to be a major part of the problem, or it can be an enormous part of getting our planet on track.”

Q: Caution to equate overseas with “bad.” China has very strict regulations. Remind us all that we have quite a lot of slave labor in prison industry in our own state.

Q: Repository for textiles? Where can you find these places?

Tracey Harper: Clarification on “Current Donation System” slide. We’re discussing individual charities such as Goodwill, Salvation Army etc.

Q: 95% recyclable – is sending it overseas recycling? What if it’s sent to landfilled there or disrupting economy there?

Tracey Harper: Meaning items that can be reused, still have tags on them etc. In the state that they were in when disposed of, they could have been recycled.

**Panel 1: Sustainable Manufacturing and Design, moderated by Kate Wilkins**

Trini Gantner, Project Manager of Textile Exchange

Nikki Player, Raw Materials Research and Development Lead, Everlane

Krystle Moody Wood, Founder of Materevolve

**Trini Gantner, An Introduction to Textile Exchange’s Recycled Standards**

- Textile Exchange
  - Nonprofit founded in 2002 with initial focus on organic cotton
  - 300+ members from brands, retailers and suppliers from around the globe
  - Since 2010, expanded to include other fibers such as lyocell and recycled polyester
  - Mission: Inspire and equip people to accelerate sustainable practices in the textile value chain.
  - We envision a global textile industry that protects and restores the environment.

- Many ways to drive transformation, but focus on the role of standards
  - Operating across 5 different countries
- Preferred Fibers and the Role of Standards
  - Global fiber production has doubled in the past 20 years
  - Now is the time to do and act: accelerate growth of preferred fibers and materials
  - Standards are a tool to tackle this, verify that using preferred materials are better for the world
  - Make sure the claims we make is traced through the system
- Voluntary Standard:
  - Market-driven tool that drives lasting change
  - Separate from the legal framework, but can help where legal structure is weak
- Recycled Input Requirements
  - GRS = Global Recycled Standard
  - RCS = Recycled Claim Standard
  - Move away from virgin material and increase use of recycled materials
  - Eliminate harm caused by production, additional requirements of social, environmental and chemical
  - Scope: starts at recycling stage – verification of reclaimed material all the way to the end product.
  - Growth from 2018 to 2019 large for GRS and RCS
- Definitions
  - Reclaimed material: material that would have otherwise been disposed of as waste or energy recovery but has been collected and reclaimed as material input
  - Recycled material: material that have been reprocessed from reclaimed materials during the manufacturing process.
    - Ex. Shredded fiber from used clothing
  - Pre-Consumer material: Material diverted from the waste stream during the manufacturing process
  - Post-Consumer material: ex used clothing, plastic bottles
- Chain of Custody, Content Claim Standard
  - Complexity: Ideally, we can trace product directly to source, but in reality it gets traded, moved around, blended etc.
  - Ex. You can blend cotton with recycled bottles, gets more complex as the fiber changes
  - Goal is you can verify recycled content as an end user
  - Solution: Transaction Certificate and Scope Certificates
    - Each entity along the chain is audited for scope
    - As material travels through chain, followed by transaction certificate
    - Product path is preserved
- Industry Commitments

- H&M, Ikea want to be 100% circular and renewable by 2030
- Patagonia moving towards 100% recycled and renewable raw materials
- Many others

Q: What do the certifications help solve? Why are they important?

TG: They offer one tool to verify claims you're making and to ensure in a confusing ecosystem to actually verify the recycled content in the end in very complex supply chains. Legality aspect: laws always have to be followed no matter where. Standard gives opportunity allows us to go above different laws in different areas. Where the law may be silent, do this anyway. Confidence for a brand or entity to stand behind claims.

Nikki Player, CalRecycle and Everlane:

