Banana fiber and its potential for socially sustainable innovation through design

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Abstract

Which key questions should design be addressing in a context of rapid environmental degradation and social inequality? Prompted by this question, the present article investigates reflective practice (Schön, 1983) and its potential for socially sustainable innovation when applied to an experience with a banana-fiber craftworker located in Brazil's southern region, in a town known for its tourist industry. Our reflections here are based on a literature review and fieldwork visits to focus on aspects arising from qualitative, participant-observational, dialogic research. Further research questions are posed in terms of exploring the socially sustainable characteristics of a product-development approach to this natural fiber and related craftwork in Brazil, aligned with empowerment-driven design practices to generate new products and services with higher levels of socially sustainable potential.

Keywords: design; craftwork; banana fiber; socially sustainable innovation

Introduction

This article is part of a broader research project investigating contemporary relationships between design and craftwork in Brazil. It started with a fieldwork visit to meet Ana Cláudia da Silva, an artisan who has been working with banana fiber, a high-sustainability material, for nearly 20 years while living on the island of São Francisco do Sul in Santa Catarina state, in São Brazil's southern region. The visit made in the first half of 2022 is described here together with aspects that emerged from the experience.

Our original purpose was to assess banana fiber in the context of developing products for a Brazilian fashion brand's footwear, bags and accessories lines after initial exploratory studies had highlighted this fiber's *sustainable innovation* potential.

Subsequent dialogue during the fieldwork visit pointed to its *socially innovative potential* too, thus prompting our investigation of more empowering approaches for design practitioners. So our fieldwork visit steered the study as a whole to reach beyond the design objective we had initially mapped.

Following Schön (1983), this paper holds a magnifying glass to the fieldwork visit itself as well as aspects emerging from reflective practice that may pose research questions based on inter-personal dialogue and co-creation. Designer-craftworker collaboration and our focus on certain nuances showed unexplored potentialities (that would have remained undetected but for dialogue), particularly in the context of collaborating with artisan Ana Cláudia. As Schön (1983) notes, researchers and professional practitioners in a complex world should focus on defining problems before trying to solve them. Schön's *reflection-in-action* concept enabled us to identify both potential for sustainable innovation that could transform possible materialities for consumer society and potential for social innovation capable of empowering individuals through their knowledge of crafts and traditions.

This qualitative exploratory study gathered data from both systematic and unsystematic literature reviews together with participant observation augmented by visual and audiovisual records, in addition to fieldwork notes and semi-structured interview. A universe of possible pathways for further investigation is posed to prioritize socially sustainable innovation potentialized by design-craftwork collaboration in Brazil.

Design: toward socially sustainable innovation

Reflection around the designer's role - given the global scenario of rapid environmental degradation and social inequality - is not a recent phenomenon. As early as the 1970s, “Maldonado strongly articulated his position in a seminal, 1970 book *La Speranza Progettuale* which was translated into English two years later as *Design, Nature and Revolution: Toward a Critical Ecology*” (Margolin, 2007, p.5). Tomás Maldonado examined the role of design in times of crisis to highlight a broader view in which the role of design practitioners would not be merely stylizing specific objects. On the relevance of *Design, Nature & Revolution*, Margolin (2007, p.5) comments:

> The impetus for his [Maldonado’s] book was the urgency he felt to counter the rapid degradation of the environment and, although he recognized that

> autonomous design action is difficult in any social system, he urged a substantial effort on the designer's part to play a role in a process of social change.

In the same decade, Victor Papanek's *Design for the Real World* (1973) looked at the designer's role in a context of scant concern for social issues and asked whether the design profession was directing its efforts towards the right problems. Cardoso (2016, p.15, our translation) explains:

> This book was intended to urge designers to get out of their air-conditioned glass offices and look around, projecting solutions for the real world that was disintegrating into hunger and misery, racial conflicts and political protests, civil wars and independence struggles, hot wars and the Cold War, a nuclear arms race that threatened to destroy everyone and everything, and an environmental crisis initially augured by the United Nations' official data.

