

Title: Rooted in Place: Crafting Sustainability Through Locally- Embedded Design Education

Keywords: Sustainable Educational Practices; Place- based Approaches; Regional Craftsmanship; Material-led Pedagogies; Cultural Heritage

Introduction

In the Anthropocene epoch, characterised by significant ecological changes driven by human activities (Crutzen, 2006), the need to rethink and restructure education, particularly within the design disciplines, has become increasingly urgent. The Anthropocene is not just a geological era but also a call to action—a recognition that the way we live, produce, and educate must change to ensure a sustainable future. This paper proposes that material-led low residency studies offer a promising paradigm for sustainable educational practices, integrating ecological, social, and economic dimensions into a holistic learning approach.

The challenge lies in the paradox of our current practices: we utilise elements from nature to sustain our civilisation, yet these same processes contribute to environmental degradation (Bak-Andersen, 2018). This contradiction underscores an urgent need for a transformative approach to the processes and methods by which we produce fashion. A re-evaluation of our manufacturing practices is imperative to mitigate their adverse environmental impacts and to develop more sustainable modes of production. This paradox is especially evident in industries like fashion, where despite significant advancements in technology and increased awareness of sustainability issues, the environmental impact remains extremely high (Lehmann et al., 2019). The Pulse of Fashion 2019 Update highlights that fashion companies are not implementing sustainable solutions quickly enough to counterbalance the industry's rapid growth, suggesting that the problem is systemic rather than isolated to specific practices.

This paper addresses the need for alternative educational models that embed sustainability into the core of the learning process. It explores how place-based approaches and material-led pedagogies, which draw on local knowledge and resources, can serve as powerful tools for fostering sustainability in design education. By integrating Indigenous and Local Ecological Knowledge (ILEK) into the curriculum, educators can create immersive, context-specific learning experiences that not only reduce the environmental impact of long-distance material transport but also foster a deep appreciation for local ecosystems and cultural heritage (Mellegård & Wiebren, 2020).

The focus of this research is to illustrate how these approaches can contribute to more equitable, resilient, and sustainable educational practices that transcend geographical boundaries. Through case studies and best practices, this paper aims to provide a comprehensive understanding of how material-led, place-based education can be a transformative force in the design disciplines.

Methodology

The methodology of this paper focuses on exploring the potential of place-based approaches and material-led pedagogies to enhance design education and foster global collaboration. The research employs a combination of a literature review, case studies, and thematic analysis to provide a nuanced understanding of how these approaches can transform design education and promote sustainability.

Rationale for Method Selection

The selection of methods for this research was driven by the need to capture the complexity and context-specific nature of place-based, material-led design education. Case studies were chosen because they allow for an exploration of examples that provide an earlier example of how to implement these changes or circumstances that can accommodate this type of change to locally-

embedded design education. The literature review was used to gain insights from existing literature, curricula, project reports, and institutional policies, while thematic analysis helped identify key themes and patterns across different case studies.

Challenges and Limitations

Implementing material-led and place-based approaches in design education comes with several challenges. These include institutional resistance to change, resource constraints, and the difficulty of scaling these approaches to larger educational settings. Additionally, the integration of local materials and knowledge into the curriculum may require significant adjustments to existing teaching practices and resources. However, these challenges also present opportunities for innovation and collaboration, particularly in low residency programs where students are embedded in their local communities.

Key findings

Material-led Pedagogies

Over the past ten years, different versions of a material-focused design approach have been gradually developed by various design professionals and researchers, a process in which the material plays a fundamental role from the beginning of the design process. This process is described by most researchers involved as material based, material-driven or material led (Karana et al. 2015, 35-54; Van Bezoooyen 2013, 277-286; Hansen 2010; Oxman 2010, Bak-Andersen, 2018:12). Material-led pedagogies represent a shift in design education, where the material is not merely a medium but a co-participant in the creative process. This approach aligns with the theoretical framework of New Materialism, which posits that matter has agency and plays a crucial role in shaping human actions and decisions. As Mette Bak-Andersen (2018) highlights, material-driven design processes start with the material itself—its properties, potential, and limitations. The designer's role is to explore, manipulate, and understand the material, allowing it to inform the design process from the very beginning. Karana et al describe how 'over time, the designer who takes a MDD (Material Driven Design) approach is expected to become master of a given material: he/she will know how the material behaves under different circumstances or how it reacts when subjected to different making techniques or manufacturing processes' (Karana et al. 2015, 35-54).