- Everlane Mission: Make ethical basics accessible to everyone around the world.
- Founder was outside the fashion industry and felt the apparel industry was very opaque – opportunity to shed transparency on the industry
- Expose the true cost of goods
- Transparency along entire supply chain, focus on Tier 1 and social compliance
- Eliminate virgin plastics by 2021
- Partnering closely with mills in Asia to produce recycled polyester and nylon
- Certify materials with a 3<sup>rd</sup> party to verify everything is recycled
  - GRS goes above and beyond recycled material to social and environmental impact
  - All our fabrics are GRS certified
- Preferred fiber strategy: recycled raw materials
- Radical transparency
  - Opportunity for education of consumer
  - On all product pages, shows true cost of what it makes to produce our goods
  - Give opportunity for consumer to stop and think about what it actually costs to make clothes
  - Disposability = connection to product is lost
  - Choose What You Pay (instead of sales): we don't create our margins to discount, we show that when the price drops by a certain percentage, we no longer can cover certain aspects of our overhead
    - 3 options to see what can be covered
    - Majority choose lowest amount
  - We don't participate as Black Friday
    - Use opportunity to collect donations
    - Partner with factories – health insurance to LA T-shirt factory employees, helmets to our Vietnam employees (primary transportation is motorbike)

- ReNew Commitment – Eliminate virgin plastic from offices, stores and supply chains
  - Upcycling post-consumer waste
  - Almost every item is wrapped in plastic when shipped from factory to warehouse, and then to consumer
    - Difficult to recycle on consumer level
    - Mission to figure out ways to minimize impact of poly bags
    - Develop poly bag made of recycled materials
    - Bags removed at distribution center so we can control stream of waste, have a partner that will upcycle to composite lumber
  - Material side: remove virgin polyester and nylon
  - Partner with mills who are innovating in biodegradable synthetics to solve microplastics
    - Trying to work on shedding of microfibers
    - Trying to stop introducing polyester as replacement
- Recycled Raw Materials
  - ReCashmere
    - Troubling fiber to find a sustainable solution
    - Partnering with a mill in Italy that collects, shreds and respins with wool
  - Complex blends of fabrics difficult to pull apart into something usable again, solution is to use more simple blends
- Challenges in Sourcing
  - Stretch yarn, looking for non-plastic source for elastane
  - Hard plastic in trims and footwear
  - Cost of goods
    - Sustainable and ethical basics should be available for everyone
- Challenges in Scalability
  - High rate of consumption of cheap clothing that's not suitable for recycling back into stream
  - Infrastructure for post-consumer garments not available in US, mostly in Europe and Asia

Krystle Moody Wood, MaterEvolve:

- Technical textiles consultancy aimed at creating transformational change in the textiles, footwear and apparel industry.
- Working mostly in materials development, usually at manufacturing level, not living in a brand
- See first-hand the impacts of microfibers
- Work with brands, manufacturers, material innovators, research and policy
- Increase commitments to recycled content:
  - Really only a few companies committing to using recycled content

- Take cut waste, melt down and incorporate into “black” = eliminate need for dyeing
- Re-invest in natural material systems
  - Highest priority thing that needs to be done as an industry
  - Shift back to natural vs synthetic
  - Ex. Climate Beneficial wool hat that comes from carbon-positive sheep
  - Rethink scale – talk to origin and traceability of material
- Developing new testing and research methods
  - American Association of Textile Colors and Chemist: pull together brands developing standard for fiber release
  - Understand if changing construction, how yarn is made etc. is impactful, agree on same standard
- Developing new material alternatives
  - Mango Materials: taking waste methane from landfills and wastewater treatment plants, feed to bacteria and creating biodegradable polyester type and create a circular system
  - Bolt Threads: using fermentation (feeding sugar to genetically engineered bacteria) to create something like spider silk
- Advancing Circular Solutions
  - Educating textile professionals – don’t usually have a materials person to talk to
  - Not much understanding of actual process about materials
- Building experiential learning adventures
  - 3 day conference for soil and sea
    - Research on plastic and microfiber pollution in SF bay
    - Work in hemp, climate beneficial wool
    - Reinvesting in natural fibers with a soil focus
  - Reuse and modularity design tour of Houston Space Center with a space suit engineer
- Hemp has a lot of potential, needs holistic thinking about what to move forward
- Aquafil Carpet Recycling: Recycled nylon from carpet industry and ocean plastic, facility in Woodland

Audience Questions:

Q: Alexa from Department of the Environment, for Nikki from Everlane about recycled content and US not having infrastructure needed. What exactly is that process and technology? Dethreading? What do we need in CA?

Nikki: From my perspective, two-pronged approach. Lots of opportunity of how to dispose of textiles and having a clear collection stream for that. Research w/ partners in Europe: recycled down, it’s more of a common practice to put pillows and duvets not in trash – more established practice. Recycling processor has clear input stream. We do have everything GRS-certified, we need more direct transparency in direct stream.