Maldonado and Papanek had raised the urgent need to tackle the issue but no books focusing this problem were published until the 1990s (Burrall, 1991; Mackenzie, 1991; Van der Ryn & Cowan, 1996; Fry & Willis, 1996; Manzini & Vezzoli, 1998), then followed by more substantive and far-reaching discussion of the role of design in a transition towards sustainability in the 2000s (Margolin & Margolin, 2002; Kazazian, 2003; Manzini, 2008 and 2015; Thackara, 2008; McDonough & Braungart, 2009; Nelson & Stolterman, 2014, among others). These authors posited new roles for design that would address social-environmental issues while creating definitions, principles and methods for an emerging design field.

Margolin & Margolin's *A 'social model' of design: issues of practice and research* (2002) posed a method of designing based on a social-intervention model. Some progress had been made since Papanek's 1971 book focused social issues, but concepts had yet to become more actionable:

> Since *Design for the Real World* appeared, others have responded to Papanek's call and sought to develop programs of design for social need ranging from the needs of developing countries to the special needs of the aged, the poor, and the disabled. These efforts have provided evidence that an alternative to product design for the market is possible, but they have not led to a new model of social practice. Compared to the "market model," there has been little theorizing about an alternative model of product design for social need. Theory about design for the market is extremely well developed. (Margolin & Margolin, 2002, p.3)

Authors moved on to posit a framework in which a designer's agenda would be set by social needs rather than a market-based agenda. Ezio Manzini publishes *Lo sviluppo*

di prodotti sostenibili (with Carlo Vezzoli) in 1998, followed by *Design When Everybody Designs* in 2015, in which his focus is people and their context as a fruitful field for designers to work with. He introduces the Social Innovation concept, defined as "new ideas (products, services and models) that simultaneously meet social needs ... and create new social relationships or collaborations. In other words, they are innovations that are not only good for society but also enhance society's capacity to act." (Manzini, 2015, p.11)

In this respect, Thackara (2008, p.31) notes:

> Manzini discovered a fascination with events. Both young and old people are designing activities and environments in which energy and material consumption is modest and more people are used, not fewer, in the ways we take care of people, work, study, move around, find food, eat, and share equipment.

Thackara agrees with Manzini and suggests a mindset that shifts our focus from technology to people: "Our task as designers is to replace physical resources with information. Informing yourself is knowing where a resource you need to use can be found." (Thackara, 2008, p.33).

Nelson & Stolterman (2014) suggest creating a new "design wisdom" capable of creating a new "design culture". This means shifting from a problem-solving mindset to one of deliberately designing for change. On the question of cultural shift through design, see *Designing Regenerative Cultures* in which Daniel Wahl agrees that there is an obsession with solving problems in our society, which usually entails quick-fix solutions and immediate answers (Wahl, 2016). Instead we should be delving into questions more deeply before looking for solutions. "Questions can spark culturally creative conversations that transform how we see ourselves and our relationship to the world. With this in mind, everything changes instantly" (Wahl, 2016, p. 25). He believes this type of questioning could lead to a new culture:

> Win-win-win cultures ensure that life can continue to evolve towards increasing diversity, complexity, bio-productivity and resilience. We can think of the three wins of regenerative cultures as individual, collective and planetary wins created through systemic solutions that nurture social, ecological and economic health and wellbeing. (Wahl, 2016, p.27)

Based on these authors, the present study is committed to experimenting with a role for design that prioritizes socially sustainable innovation as an urgent goal in the context of the industrial model's adverse environmental impact. I do so by exploring existing potentialities, namely the social, ecological, cultural and material potential of

banana-fiber craftwork in São Francisco do Sul, a town in southern Brazilian. The following section details some of this fiber's potential for socially sustainable innovation in the context of alternative natural fibers.

Fibers and textile techniques: natural and social capital

With its renowned biodiversity, Brazil is rich in natural fibers. Unlike other countries, where more polyester is produced, Fig. 1 shows the leading role of cotton in Brazil:

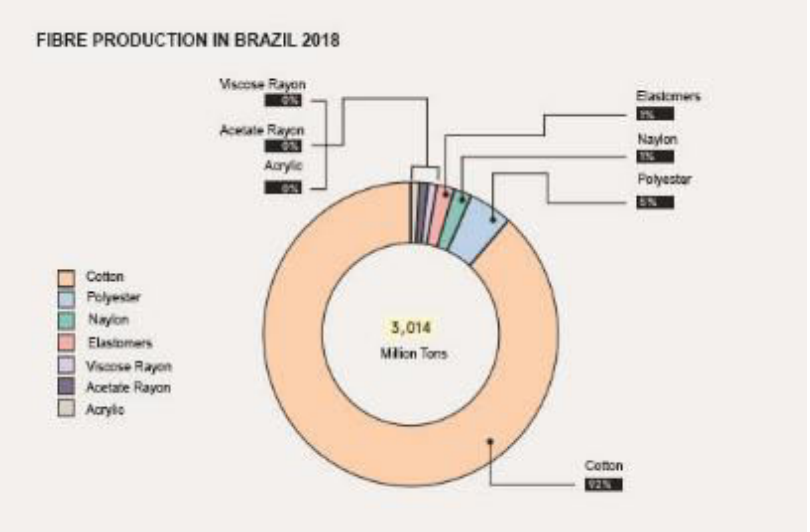

Figure 1. Brazilian fiber production - 2018. Source: "*Fios da Moda*" report (MODEFICA, FGVces, REGENERATE, 2020, our translation)

Cotton is Brazil's top crop, but the FAO's *Unlocking the Commercial Potential of Natural Fibers* (2012) report addresses opportunities for natural fibers other than cotton, especially in developing countries, and emphasizes their potential for socially sustainable innovation:

> There is considerable scope for further developing commercial opportunities for lesser-known natural products, for example fibers from developing countries. These natural fiber crops, such as sisal, are of vital importance to the livelihood and food security of farmers in some of the poorest regions of the world. As renewable raw materials, they require little if any chemical or other production inputs. At the same time, they provide employment for low-income populations in

rural areas, while contributing to food security in times of drought. (FAO, 2012, p.3)

Fig. 2 shows the geographic distribution of fibers other than cotton that are currently being produced in Brazil (jute, sisal, flax, ramie):

Figure 2: Brazil - vegetable fiber crops by state and region. Source: Secchi, Padilha and Rodrigues, 2018, our translation.

A key point to note is that these fibers exist but are not significant in terms of volume produced, as Fig.1 shows. One possible explanation for their absence is noted in the FAO's report. Despite the potential of such alternative fibers, scant research hinders development of commercially viable forms: "Increased focus by the public and private sector is needed to enhance the economically viable uses of these fibers on a global scale while benefiting the environment and contributing to income growth in developing countries." (FAO, 2012, p. 3). Finally, the report highlights the need to connect materials to techniques, in order to enhance the social fabric: "while it is necessary to expand the use of sisal and other natural fibers with industrial applications, this must go hand in hand with traditional uses of textile applications that have constituted the historical profile, which connects natural and social environments" (FAO, 2012, p. 3).

Note that research had not mentioned banana fiber despite its huge commercial and socially sustainable potential for Brazil. Data from EMBRAPA[1] (2013) show that Brazil is currently the world's fifth largest banana grower: 7.3 million tons from 503,000 hectares on 172,000 rural properties. EPAGRI[2] (2020) reported that the state of Santa Catarina alone grew 732.2 tons of bananas on 28,000 hectares of planted/harvested area, involving 3,854 growers, most of them small-scale operations. The state of Santa Catarina's output, mainly from small rural properties, accounts for 10% of Brazil's total and 90% of its banana exports (EPAGRI, 2020).

However, some 40% of Brazil's banana crop, or 13 tons per planted hectare, becomes waste, being organic matter consisting of banana-plant leaves, stalks, and pseudostem (ROJA *et al*., 2002 *apud* Pinheiro *et al*, 2018). Banana pseudostem is part of this waste but has immense potential for reuse as a raw material for design purposes. Shivashankar *et al* (2006) state that bananas are grown year-round, so the waste has high potential as a raw material for industry and the basis for products such as paper, cardboard, fabrics, clothes and even banknotes. In addition, pseudostem fiber must be processed: this material may become a pollutant if left in the crop area. Pinheiro *et al* (2018) warn that unused pseudostem may host boll weevil, a pest that may lay eggs in the banana rhizome and contaminate new plants.

As mentioned above, although banana fiber is highly sustainable, few are exploring its potential as a means of replacing more environmentally damaging fibers. For this study, we visited a small-scale grower and her craftwork production to explore these possibilities. The method used is described below.

