**E-Co-Creation for Fashion: A review of co-creation and open innovation methods for sustainable fashion**

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**Abstract**

*The landscape of design is changing, fuelled and inspired by emerging technologies, the economic downturn and environmental concerns: fashion is entering a new frontier.*

*The Web 2.0 revolution is changing perceptions and influencing a younger generation, but can co-creation challenge traditional design methods for fashion and promote sustainability, and can designing together enable the democratization of fashion?*

*This paper aims to map co-creation within a fashion context, as part of a PhD study using participatory practice methods. A series of case studies will be used to define co-creation communities, the role of the individual and the sustainable benefits of working together. The viewpoint of both the designer and consumer will be explored to identify what methods and tools they might require to enable them to work together.*

**1. Introduction**

The design landscape is changing and users are shifting from passive consumers to active participants who play a role in the design and content of new products and services. The convergence of digital technologies and the rapid growth of content in the form of software applications (“apps”) enabled by allowing developers access to free or low-cost software developer kits has been largely responsible for this shift. In a short space of time we have moved from an exclusive model of design-where access was restricted through either cost of equipment, media or retail channel, to an open and multichannel model. Access to high performance, low cost mobile computer hardware and software, is now within reach of the masses, and high-speed broadband Internet access has allowed a large user/developer community to be established. They are able to compete with established large corporate developers and this has been instrumental to the development of more user-based tools for discovery, creation, production and sharing. *“Consumer culture is a design experience that links production with consumption, professional designers as cultural intermediaries, plays a vital role in helping people find meaning, identity and sense in a highly confusing world.”*(Press and Cooper , 2001)

**2. The landscape of design**

Sanders and Stappers (2008) make two important observations regarding co-creation:

1. *“Co-creativity requires that one believes that all people are creative. This is not a commonly accepted belief...”*
2. *“When we acknowledge that different levels of creativity exist, it becomes evident that we need to learn how to offer relevant experiences to facilitate people’s expression of creativity at all levels”*

Some believe co-creativity has taken too long to become a mainstream methodology because of this stigma. Acknowledging that all people can play out different and equally important roles free of hierarchy is essential to the process, and this is where the professional role of the designer seems to become most relevant, in providing communicative tools and expertise as a negotiator and curator in order to assist in what can potentially be great opportunities for learning. Not only does this mean that the role of designers is changing, but also that the relationships between all of the participants in the chain of creation is changing too.