While they're buying a small portion from US funneled via India, but mostly coming from Europe. Need more education in US of what to do with textiles other than putting in landfill. Once it's out of consumer hands, we generally stop thinking about what the impact is. Need education on at home use face and then disposability

Q: Shannon at GreenMBA. What info does CA WCS show in relation to textiles? Any segmentation? Fiber type? Sources other than residential vs commercial?

Kate Wilkins: 2014 was released, working on 2018. 2014 shows just clothing, no breakdown by fiber type. More segmentation in 2018 which will be released in early 2020. Keep an eye out for it.

Q: Heather from Fibershed, Q for Trini: microplastic impact of textile waste stream, how much microfibers going into our bodies of water? How does the new research impact how you verify, monitor and help companies prioritize fiber choices?

Trini: Overarching approach is a bit outside of my expertise but from standard perspective, standards are trying to put our best foot forward and make sure latest thinking is included. In terms of preferred fibers, market report is rich and heavy and shows information on how we define preferred fiber, breadth of it, how it's being sourced and used.

Q: Reuse alliance, The use of plastic in general in fiber. Is this encouraging the use of plastic in our system rather than trying to eliminate from materials? What impact on plastic industry in general?

Krystle: Coming from food industry, textiles are a great second use because don't need quite as high quality as food industry. Touting circular solutions but don't have facilities to put it back into textiles again. As we think about future of this, ideally we aren't having to produce more virgin at all and just continue to cycle within same system. Most textile recycling is a mechanical process which shortens fiber length = sub quality product and shedding. Cotton can become an issue. For now, so many single use plastics that there's plenty to be recycled right now.

Q: Cecilia at Guess. Working at a fashion brand, sustainability is very complex. What communication strategies have you found engage consumers best?

Nikki: We do find a lot of consumers communicate via Instagram. In the past year, highest engaged posts (positive or negative) have been around sustainability. Our strategy is to be as honest and direct with consumer, give as much info as we can and allow them to make their own choice. Quickly evolving field that we need to stay as nimble as possible and be open to adapting (small team). We are so far from using up plastics that could be recycled, not a long term solution, just the first step.

Q: City of Napa, What kind of recovery rate has there been for pre-consumer waste? Like paper waste or is that getting landfilled as well? CA specifically and then more globally

Tracey: A thing we've heard about that is low hanging fruit, scraps from manufacturing process. Trend or one-off but someone is making rolls of fabric from scraps and making other garments from that.

Krystle: That would be post-industrial scrap (cutting waste on floor, 15% on floor). Brands mostly looking at margins. Since it's coming in from overseas, there's a one hundred day lead time, projecting out way larger volumes than we're actually making, lots of extra at factories. "Leftovers" from large production runs, smaller designers can use. Pattern making for zero waste. Size medium at 100% usage, fit pattern to use as much of fabric as possible. Improve to 89% usage, 11% waste for colored cotton and natural materials. Different levels of post-industrial, post-industrial fiber fluff left over (fleece jacket). Capture that and send off to another industry to compact into puck and send off. Did you mean post-consumer where we're collecting textiles and apparel? No.

Q: Post-industrial and pre-consumer, is it being recovered?

Krystle: Not a lot. It's advertised more but it's still not a lot. Still a lot extra out there that can be used.

Nikki: At mill level, there's quite a bit of waste. We see a lot of the more premium mills starting to incorporate back into process. Requires cleaner facilities and more investment to set it up.

Q: Have been discussing education of being aware of textile waste. 15-20 years ago, textile was not even recognized as a waste. Today we don't even have an integrated program for textiles. So for CalRecycle, what are you doing to educate young people about textile recycling like we have done for paper and cans?

Tracey Harper: We're going to be talking about this during our World Café, please stay for that. We'll be taking everything today and making a summary report.