Methodological Procedures

We arranged a fieldwork visit to meet artisan Ana Cláudia in Santa Catarina for a practical reason: to get a clearer notion of how the material could hold potential in terms of designing footwear and bags for a sustainable fashion brand, in which one of the authors acted as Head of Design. Having talked to Ana Cláudia on the phone and mentioned the importance of learning more about the whole process of extracting fiber to better envisage its potential, the designer and the firm jointly decided that a field visit would be in order. Before the fieldwork visit, having discussed its potential for systematic research too, data-gathering tools were prepared for this purpose.

A systematic study was planned in terms of collecting data through a semi-structured interview and a presentation of the banana-fiber process (from pseudostem

[1] *Empresa Brasileira de Pesquisa Agropecuária* (Brazilian Agricultural Research Company, our translation)
[2] *Empresa de Pesquisa Agropecuária e Extensão Rural de Santa Catarina* (Santa Catarina Research and Rural Extension Company, our translation)

extraction, through fiber extraction. to craftwork processing), to be recorded on video. The interview's 20 questions were divided into 5 main headings (1. the “ana banana” company, 2. production process, 3. relationship with culture and environment, 4. connections with the market and future vision).

Informal conversation and interaction during the visit prompted the researcher to take photos and shoot videos as well as logging her impressions in a field notebook for certain periods and situations. The latter forms of data collection were not initially planned but turned out to be very helpful.

The visit led to over 5 hours of video, some 300 images and a notebook containing dozens of pages of writing and sketches. All collected data (photos, videos, field notes, recordings of interview) was analyzed and systematized around insights that arose from the interview, which pointed to key opportunities for further research. Findings submitted below (next section) then emerged from this systematization, which included relating these findings to the relevant literature.

Banana fiber: potential revealed through dialogic experience

This section describes the April 2022 fieldwork visit to artisan Ana Cláudia’s home in São Francisco do Sul (SC), Brazil, which involved immersion in the whole process of producing banana fiber and possible artisanal transformations. While staying at Ana Cláudia’s home with its small banana growing area, shared experiences from her everyday life were logged in fieldwork notes in so much as this was possible.

It was only by visiting artisan Ana Cláudia's workplace that we were able to clearly perceive banana fiber's potential. Having traveled from the megacity of São Paulo (SP) to the artisan’s home, it was a surprise to find a small banana 'forest' in her backyard. She plants banana plants, collects their pseudostems (having cut off bunches), extracts fiber and subsequently uses craft techniques to process it. As the researcher's bus crossed the state line, the extent of banana growing areas in Santa Catarina was clear to see, as field notes and visual records show:

> The bus reached São Francisco. The closer I got to the island, the more banana plants I noticed along the roadside. Bananas were growing not only in front of rural properties but in backyards and along the seashore too. I realized that banana plants are really part of the area's natural setting. (Field notes, the author)

Figure 3: Bananas growing in roadside backyard, Santa Catarina. Source: author's archive

Artisan Ana Cláudia is well aware of her banana crop's sustainable potential, as she stated in the interview: "A banana tree yields a single bunch. If left standing, it will rot. If the stems are left behind, the stem water becomes a host for pests. So I make good use of something that could be seen as just a nuisance." (verbal information, 2022)

An important aspect of a designer's role may be finding ways of making use of material that would otherwise be discarded and possibly cause pollution, despite its great potential as a sustainable material. As participant-observational research with artisan Ana Cláudia showed, this "leftover" stem's fiber may be processed into 5 different raw materials named silk [*seda*]; lace [*renda*], 'cape' [*capa*] 'steak' [*filé*] and 'tenderloin' [*contra-filé*] - each with its own characteristics and possible applications. After collecting stems, the artisan extracts five types of fiber and hangs them out to dry naturally for a few days (Fig. 4).

Figure 4: Ana Cláudia and material drying. Source: author's archive

Techniques such as hand weaving, crochet and macramé are applied to the fiber, depending on the final product desired. Prior to the visit, the researcher knew of only one possible use for this material: handloom weaving to make fabric that is highly suitable for footwear and accessories (Fig. 5).