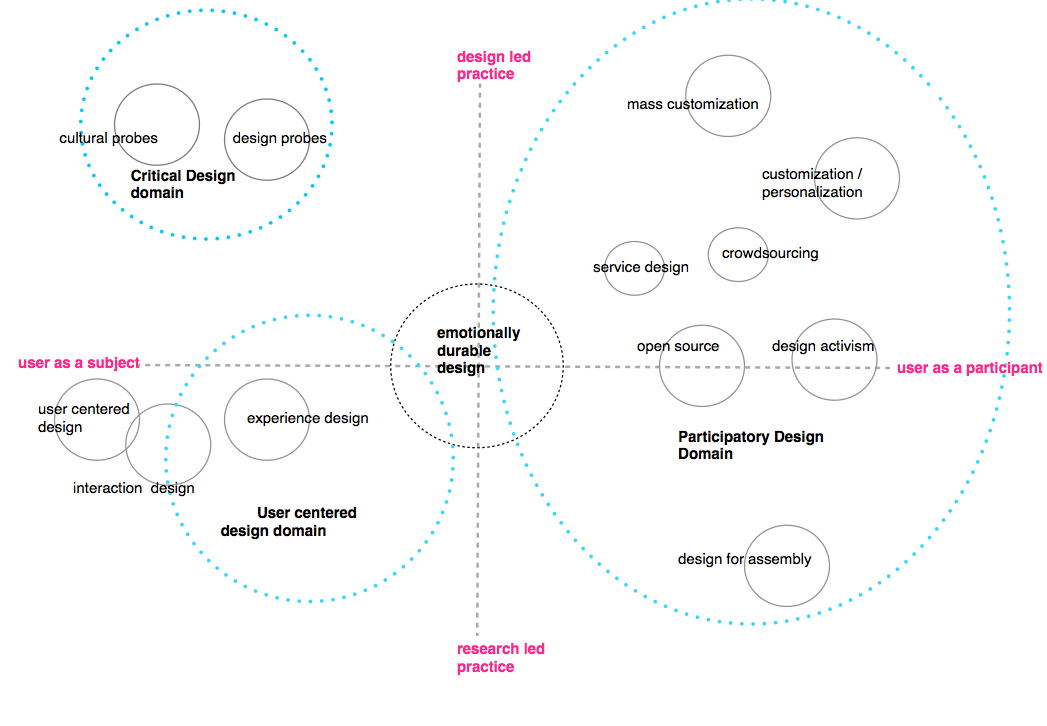
*Fig. 1: The Design Landscape*

**2.1. The Designer**

If Design is to embrace more collaborative models of working, what does the role of the professional designer become? Von Busch (2010) argues that today, creativity and overview are reserved for designers, planners and experts. He believes that design has to be enabling rather than only solving immediate problems or shortsighted needs, saying:

*“By habit, we make user-friendly stuff – so simple that we never let users know how it works or what the true cost is. But we need to design agency and involvement. We need to design for inclusion, repair, co-innovation, and to involve many more stakeholders as agents and actors”*

Fletcher (2008) positions the designer as a street level collaborative practical facilitator and teaser. She defines this role as creating the opportunity for people to work collaboratively, and to orchestrate change. The work of Fuad-Luke (2009) can be positioned within similar territory through his promotion of what he labels the ‘design activist’. He defines this role as a designer using the power of design for the greater good by becoming a catalyst; a facilitator, a creator and a co-author. This multidimensional role advocates participation and champions the power of design.

Fuad-Luke (ibid) suggests that design is often executed by designers who are trained professionals and who offer their expertise to solve problems. Yet design is also undertaken by those who are unknown (anonymous, non-intentional), and who gain their expertise from outside the design professionals’ world. This broadens the design landscape by positioning the role of the hobbyist, amateur and what Leadbeater and Miller (2005) define as the ‘Pro-Am’ within design territory. These individuals learn by doing, are often self-taught and extend their skill set by working within a community. This is where the professional role of the designer seems to become most relevant, in providing communicative tools and expertise as a negotiator in order to assist in what can potentially be great opportunities for learning.

**2.2. The Manufacturer**

The role of the manufacturer is changing in relation to the introduction of new business models and what Christensen (1997) describes as ‘disruptive innovation’. An example of disruptive innovation is 3D printing, which allows finished products to be manufactured directly from raw materials without the need for moulds or tooling in an additive fabrication process. This means that individual products can be made as effectively as mass products and could provide the mechanism for true mass customization as predicted by Davis, Pine et al. In fact the manufacturer, like the designer, may now exist in a number of different roles which relate directly to the type of product and the way that it is designed or co-created. Many of these are enabled by the virtualisation of the supply chain, and the integration of the tools for the designer-manufacturer to be able to produce, sell and distribute through one platform. Commercial examples such as “Shapeways” and “Ponoko”, where the design tools, manufacturing capabilities, storefront and distribution are integrated onto a web platform offer the Pro-Am equal footing with the professional designer. Jeff Bezos, CEO of Amazon describes this type of virtualization of production as significant suggesting that *“setting up a company that designs, makes and globally sells physical products could become almost as easy as starting a blog — and the repercussions would be earthshaking.”* (2006)

“Fabricly” has adapted this model for the fashion industry by providing a web-based platform to provide aspiring designers with the manufacturing, distribution and promotion of their designs. These may be submitted at any time and are assessed by a panel and then licenced, with a royalty going back to the designer. This model could be very attractive in an industry where most of the problems associated with fashion start-ups are with manufacturing, distribution and cashflow.

**2.3. The Consumer**

The term Generation Y is used to define a technology-savvy generation (born between 1976 -2000) who have grown up surrounded by digital media. Tapscott (2008) states that for the youth culture growing up within this media age technology its transparent, it’s like the air. They don’t talk about technology but define it through use and experimentation. As consumers they want to be ‘prosumers’ co-innovating products and services, they use digital media to edit, create and distribute their own content, they collaborate by constructing their own social networks and they innovate by becoming active participants within the design process.