5 min break

## **Panel 2: Textile Collection Methods**

Marcus Gomez, Owner of California Clothing Recyclers

Alice Koehler, Senior Vice President of Marketing at WasteZero

Sevilla Granger, Project and Program Strategist of Textile Exchange

Emily Lucic, CalRecycle

Marcus Gomez, California Clothing Recyclers:

- Third generation at family company.
- We work with thrift stores (smaller independent ones)
- Once you donate the clothing, it has a second life after the thrift store
- That's what we do – bale and export it out



- Cheaper to process in other countries
- More expensive here (insurance, fuel), very small overhead
- Receive clothing from fundraisers (churches, schools, etc.)
  - Mixed clothing: comes from thrift stores, already gone through, all good clothing sold off already
  - Credential clothing: straight donations. Worth more, now more popular and other countries are looking for it
  - Shoes: Sort and grate shoes from thrift stores. Bring them in, if still wearable, it's sold off.
  - Shipping
    - Ship 28-30k pounds at a time
    - 88k pounds clothing shipped per week
  - Weather and economy really affect us
- Recycling: pick up from thrift store, sorted or graded
  - Individual items sorted out by type
  - Each item graded
    - Not wearable, is cotton = turned into rags
    - Federal government number 1 purchaser
- Difficult to do in CA
  - Pennies on the pound
  - Large warehouse, 50 workers
  - All products market driven
  - Big industry, 3-4 million lbs per year

#### Alice Koehler, WasteZero:

- Cut trash in half across America
- Municipal and waste reduction programs
- Bag based pay as you throw program
  - Enable you to save money by being more conscious of your trash generation
  - Reduces trash on average by 44%
- Saw WCS, 4-8% of landfills nationwide is textiles
  - One of the few things that retain latent value when thrown away
- Collection is a problem
  - We work with collectors (don't do it ourselves)
  - Partner: curbside textile collection
    - 1.5 million households nationwide – residents fill bags that are picked up with weekly recycling
- Challenges:
  - Theft and looting in metropolitan areas
    - Have to be smart about it
  - Big central drop off bins causes contamination
    - Source separation is important

- Our preferred method is bag based
- 3 strategies to get people involved
  - Guilt them into it
  - Make people feel really good about it
  - Make it really really easy to do
- End market values starting to decline from fast fashion
  - Companies trying to recycle textiles are struggling
  - Tariffs in place, China looking at other markets to take their goods.

Sevilla Granger, Home and Hospitality Recycling Project:

- Lead industry sector round tables
- Aquafil tour: everything on hold until March due to PG&E issues
- Main mission is to be driving force for urgent climate action with goal of 35-45% reduced CO2 emissions from textile fiber and material production by 2030.
- How can we as an industry positively affect our climate footprint?
- Butterfly model: circular economy
  - Left side: Organic Agriculture
  - Right side: Recycled Material, waste reduction
    - Putting things back into the stream
- Compile data across different sectors
  - 2017 Fiber and Material Portfolio: Home textiles is almost all cotton, not usually blends.
- Low hanging fruit: sheets and towels from hotels are one material, standard sizes, almost all white = very easy to recycle, just need a collection system
- Cotton: everything is in place (collectors, concentrators, etc.), just need to tie everything together between stakeholders to complete the loop
- Hotels do laundry in house or to a facility
  - Either way, someone decides if it will be used again
  - Just need to start collecting at that location where that decision is made
  - Can also be a collection site for domestic recycling

Q: Geographic region of where Sevilla's project is targeting?

Sevilla: We're not creating one project, we're connecting partners across regions. Dedicated partners in Eastern Europe and Spain, already set up. It's like wildfire because it's very easy to set it up. Setting up methodology that anywhere can set it up with unique challenges to local region.

Q: For Alice, curbside collection. Who collects the bags?

Alice: Depends on program. Majority is collected by separate vehicle not related to local hauler. Most MRFs are configured, if bags come in, it won't stand up to the processing facility tools.

Q: City of Napa, Kevin Miller, for Alice. Our community since 2013, Recycle More, combine e-waste, large metal appliances and clothing and shoes, sold to Goodwill. None of those are compatible with single stream collection systems. Our program has grown 600% since 2013. All positive return items, free of charge to consumers. Less participation if you have to pay.

Alice: We see that as well. Make it free and convenient, people will absolutely participate. When we sign a municipality on, we pay them by the ton for the material. It's been key to our success in getting people to sign on.

Marcus: I don't do green bins, I'm a for-profit company. I've found that the problems with those is lots of people dump junk in there. Becomes a problem for strip malls, so we do more of the fundraising and direct collection. Lots of those companies have volunteers to collect that, I do. To make it profitable to me, I have to fill a truck up.

Q: Jessica Athens Services in Southern California: Separate vehicle to collect materials, where is it being dropped off? Is it avoiding MRFs and potential contamination? Though it's going to a non-profit, a lot of it may not be used, this seems to be initial diversion, not long term? Where else is this material going?