Figure 5: Making fabric on the handloom (right) and final fabric (left). Source: author's archive

During the visit, the artisan commented that the loom is suitable for only one of the raw materials (lace), so she demonstrated possible ways of applying others (silk, cape, 'steak' and 'tenderloin'). Fig. 6 shows 'steak' being used to make a crocheted sousplat piece:

Figure 6: Crocheted sousplat made from banana fiber. Source: author's archive

Seeing this piece I was amazed by this technique's potential. Schön (2000) notes that extremely valuable surprises may arise during the *knowing-in-action* process, thus prompting a designer to adapt and restructure previously defined action strategies, and immediately devise experiments to test emerging comprehension of the creative process in action. Watching the artisan weaving material, an idea occurred to me: "Why not try making a bag using these same crochet stitches?" This process was a very rich and exciting experience for the artisan since she realized that a technique that had already been mastered could be used in a different way that she had not envisaged. From the researcher's sketches and the artisan's technique, a new product was conceived (Fig. 7):

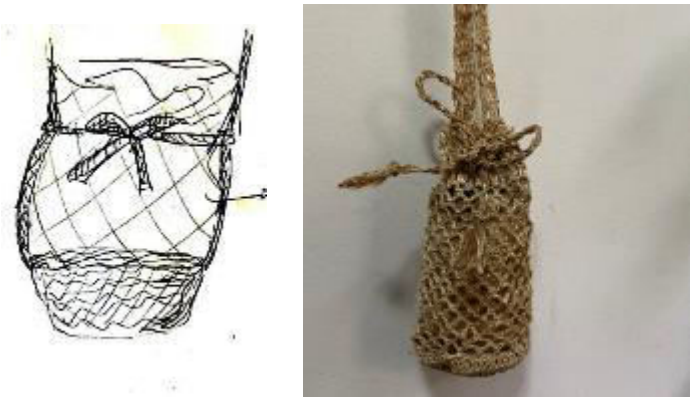

Figure 7: Bag sketched in the author's field notes (left) and final prototype made by the artisan (right). Source: author

As an unexpected outcome of artisan-designer dialogue, co-creating this bag was an important milestone in terms of discovering inherent local potentialities that had remained unseen, thus corroborating the potential of Schön's *reflection-in-action* concept (1983). This situation was possible because of the 'dialogic designing' concept that Cipolla and Bartholo (2014) saw as an encounter fostering dialogue in which *empathy* is prioritized over *inclusion*, as in Martin Buber's distinction between *It* and *Thou* relationships.

> When I interact with "It," I always confront something I know, that I know is an "It" and about which I might wish to know more through my actions of knowledge. When I relate to a "Thou," I always have before me a person whom I do not know entirely and whom I will never know unless I listen to what his presence tells me and lets me know of him. (Cipolla and Bartholo, 2014, p.90)

Given in-depth knowledge of artisan Ana Claudia's process, she could be situated as a "Thou" before making any further design suggestions. This positive assessment of the outcome of our collaboration is based on needs and desires that the artisan expressed during my field visit and on the "participant-reflective -observation" process logged in my field notebook:

> By being here, I can show the artisan a whole world of possibilities that we could do with her material and techniques. While looking at the material, I suggest new applications and see her eyes shine with excitement over these new opportunities. Although frustrated because this kind of dialogue is seldom part of her everyday life, she says she would like to explore as many possibilities as we can during my fieldwork visit. (The author, 2022)

With an interesting path to pursue in terms of socially sustainable innovation that explores materials and techniques inherent to new shapes and functions discovered during *reflection-in action* (Schön, 1983), our findings subsequent to the dialogic encounter clearly showed 'gaps' in terms of empowering the artisan and her craftwork process. While on research leave after the visit, we found the theoretical foundation for empowerment, thus helping me see the experience from a fresh perspective by practicing Schön's (1983) *reflection-on-action* concept: reflecting on an event *after* it has happened in order to think about what needs changing in the future.