This approach contrasts sharply with traditional design methodologies, where materials are often selected after the design concept has been fully developed. In a material-led process, the exploration of materials becomes a source of inspiration and innovation. Designers are encouraged to engage in hands-on experimentation, where the physical properties of the material influence both the form and function of the final product. This iterative process, where design and material interact dynamically, is central to the philosophy of material-led pedagogies. This approach is similar to the one taken in the MA Fashion Artefact, a course that exists within the Craft Programme, in the School of Design and Technology (SDT) at London College of Fashion. I teach the course, along with my colleague the footwear designer Georgina Goodman and the course leader and jeweller Naomi Filmer, to a cohort of mostly international students that come from a diverse range of disciplinary backgrounds, such as jewellery, product design, and fashion design among others. Craft is at the core of this designer-maker course, and many MA projects tend to be material-led or material-based. Settled in a studio environment, students share a studio space and have access to a series of workshops (jewellery, leatherwork, and mould making among others) that sharing community is central to the course's essence. Students are often invited to explore, learn and become skilled in specific materials and techniques. As pointed out by Richard Sennet, in the traditional workshop environment 'craft arises out of face-to-face interactions sustained over extended periods of time in the workshop space, where neophytes can watch and imitate expert craftsmen, receive instruction and correction, and learn by doing' (Sennett, 2008).

This kind of learning, what educational psychologists call 'situated cognition', 'occurs when the learner is embedded within a community of practice, such as a workshop, where the embodied practices of

the artisan are visible, and learning is based on observation and imitation' (Fowkes, 2020). This process permeates the studio-workshop culture through the shared environment between technical staff and students and also between cohorts of first and second-year students. There is also an understanding of materials and a specialisation of specific materials and technique that happens over the course of the 15 months study.

Therefore, when translating this context to an online low residency program, the shared studio space is not readily available online - meaning less cross-contamination of ideas, techniques and material knowledge happens. I believe that environment may be replaced by local communities and local expertise that students can connect with if staying in their own local environments, supported by the curriculum and low residency study pedagogies.

A material driven design process can also help students to develop that early understanding of how to approach local materials and develop designs with that knowledge and understanding. In the article 'When Matter Leads to Form: Material Driven Design for Sustainability' (2018), Bak- Andersen outlines a three-step process for one of her project analysis on Material Driven Design (MDD):

Step one involves comprehensive material research, including evaluating circularity, sourcing, composition, historical and anthropological context, value assessment, and hands-on exploration.

Step two focuses on material manipulation and design, where materials are manipulated to enhance strengths, address weaknesses, and engage in 3D sketching.

Step three is centred on product development, emphasising the integration of form and function and culminating in the presentation of the prototype.

Material-led pedagogies represent a significant shift in design education, emphasising the active role of materials as co-creators in the design process. This approach, rooted in New Materialism, not only redefines the relationship between designer and material but also incorporates a strong sense of place, recognising that materials are deeply embedded within their local contexts. Bak-Andersen's Material Driven Design (MDD) process exemplifies how understanding the origins, properties, and cultural significance of materials can lead to more sustainable and innovative design practices. By integrating place-based considerations, this approach encourages designers to explore and manipulate materials with an awareness of their ecological and cultural contexts, thereby fostering a design process that is not only materially informed but also attuned to the local environment. This focus on the interplay between material and place enriches the educational experience, guiding designers towards creating solutions that are sustainable, contextually relevant, and deeply connected to the communities and environments from which they arise.

Sustainable Educational Practices

Sustainable educational practices are those that not only teach sustainability as a concept but also embody it in the methods and processes of education itself. This means creating curricula that integrate ecological, social, and economic sustainability into every aspect of the learning experience. In the context of design education, this could involve using sustainable materials, promoting ethical manufacturing practices, and encouraging students to think critically about the environmental and social impact of their work.

As Kim and Lee (2022) emphasise in their study, 'Sustainable fashion design education aims to educate students on how to explore fundamental values and possibilities of sustainable development, recognise social issues, and find solutions to problems, beyond simply educating how to implement sustainable fashion design.' They argue that a well-rounded education on sustainability holds future-oriented value by fostering a shift in perception among students, who will go on to become the design

professionals of tomorrow, enhancing both their design skills and their understanding of sustainable practices.

The literature increasingly acknowledges that the integration of sustainability into education demands more than superficial adjustments to existing curricula (Junestrand et al., 2024) and that educators have been proactive in integrating ESD initiatives into HE fashion education in the last decade (Agarwal, 2020; Armstrong and LeHew, 2013; Armstrong et al., 2016; Baytar and Ashdown, 2014; Jestratijevic and Hillery, 2023). There is a pressing need for a paradigm shift in educational structures and delivery methods. This shift entails moving away from standardised approaches and adopting models that are context-specific, responsive to local needs, and rooted in the realities of the communities they aim to serve.

The importance of transformative learning in sustainable fashion education is highlighted by the work conducted at the Fashion Business School (FBS) at the London College of Fashion (LCF). According to the study completed by Junestrand et al. (2024), FBS has implemented a variety of Education for Sustainable Development (ESD) initiatives that exemplify sustainable pedagogy.

These initiatives integrate ecological design principles and aim to instil a deep understanding of sustainability among students, who are seen as future "agents of change" in the fashion industry.

One significant approach mentioned in the document is the use of Burns et al.'s (2019) Model of Sustainable Pedagogy, which emphasises content co-creation, diverse perspectives, participatory processes, and context-specific learning. This model is employed in multiple case studies within the FBS, which illustrate how sustainability can be embedded into higher education curricula to achieve transformative learning outcomes.