Alice: Every program that we do is unique in that each partner that collect (cities or non-profits), depends on how they collect. Our materials are not taken to a MRF, usually to a hub where it's baled and sent to reuse markets. Global reuse markets used across the board. Our goal is to pull out of landfill and for the recyclers to get as much clean materials as possible. Our philosophy is that the more you can source separate and combine like-materials into large quantities, there's a greater likelihood that it will be recycled or reused in some way.

Q: Resource recycling systems: How have you seen used market clothing change and ability to stay in business? Have export markets shifted over time? On sourcing side, how competitive is that for you? Do you have to chase after donations or do you have more than you can handle? On the collection side, what factors have you seen are the biggest determinates for curbside collection?

Marcus: On thrift store side, it is competitive in the sense that some Southern California folks try to take over my customers. I deal with smaller thrifts because Goodwill sources their own. My thrifts don't generally have that capacity. Quality depends on economy. Economy good = lots of donations, price comes down. Recession = price per pound goes up, since there's not much there.

Alice: It's all about participation, better Return on Investment. A lot of our communities in pay as you throw, they're much more open to learn about recycling, participation significantly higher because it directly affects how much it costs for them to throw things away. We'll go into a market with a partner with low participation and it's not

sustainable. It cost money to send bags, communicate with people, operate trucks. Low participation = we lose money.

Sevilla: Consumer education is number one challenge. It's how you dispose of it and also trying to explore better business models with responsible growth, not slash and burn. Responsible growth, not high dollar. Fast fashion is often made out to be the big bad guy, but it's not the fashion industry's fault. It wouldn't exist if people didn't buy it. We as a community need to be realistic of how fast fashion exist. Value what you wear, invest in clothing, take care of it (mend it, clean stains)

Alice: Boomers get it (they were around when recycling came out), Gen Z gets it too. Gen X is the real group that needs to be educated and start to care. Older millennials too, they have the biggest gap in participation in recycling and education.

Q: 1.7 billion tons were exported last year, very little transparency where it's going and what's happening to it. Likely not value added to those countries where they're going. This idea that you're talking about has the potential of growing a market within our own country, but something we should forget is that there's an opportunity to do this collection process and funnel through market in such a way that it's hitting reuse sectors first, and then going back into circular economy. CalEPA has huge opportunity to provide guidance and infrastructure and money to help facilitate collection and funneling process of reuse and then recycling industry. Money into local economies (help out companies like Marcus'), create jobs.

Marcus: You mentioned the creating jobs – it's getting tough. My father employed 50 people, the company no longer exists. Probably can't exist today doing what he did. One in LA employed 100 people, he's down to skeleton crew, selling his building and moving to Texas. Getting tougher to operate a business in CA, not to mention US. I'm the middle man sending it over. Cheaper to process in their country.

Q: Jenna Molder, model and fashion buyer for someone who was not sustainable, now a student for sustainability and fashion. You talked a bit on consumer education, what are you individually doing to grow awareness?

Alice: When we launch, we put together a mailer program and send bags that are printed with what can go in them. Once goods are in the house, how do we get what has value but unnecessary, out? We also do social media programs (your textiles do have latent value). These statistics are terrifying, but they don't seem to drive action. By putting something physically in their hand that they can fill from their closet and not having to exert any other energy, is the most effective way to participated. We're bombarded with statistics and guilted and shamed, you'll freeze. We give them little things that drive small steps that hopefully step to bigger things.

Sevilla: Turtle with straw in the nose – major moment for drinking straws and disposable plastics. Something will happen again and customers will turn. Almost takes that level of disgust to get people into it. What's it going to be for environmentalism? We don't want

a disaster or another animal hurt, but it's necessary. If we can find the answer, that's what we need to get the lightbulb to go off.

Q: I feel we can bring sorting and grading back in US if we incorporate technology that's being developed right now. Textile Exchange is a voluntary driven membership based activator. Until CA or some other way of looking at what the actual true cost of environmental impact of this industry, it needs to be a combined effort. Not sure if CalRecycle is involved in looking at the true cost of production. Around the Waste Zero program, we've had programs (from H&M), incentive is usually get 15% off your next purchase? Not great incentive. Where are we in municipal waste collection?