Empowerment: realizing the potential for social innovation

In order to explain 'empowerment' applied to design, this concept posed by Leitão & Marchand (2018) is highlighted in juxtaposition with my fieldwork visit with artisan Ana Cláudia. Kabeer (2001 *apud* Leitão & Marchand, 2018) defines empowerment as the expansion in people's ability to make strategic life choices in a context where this ability was previously denied to them. The latter authors transposed Kabeer's (2001) empowerment concept - originally applied to women's condition of disempowerment – to the universe of a Canadian indigenous community in the context of craftwork:

> Since Kabeer's work focuses women's empowerment in South Asia, the expression "a context where this ability was denied to them" refers to the disempowerment of women in certain societies. However, this expression may perfectly well refer to the consequences of colonialism, modernity and development for indigenous peoples and communities. (Leitão & Marchand, 2018, p.2)

Here, this transposed concept is seen as applicable to banana-fiber craftwork in Brazil too. In the context of the contemporary design-craft relationship, globalization and industrialization have disempowered artisans: their handicraft has been replaced by machinery and work has lost its value. Kubrusly & Imbroisi (2011) state that handicraft played a leading role in society until the 18th century because it was the only way of making or building anything people needed. Artisans' tools and skills improving over time afforded them power as well as political and social representation. The industrial revolution drove invention and new machines, so Western civilization's structures were transformed and craftwork too, no longer being the only means of making objects. This process of disempowering craftsmanship may be seen in examples found during research leave: in the case of Impruneta (Italy), traditional artisans had difficulty finding outlets due to competition from imported ceramics (Alonso & Bressan, 2014); the case of bobbin lace embroidery (Portugal) led to the same situation of competing against mechanized embroidery (Bieger & Carvalho, 2015); in the case of Haiti (Hammond, 2020) and India (Guerrieri, Comai & Fugini, 2021), factories took over to make cheap clothes for the West, so a mostly artisan workforce was largely replaced by factory workers.

Actually artisan Ana Cláudia raised the issue of empowerment (verbal information, 2022). Asked what motivated her working with fiber, she explains how her own life was empowered through craftwork:

> My main motivation [to start using banana fiber for craftwork] was a matter of empowerment. I needed to find myself as a person and a woman. It was a difficult time in my life and the banana tree was there for me so I could be reborn. I had been in a very bad place. The banana tree, being so strong, with all its potassium and magnesium, raised me up.

Further describing the concept, Leitão & Marchand (2018) explain empowerment as characterized by three principles: 1. agency, 2. resources and 3. achievements. The first of them, *agency*, has to do with the ability to define one's goals and act upon them (with meaning and motivation) guided by the challenges that are essential for a continuous self-challenging attitude in life. As the interviewer shows, this principle was naturally happening in Ana Cláudia's practice:

> A banana tree is always a huge challenge. You have to be constantly discovering, rediscovering, exploring new properties. It's a process of personal growth, [in which I say to myself:] "you can do it, yes you can".

The second principle: *resources* that "shape the conditions from which choices are made" (Leitão & Marchand, 2018, p.5). This entails material resources but also social and human resources capable of enhancing the ability of making choices (Leitão & Marchand, 2018). *Agency* and *resources* together constitute *capabilities*, which is the potential that people have for living the lives they want.

Dialogue with Ana clearly showed that there is still room to further develop her *resources* in order to enhance *capabilities*, especially when she talks of lack of continuous demand: "A lot of the companies that I work with offer seasonal projects: this is a big problem. When I am thinking I'm going to continue, the collection is ended and they don't buy anymore …" (Ana Cláudia, 2022). During the interview, she explained that the problem of lacking continuous demand means that she is unable to make long-term investments such as hiring a team of people to help with extracting or weaving tasks (human resources). Without their help, the next time she gets an order she will have trouble delivering it in time (impact on financial resources).

Being unable to hire a team prevents her from living the life she wants to live; in other words it undermines her ability to translate *capabilities* into actions. Asked about her dream, she said that it was "to help empower other women through the banana-fiber process, the same way it did for me" (Ana Cláudia, verbal information, 2022). Later, when asked to suggest a newspaper headline featuring her story, she said: "I can't see myself standing alone in a headline. I can see one saying 'All women can'.." (Ana Cláudia, verbal information, 2022).

Finally, the last principle posited by Leitão & Marchand (2018) refers to *achievements*, meaning outcomes from choices, and *resources* and *agency* being transformed into tangible results. Frustrated by the low level of demand and her consequent inability to grow her business and dream, Ana Cláudia's sense of *achievement* had been impaired. This study therefore demonstrated the great potential of reflecting on these gaps or lacunae.