Tapscott (ibid) defines the eight norms for this culture to be freedom, customization, scrutiny, integrity, collaboration, entertainment, speed and innovation. As a consumer group they are very influential a report by *L2 Lab (2010) stated that* Gen Y purchases an average $150 Billion of goods a year and influences another $50 billion in purchases by baby boomers, that’s five times more than their parents did at their age.

As a consumer culture Gen Y are driving forward new models of innovation, if they can’t find what they are looking for they go out and create it for themselves. Seybold (2008) states that co-creation has the potential to produce products that meet consumers particular needs as they know more about their desired outcomes, their needs, and their constraints they have a deep knowledge into their context and circumstance. Soltes (2011) goes on to explain that Gen Y, as a whole, are making conscious choices with their cash. They are more interested in value than heritage and authenticity vs. tactical marketing that rings untrue. Watching the way they have influenced fashion, technology and even workplace attitudes in recent years, this outspoken, DIY and anything-is-possible generation is championing forward new models of working together.

But community is key to Gen Y, as individual consumers/users they do not innovate, develop everything on their own but they benefit from user innovation communities Shirky (2006). New models of fashion consumption are emerging for example “collaborative consumption” a phrase coined by Botsman (2011) to describe the rapid explosion in swapping, sharing, bartering, trading and renting being reinvented through the latest technologies and peer-to-peer marketplaces in ways and on a scale never possible before. Botsman (ibid) argues that design not only has to sell itself in the wider world of things but needs to develop relationships with consumers. This type of “Social Shopping” is particularly suitable for fashion products, and a study by by eMarketer.com showed that 81 percent of teenage girls use their friends and peers as a source of trend information and 45 percent seek the opinions of those same groups when purchasing clothing or footwear. (source:BaC)

**2.3.1. How we might become better owners**

New types of fashion consumption have emerged which challenge the nature of consumption itself, such as: slow, sustainable, and political. They are driven and enabled by web 2.0 tools and applications.

The Uniform Project – an exercise into sustainable fashion (May 2009-10) pledged to wear one dress for an entire year as an exercise exploring sustainable fashion. A series of seven dresses were designed and produced by a local designer, in New York. The dress was styled differently daily and recorded through a blog online to document the entire project. As the project progressed it attracted a global audience of followers who began to participate by donating accessories and funds to support the project. The overall success of this project could be credited to web2.0 tools and applications that enabled a small local project to be documented and distributed to a global audience, who could then freely engage, interact and become directly involved through online collaboration.

An alternative open source model is “Hacking Couture” – fashion for the masses by the masses. Hacking Couture is an activist fashion movement based in New York. They analyze high-end fashion labels such as Gucci, Chanel, Yves Saint Laurent and devise a formula for reconstructing garments to represent the brand. The formula is then edited into an open source code for each brand that references their style of materials, construction techniques, logos and symbols and connected to the hacking metaphor. Participants bring old or unwanted garments to each workshop and use the open source codes to re-work their garments to emulate a high-end look.

The “Neighbourhoodies” project explores locality through engagement with each participant’s local community. The project was run as a collaborative research and student project facilitated by Dr Otto von Busch and supported by London College of Fashion, Centre for Sustainable Fashion. The MA fashion and photography students set off for a shared research examining their neighbourhoods and proposed a series of wearable expressions reflecting their local environment. The final designs were digitally printed onto fabric, constructed into a hood and photographed in each environment.

**2.4. The Market Place**

The marketplace is changing to reflect the new models of consumption. Firstly and most importantly the marketplace for buying clothes online not only exists, but since 2007 it is consistently the highest grossing category of e-commerce, with around 10% of all online purchases being fashion related products and Since 2007, clothing is consistantly the highest grossing category of e-commerce. US national statistics for e-commerce show apparel sales of $17bn for 2008, an 8.4% rise on the previous year (US Census data).

Major online retailers like Amazon, have moved quickly to include clothing and Google recently acquired "like.com", a visual search-engine for clothing products. E-commerce and new media are creating a previously unforeseen market for digital fashion content including video and 3D immersive interactions, with multichannel retailers already seeing up to 100% increase in sales when selling online as well as in store (John Lewis, 2010).

The relationship between the online experience and the retail store experience are blending as consumers can use smartphones to get live price comparisons by scanning barcodes instore. EBay is buying the technology behind RedLaser, an iPhone application that lets people scan barcodes on products they want to buy and do immediate price comparisons online. RedLaser has been downloaded more than 2 million times according to the startup that created the application The scanner works by holding an iPhone up to a barcode on a physical item in a store. If the item is recognized, the phone brings up more information about the product, including online prices.