Kate Wilkins: Not that I know of, but stuff we would really like to hear about. Waste collection specifically about textiles, jurisdictional level, nothing on state level that mandates that. Few jurisdictions that allow it in recycling bin, even fewer that have collection programs. Not a whole lot going on.

Alice: There are a lot of models around the world. Individual responsibility of what they throw away. Legislation is key, people are not incentivized/disincentivized, it's hard to get them off of auto-pilot.

Sevilla: Don't let good be the enemy of great. Just because we don't have anything doesn't mean we shouldn't try.

1 hour break for lunch

### **Panel 3: Reduce, Reuse, Repair and Recycle**

Steffen Kuehr, CEO & Founder of TekTailor Inc.

Isaac Nichelson, CEO & Co-Founder of Circular Systems

Nima Pauline, Founder of Eco Culture Manufacturing, Textile Recapture Program and EcoSustineri-Technologies

#### **Steffen Kuehr, TekTailor:**

- Founded in 2015, legal benefit corporation and certified Green Business
  - 20,000 sq. ft production & warehouse in Santa Rosa, CA
- Mission: Strengthen apparel and textile industry in Northern Bay Area.
  - Enabler that allows small brands and designers to move towards a demand-based industry
- Enabler for contract sewing customers
- Tactical work safety and PPE (anyone who has served in the military has likely received their knee pads in their uniform issue)
- Unique products made with used materials diverted from landfills
- First-hand experience on overstock scrap and leftovers

- Consider what other companies must have this extra stuff (banners, bulletin boards etc.), must be a better use for it
- Currently, textiles are a linear system, what can we do to make it more circular?
- Almost every big brand in fast fashion has stuff sitting around that can't be sold in time for the fashion cycle
- The Challenge:
  - Single-use, throw away society
  - 30% of world's garbage but 5% of world population
- Divert. Design. Deliver.
  - Divert:
    - Decommissioned fire hoses
    - Used burlap and grain sacks
    - Used truck tarps
    - Endless amount of stuff sitting around
    - Create idea of finding solutions for these materials
  - Design:
    - A long lasting product from something that would otherwise be in the landfill
  - Deliver
    - Meaningful corporate gifts and merchandise from their old banners
- Examples of products
  - Used or stained table cloths into tote bags or discount fabric for crafters
  - Scrap leather
- Move away from pre-making of items
  - Combine technology from digitizing patterns, customizing products to minimize stock
  - Move away from large warehouses full of product that can't be sold
  - Order minimums for bulk t-shirts etc
- Virtual inventory of products
  - Allows more customizing
  - Reduces waste and excess product
- Corporate swag niche market
  - More meaningful gift that tells a story
- Planting the seeds of sustainability early
  - Going around to schools to learn about upcycling and sustainable businesses
  - Business as a force for good should default in teaching, not just making money and answering to share holders

Isaac Nichelson, Circular Systems, Building the Circular & Regenerative Textile:

- Transforming waste into valuable products
- Materials Science Company
- Produce fiber, yarn and fabrics that benefit our environment, society and economy.
- Open sourced

- Waste to Resource – essential change that needs to happen in textile industry
- Fashion industry needs to change to survive
  - Driving massive race towards circularity
  - Trying to figure out what it is
  - Resource scarcity is driving a lot of it
- Create economic abundance that is necessary to support us
- Strict innovation criteria:
  - Only release technologies that are massively scalable and cost effective
- Recycled/organic materials should not be lower quality
- Technology platforms:
  - Agraloop: biomass left in field (60% of what's grown) transformed into textile fiber and organic fertilizer
  - Texloop: enabling of circularity as a platform globally in textile sector
  - Orbital: Way to manage shorter staple fibers after mechanical recycling or more coarse fibers from agraloop, controls shedding
- Texloop is our focus today
  - Majority of what we're buying is ending up in landfill
  - Enable resource efficiency that fashion needs
  - Global system for textile circularity
  - Lightest touch: emphasis on preserving embedded energy in a textile
    - Dye stuffs
    - Texture itself
    - Attempt to carry it into the next life
  - No need to break down to monomers (very energy intensive to do so)
  - Mechanically recycle textiles while preserving as much as possible
  - Going after post-industrial, pre and post consumer waste
    - Post-industrial: waste from manufacturing of clothing
    - Pre-consumer: rejects, web returns, unsellable
    - Post-consumer: After we've used it
- Actively working on 3 continents
  - Connecting dots mentioned early
  - Connect recyclers to brands/communities who need recycling
- Texloop Recycling Process
  - Step 1: Collect/classify waste stream
    - Trademarked items that can't be sold
    - Receive and classify (almost all black and cotton)
  - Step 2: Deconstruct
    - Remove label and trademarked logo
  - Step 3: Mechanical Recycling
    - Preserve fibers
  - Step 4: Yarn Spinning
    - Assess fabric quality
  - Step 5: Fabric Milling
  - Step 6: Garment Manufacturing
- Shows what can be done with well managed recycling stream
- Looking into creating a MRF/textile recycler in LA