To complement the reach of the term *empowerment*, Certeau (1998) sees everyday practices in terms of distinguishing tactical from strategic action. *Tactics* are actions that may be calculated but are determined by the absence of a proper place, hence the subject being deprived of autonomy and acting in a context imposed from the outside – a place in which they can neither be in a position to predict nor seize occasions - depending on the latter they may be "unable to foresee benefits, increase ownership and predict exits." (p. 100). On the other hand, for Certeau, the subject conquers a *strategic position* when they acquire will and power, being in their own place from which they can manage relations with the outside, no longer only reacting to events but also planning and envisaging the future, which may be considered one of the most important outcomes of the empowerment process. For artisan Ana Cláudia, acting strategically in her own life means being able to empower other women through banana fiber in a process that entails looking at *resources*, *capabilities* and *achievements*.

Figure 8 shows the abovementioned empowerment principles and Figure 9's dashed boxes highlight principles that, as the analysis has shown, appeared to be lacking when comparing theory with the artisan's reality.

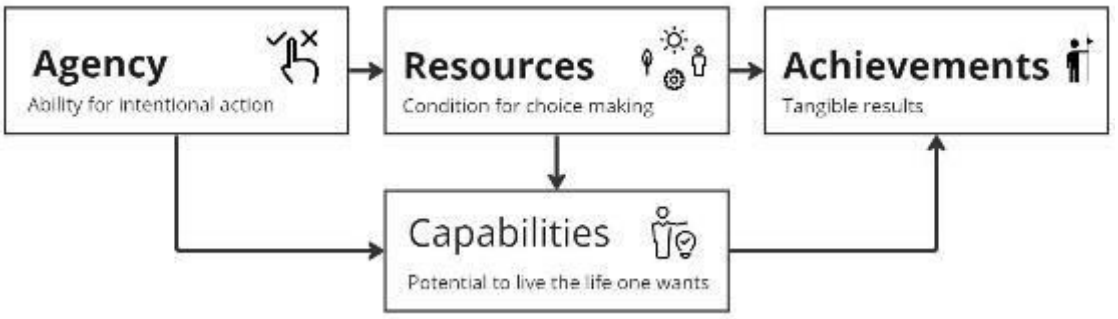

Figure 8: Empowerment principles. Source: my own elaboration based on Kabeer (2001) *apud* Leitão & Marchand (2018)

Figure 9: Empowerment principles - gaps in the case of artisan Ana Cláudia. Source: based on literature review and my participatory-observational research

If these principles were linked to a simple creation-production chain, it would be easier to visualize the missing links causing these gaps. Lacking constant demand from the market undermines her inability to create conditions for making decisions (building *resources*), thus consequently affecting *capabilities* and *achievements* (Fig. 10).