ASOS has recently launched its web based market place with the tagline: “start your own fashion empire”. This new market place allows anyone to retail clothing through their own shopfront on the portal. ASOS market place in connected to their platform, which retails high street fashion online, and allows anyone to retail clothing through the portal. Other features have been embedded to enable participants to rip and mix clothing within their archives to curate trends and new looks. Another section is dedicated to street fashion and encourages users within the community to style and photograph their clothing to share with others.

Capturing the opinion of the customer before production is also being explored by online retailers, “Modcloth” allows the customer to become the buyer, and to vote and comment on prototypes which they show for a limited time on the site before deciding whether to go into production. Importantly the high level of customer engagement at this early stage is building trust and increasing loyalty where the customer may take on the role of someone engaged in buying for the company. The site reported traffic increased 25% in the first month after the feature was introduced

Reinforcing this point, Altimeter Group suggests there is now a fifth “P”—people—to add to the traditional four “Ps” of market­ing (product, price, placement, and promotion). A 2010 presentation by Shop.org said that 68 percent of North American business-to-consumer (B2C) companies have acquired at least some customers through Facebook. Currently the links between social networking and commerce are by driving traffic to sites, and through recommendations. In the near future it seems that customers will transact commerce inside social networks—recommending and selecting products, and purchasing through pay­ment with credit cards and rewards. Ostrow (2009) reports that Dell Outlet has already sold $6.5 million in products through its Twitter feed, and large fashion brands such as Burberry and Hermes are also experimenting with online applications to enable end users to upload photographs of their styled clothing.

*“In the first quarter of 2011 alone, the British luxury brand added more than 600,000 “likes” to its Facebook page. At that rate, it’ll reach 10 million by the middle of next year.”*(Soltes, 2011)

**3. The Co-Creation Landscape**

Elizabeth Sanders, on the subject of co-design and co-creation, states that designers are moving increasingly closer to the future users of what they design, and the most recent activity within the changing landscape of design and design research has become co-creating with your users (Sanders, 2009). This evolution has shifted design research from a user-centered approach and changes the roles of the designer, the researcher and the person formerly known as the user.

Co-creating recognizes that design is performed not only ‘for’ users (i.e. user-centered design) but also ‘with’ and ‘by’ users (i.e. designing with participation from users, who may assume the role of designers). Co-design (or collaborative, co-coordinated or co-operative design) gathers insights into users’ needs, allowing ideas to be fed into concept design and further product development.

As a methodology, it opens up new learning spaces for understanding the cognitive, emotive and sensory dimensions of human experience. Co-creation activities are mediating the external influences on individual identities and value systems within communities, companies, organizations, business partners, and between companies and the people they serve. Pro/am culture and DIY Design, is an external force re-shaping design practice from the inside out. Whether the design proposition focuses on monetary, experience or social values (or all three simultaneously), “co-creation puts tools for communication and creativity in the hands of the people who will benefit” (Sanders and Simons, 2008).

**3.1. Co-Creation Communities**.

The term co-creation can be defined as a creative act within any stage of the design process within a fashion context the term can be applied to various stages throughout the design process and even beyond by exploring alternative new models through systems and service design. The approach of designing interactions and experiences around clothing has the potential to mediate new models of engagement for the fashion consumer.

Design for experiencing has been influenced by the growing field of interaction design, an industry of intangible activities to engage consumers through experiences as well as things. The design for experiencing space presents co-creation opportunities.

Reid (2005) refers to co-creation as an open, ongoing collaboration between employees and customers to define and create products, services, experiences, ideas and information.

1. Open brings in the idea of transparency, so that non-participants can easily see the collaborative process. This, in my mind, eliminates traditional customer research from the definition.
2. Ongoing implies that it's not a one-time shot at obtaining customer input and then taking the rest of it in-house. Anyone can participate at any time.
3. Collaboration brings in the spirit of teamwork. Employees and customers are peers in the process. In many cases, the company simply serves as a facilitator of the process.