- Est. 1000 tons/day of textiles going to landfill
  - Take technology from the Bay Area and take it where it's needed
- Nike waste in China
  - Trying to unlock potential in 60/40 poly blends
- Orbital Yarn System
  - Created to make higher value/performing textiles from lower value fibers
  - Shorter fibers = fiber fragments fall out of yarns and puts pollution into waterways
  - Orbital yarn construction locks in staple fibers to prevent shedding and fiber fragment pollution
  - Competes well with Dry Fit or Climalock
  - Low quality product changed into something better than virgin
  - Pilling resistance that doesn't wash out
- Bioloop
  - Regenerative system for handling biomass that can be used as a raw material instead
  - Huge opportunity to unlock a natural fiber without having to grow cotton
  - Biomimicry, giant mechanical sheep
  - Only thing left at the very end is fertilizer

Nima Pauline, Ecosustineri Technologies:

- Purpose: To combine fashion, sustainability and technology
- Stakeholders
  - Government and Academia
  - Garment/Accessory Factories
- Quantify carbon footprint of each factor
- EcoCulture Manufacturing
  - Lifecycle of ECM process
    - Digital birth certificate
    - Authenticate product so consumer knows it's real and to follow it (responsible sourcing, waste etc.)
    - Digital tracking – scan the box to know what's in it so you don't have to open it
  - Allows loss prevention
- Take waste back and upcycle into new products
- Policy has to start up top so consumers can follow
  - They're ready for it!
- Ecosustineri Technologies
  - Garment factory SmartThread is born
  - Customer purchases new garment
  - Customer returns used garment
  - Brand recycles and upcycles used garments
    - Creates secondary market
- Fast fashion doesn't even make it to secondhand market
- Challenges



- Timing – paying attention to what consumers want
- Education and knowledge
- Policy
- Successes
  - Awards
- Shift in consciousness that's key to our success
- Greenwashing: companies say they're green but are they considering the whole picture?
- Starts with policy and consumers

Q: How do you remove labels and trademarked logos?

Isaac: Manual process. Hired disadvantaged and veteran workers to do so. Not chemicals.

Q: Kevin, City of Napa. What is pilling?

Isaac: The balls that form on your sweater after a few washes. A synthetic fiber that pops out that doesn't break away and then the natural cotton wraps around it.

Q: To CalRecycle – having private companies doing this great work. Is there anything in terms of policy like CRV for this process? Pay money when you buy a t-shirt to make this process worthwhile?

Tracey Harper: Our next speaker will be talking about this – Extended Producer Responsibility. Also in our World Café sessions, this would be exactly what we'd like to discuss.

Q: Can you speak about the work that you're doing with Stella McCartney?

Nima: It was an example actually, she's working with us as an example for utilizing upcycled products. 40% upcycled, 60% virgin. Let's use Ecosusteneri to do this, can make a completely upcycled collection just for her.

## **Joanne Brasch, California Product Stewardship Council**

### Policy Options to Drive Circularity in the Textiles Industry

- How do we drive circularity?
- Charged with making UC medical centers zero waste. Every obstacle I encountered was with policy.
- Shift cost burden from local government to producers
- Help local governments who have been managing our waste
- Manage materials sustainably instead
  - Get producers involved in end of life

- Product stewardship: voluntarily take things back or take responsibility of what they put on the market
- Extended producer responsibility: producers fully finance end of life management (recycling & disposing)
  - If you internalize the external cost, it then becomes part of their business model
- Which realm of textiles is most impactful to regulate or doing well on their own?
- Shift burden off non-profits and consumers to up the stream
- Doing less “bad”, is not enough. We need to mitigate the damage and make the world better.
  - Improve the damages we’ve done