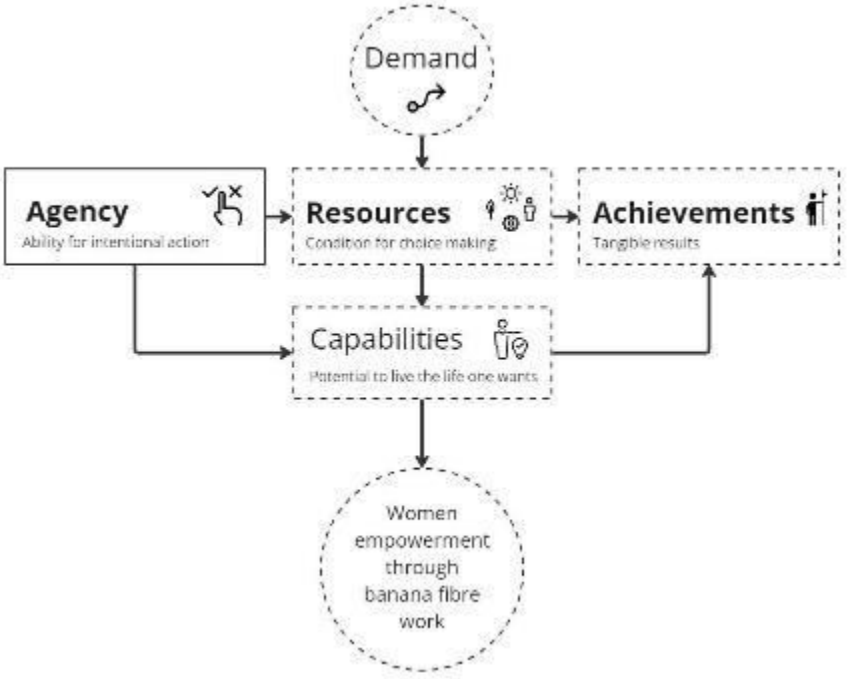

Figure 10: Detailed empowerment principle gaps in the case of the artisan Ana Cláudia. Source: based on literature review and my participatory-observational research

Creating this flow of demand could enhance the artisan's empowerment, since it would enable her to build a team (human resources) and enhance her productivity (material and financial resources), thus finally being able to make the choices she wants for her life (capability) and translate them into material resources (achievement) with a strategic approach. Acting in this respect is part of a designer's role.

Possible pathways to enhance socially sustainable innovation via design-supported empowerment

How might we grow constant demand for Ana Cláudia's products?

How might we build a replicable productive system that could be executed by a team?

How might we enable Ana Cláudia to empower other artisans?

These questions that emerged from the fieldwork visit and dialogue with artisan Ana Cláudia are situated on different spectrums of a system, so they require different actions to ensure their feasibility. The *enabling solutions* notion - defined by Manzini (2015) as "product-service systems providing cognitive, technical, and organizational instruments that increase people's capacities to achieve a result they value" - offers guidance in attempting to address answers.

In terms of increasing demand, one possible pathway is holding *collaborative encounters*, a term coined by Manzini (2015): "collaboration takes place when people encounter each other and exchange something (time, care, experiences, expertise, etc.) in order to receive a benefit; in other words, they create a shared value" (p.93). This article shows the potential for collaborative encounters between artisan and small brands and/or designers willing to experiment with materials and techniques to build shared material value in terms of desirable new products that drive socially sustainable innovation. For brands and designers, this poses an opportunity to work with a special sustainable material. For artisans, there is an opportunity to drive demand by using these co-created design products. Design has an important role to play in fostering and designing these encounters.

Assuming that demand is no longer a problem, a designer could also act by building a replicable productive system to ensure demand and supplies. A detailed analysis of the current production process aligned with mapping materials that might be transformed may lead to a structured production and design system. Having done so, ways of replicating the latter to empower other artisans may be envisaged, thus

designing a horizontal learning network for artisans and connections with banana growers.

In more general terms, this study has also noted the broader research questions related to the designer's role in bringing about social change:

How might designers better articulate sustainable potential with social change within the study of natural fibers and their craft knowledge and communities?

How might designers create more empowering forms of relationships with artisans?

How might we foster more socially aware and sustainable products by designing empowering relationships between designers and artisans?

With which other fields could design collaborate in order to better understand social-environmental problems and act systemically?

Conclusion

Although exploratory, this article has identified the potential for socially sustainable innovation in Brazil's southern region, specifically in the context of sustainable natural fibers that have yet to be explored, namely banana fiber, as well as traditional techniques used to transform this fiber into different product designs that could reach new niche markets. It has shown that a role for design could be based on collaborative encounters and dialogue in response to Maldonado's (1970) and Papanek's (1971) urgent calls for designers to play a role in a process of social change, thus materializing proposals from Thackara (2008) and Manzini (2015) to innovate by recombining existing natural resources and traditions.

We have also sought to show how reflective -practice in design (Schön, 1983) may drill below surface-level approaches to pose more important research questions capable of mobilizing design to tackle society's most pressing problems. As such, this open-ended text appreciates the power of brand-new questioning as an outcome in itself while calling for further research and experimentation to validate the hypotheses and pathways posited here.

Finally, this study suggests that designers should act intentionally in terms of designing the "*how"* of an empowered relationship happening, particularly between design and craftwork. While writing the present article, we found many analyses of this relationship with specific instances and case studies from around the world.

Replicable methods of collaborating, co-creating and empowering the design-craftwork relationship, may open up a wide range of opportunities that could, in the long term, provide society with more responsibly made products, as well as more empowered product development and production relationships. These are the goals of the broader research instigated by this experience.

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