Magar (2011) refers to co-creation as an umbrella term for mass customization (including design your own and create your own) and open innovation (generally speaking the idea of listening to others when innovating). In essence, it means that companies and customers (and sometimes partners) jointly create products.

Developing a relationship with the consumer promotes a deeper level of interaction beyond direct consumption. This approach requires further research and development into new models that offer alternative services and experiences. To enable designers, businesses and large organization to connect with consumers on a large scale is not only becoming possible but also economically viable through online tools and resources.

Leadbeater (2009) coined the term “we-think” to utilize mass creativity. This explores how the web is changing our world, creating a culture in which more people than ever can participate, share and collaborate, ideas and information.

Leadbeater (2009) explores different types of collaboration through utilizing online tools.

1. Indirect collaboration: where collaboration is a useful, indirect and unintentional by-product of singular activity. An example of this could be the facebook like button and harnesses collective intelligence.
2. Instrumental collaboration: where collaboration is a deliberate, purposeful activity, done with the intention of creating or finding information. Other people online create a social presence, spectacle or audience in instrumental collaboration. It’s about creating dialogue and conversation for a fairly well defined end-goal.
3. Means / Ends collaboration: here collaboration is itself the primary purpose of activity. Social networking is the most obvious example of this.

But if a fashion consumer plays an active role in contributing within the fashion design process – do they connect on a deeper emotional level with their clothing? Chapman (2008) argues that for decades consumer culture has raged forth practically unchanged, leaving designers to work within what he describes as a fundamentally flawed system. By failing to understand the drivers underpinning the human consumption and waste of goods, design resigns itself to a peripheral activity rather than the central pioneer of positive social, economic, and environmental change.

To position design as a positive catalyst for sustainable change emotionally durable design requires deeper consideration to explore the experiential qualities and argue the sustainable benefits.

**3.2 The Origins of Co-Design in fashion**

The “Haute Couture” model of fashion was established in 1852 By Charles Frederick Worth who founded the first couture house in Paris, in order to provide clothing to wealthy clients. This model was enabled by the advent of magazine publishing and the emerging middle class with disposable income to spend on clothing, which could be marketed to them through fashion magazines and presentations in department stores and seasonal shows at the designers premises. By its nature “couture” could be considered a form of co-design, as these garments showcase the epitome of the couturiers skills, and those of the “petit mains”, the artisans who painstakingly craft and embellish the garments with hours of handwork. As each garment is effectively shown as a working prototype, there is a considerable amount of input from the customer, working directly with the designer, to create the final garment which is the right fit for both the figure and the taste of the customer. The value to the designer in this process is that each design may be customized to the individual but is essentially the same, and acts both as an advertisment for the designer-where the individual creations may be seen and publicized at social events and featured widely in the media. In the post WW2 era, Christian Dior developed on the Couture model by licencing the prototypes and paper patterns of couture garments to department stores to make editions in their own workrooms for sale. This was further developed by Yves Saint Laurent, Pierre Cardin and others to the prêt–a-porter (ready-to-wear) model in the 1960s, and which is the basis for most clothing produced today, allowing for economies of scale to mass produce clothing for global distribution, using established sizing rules.

We can see in the evolution of this model that two key issues have arisen:

1. The direct relationship between designer and customer has been eroded or lost entirely
2. The move away from creating designs tailored to the individual has created waste and proliferation of similar products

In 2006 the [UK] clothing and textiles industry produced up to 2m tons of waste, 3.1m tons of CO2 and 70m tons of waste water.(DEFRA, 2007)

**4. Tools & Methods**

*“People need not only the need to obtain things, they need above all, the freedom to make things among which they can live, to give shape to them according to their own tastes, and to put them to use in caring for and about others.” Illich (1973)*

Illich (1970) set a premise for moving beyond designing objects for direct consumption through his text ‘Tools for Conviviality’. By challenging mass manufacture, Illich argued a case for making with your hands, a return to small local workshops and promoted participation. The industrial revolution changed society and created a material culture where people have become disengaged with the objects around them due to an overabundance of stuff.

**4.1. Open Source Design**

The term “open-source” was coined to describe the Linux software developer community and the Free Software Foundation in the mid 1980s to refer to shared software that was open to editing and improvement by any user for the benefit of all. They termed the phrase “copyleft” as an alternative to the protection afforded by “copyright”. The open design movement takes these attributes and currently unities two trends:

1. people applying their skills and time to projects for the [common good](http://en.wikipedia.org/wiki/Common_good), perhaps where funding or commercial interest is lacking.
2. providing a framework for developing very advanced projects and technologies that might be beyond the resource of any one company or country and involve people who, without the [copyleft](http://en.wikipedia.org/wiki/Copyleft) mechanism, might not otherwise collaborate.

The open source movement is influencing fashion by enabling designers to upload and distribute design concepts as downloads. This enables consumers to source patterns and produce independently or with the support of someone skilled.

Fashion media portal SHOWstudio initiated the Design\_Download project by inviting a selection of high profile fashion designers to submit a garment pattern in an open source format. These designs were then accessible to anyone to download and assemble to reproduce the garments by themselves. A competition was launched to promote this approach and attracted a global audience of participants.

Burdastyle is an open source platform which distributes home dressmaking patterns and hosts an online community who are encouraged to share their creations and skills. Their most recent collaboration with Karl Lagerfield illustrates how the boundaries between high-low end fashion are blurring through various channels of communication.

MyThe My Label concept produced in collaboration by Bernina/Optitex is 3D software enabling users to visualize and customize made to measure dress making patterns. This expands upon both SHOWstudio and Burdastlye approach by offering a pattern tailored to the individual.

Open wear is an EU funded project which hosts an online platform for fashion designers and educators. This platform profiles alternative models for sharing and distributing garments through co-design, DIY and open source toolkits.

The Open Garments project is the manufacturing service providers (MSP) business model enabling individual garments. This business model will enable a new form of design, production, and sales of consumer designers and configured garments, based on the provision of individualized services and sales of consumer garments. This hopes to lead to new product designs, consumer’s satisfaction, and to an improvement of the stability and competitiveness of SMEs.

The notion of desirability is a key to fashion and distributing patterns and templates by high profile designers encourages participation.

**4.2. Crowdsourcing**

The term ‘crowdsourcing’ is the act of outsourcing tasks, traditionally performed by an exployess or contractor, to an undefined, large group of people or community (a “crowd”), through an open call for participation (Howe, 2010). Humle (2011) claims the term has become overloaded and connected to a multitude of projects and online platforms used to outsource the idea and concept generation stage of the design process or even beyond by inviting the crowd to submit design work. The content submitted is then voted for and ranked within this online community who peer review and offer feedback.

‘Kickstarter’ has been branded as one of the largest online funding platforms for creative projects (film, music, art, technology, design, food and publishing) providing an alternative model to follow and fund creative projects. Participants are invited to submit new concepts with a rationale and outline for funding. The propsed project can only proceed towards development if it successfully attracts the full requested amount. The artists, designers and creators retain full ownership in exchange for alternative products, services and experiences.

An associated term to crowdsourcing is crowd-funding, a similar concept which utilizes the crowd but invites them to fund new design concepts. An example of this is Catwalk Genius an online platform for up and coming fashion designers “Fan funded collections”.

The ‘Beta Fashion’ platform has established a new model for the fashion design process - contemporary fashion created on an open platform in collaboration with designers from around the world. This provides an alternative model for fashion consumption. The platform provides an open space for designers, design students, graduates and the general public to participate by contributing new concepts which are voted for online, if successful the participant receives a share of the profits. They now have a concession within high street retailer Topshop to retail the successful products.

**5. Conclusions**

This paper provides an overview of the fast changing design landscape by positioning fashion within new ground. The Long Tail described by Anderson(2006) is beginning to take effect in the fashion industries, driven not so much by the large established global brands, but by Gen Y start-ups and digital natives who see opportunities in the niche applications that can be driven by user communities, social media, open platforms and collaboration. They are also driven by different values which are not embodied in logo culture, but by authenticity and sustainability. These are the E-Co Creators. While these may not currently challenge the hold of the globalised mass producers, they offer viable alternatives to those who seek new types of fashion experience, unique products and services.

To expand fashion into new territories, designers not only need to learn how to engage consumers through well designed garments, but they need to explore design experiences and interactions for multichannel environments too. In order to do this a range of tools, methods and applications will be required. The outcome of this PhD research is to devise a toolkit and systematic approach for delivery of E-Co-Design. This will be tried and tested through field research and concluded by illustrating a series of scenarios for possible future markets.

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