The FBS's commitment to ESD is not only evident in their curriculum but also in their broader strategic goals, which align with global sustainability frameworks such as the United Nations Sustainable Development Goals (SDGs). This alignment ensures that the education provided is not just theoretical but also practical, equipping students with the skills and mindsets needed to drive sustainable innovation in the fashion industry (Junestrand, Alexander and Sheldon, 2024).

Place-Based Education Approaches

Place-Based Education (PBE) is an umbrella term for pedagogical practices that prioritise experiential, community-based, and contextual/ecological learning to cultivate greater connectivity to local contexts, cultures, and environments (Gruenewald, 2003; Smith, 2002; Sobel, 2004; Orr, 2013). It incorporates the meanings and the experiences of place in teaching and learning, which can extend beyond the walls of the school (Yemini et al., 2023).

Place-based education is a pedagogical approach that emphasises the importance of local context in the learning process. It involves teaching students about their local environment, culture, and community, and encouraging them to apply this knowledge in their work. Place-based approaches have been shown to foster a deeper connection to the material being studied, as well as a greater sense of responsibility towards the local environment and community.

PBE regained significant attention with the early 2020 outbreak of the COVID-19 pandemic, which caused large scale school closures globally and forced the rapid adoption of alternative learning environments, including teaching and learning outdoors, and learning from home (Yemini et al., 2023).

In the context of design education, place-based approaches can involve using local materials, collaborating with local artisans, and studying local craftsmanship traditions. By doing so, students not only learn valuable skills but also develop a greater appreciation for the cultural and environmental

significance of the materials and techniques they are working with. This approach also supports the preservation of cultural heritage, as students learn to value and maintain traditional practices.

In reviewing literature on place-based education (PBE), the following relevant points can be gleaned:

The review highlights that PBE is often implemented in various subjects, particularly environmental studies and science, but its application in other areas like arts, literacy, and social studies remains limited (Yimin et al., 2023). The literature also points out that while PBE is often linked to improving students' environmental awareness, its broader impacts, such as fostering social justice, community engagement, and decolonisation, are equally significant but less frequently explored.

One key framework for understanding PBE is Ardoin et al.'s (2012) model, which categorises PBE into four dimensions: biophysical, psychological, socio-cultural, and political-economic. These dimensions provide a comprehensive view of how place influences education, highlighting that the concept of place goes beyond mere geography, encompassing cultural, social, and economic factors.

Moreover, the review identifies challenges in implementing PBE, including the need for extensive teacher preparation, resource allocation, and community involvement. Despite these challenges, PBE offers a promising approach to education that develops connections between students and their local environments, thereby promoting sustainable practices and community well-being.

In the context of design education, incorporating PBE could mean engaging students in projects that utilise local materials, collaborate with local artisans, and explore traditional craftsmanship. This not only enriches students' educational experiences but also supports the preservation of cultural heritage and promotes sustainable design practices that are deeply rooted in the local context.

The findings of this research highlight the transformative potential of material-led and place-based approaches in design education. The case studies analysed in this paper demonstrate how these approaches can intensify students' connection to local materials and craftsmanship, while also promoting sustainability and cultural preservation.

Case Study 1: Artefact & Local Identities

In 2018, the MA Fashion Artefact course leader, Dai Rees, curated an exhibition titled 'Why-What-Who' as part of the Venice Biennale of Architecture's parallel program Design.Ve – Biennial Design Walks through Venice. The exhibition showcased a wide array of works from MA Fashion Artefact alumni, spanning a decade of creative exploration. The exhibition went on to tour China and Argentina. One of the standout projects from the touring exhibition was a commissioned project, a collaborative effort between course alumni, Daniel Ramos Obregón and the Argentinian designer Juliana García Bello. Their work, featured in the exhibition at the Museo Nacional de Arte Decorativo in Buenos Aires, Argentina, in 2019, served as a profound exploration of cultural identity through speculative objects, weaving a narrative that connected regional craftsmanship and cultural heritage.

Cross-Cultural Dialogue Through Design: The Colombian Poporo and Argentinian Mate

Fig.1 Photo by Gonzalo Valenzuela, Speculative objects, Daniel Ramos Óbregon in collaboration with Juliana García Bello for 'Why-What-Who' exhibition at the Museo Decorativo de Buenos Aires, Argentina (2018) Courtesy of the artists

Obregón and Bello's collaboration highlighted the power of material-led design to foster cross-cultural understanding and dialogue. Their project focused on two culturally significant objects: the Colombian Poporo and the Argentinian Mate. The Poporo, an indigenous object associated with the traditions of

the Kogi people of Colombia, serves as a symbol of maturity and status. The Mate, a traditional vessel used in Argentina to drink the herbal tea known as mate, is a cultural cornerstone that reflects the country's social rituals and communal identity. By choosing these objects, the designers sought to explore the relationships between their cultural heritages while also addressing the specific regional craftsmanship associated with these artefacts.

Through this cross-cultural lens, the project illustrated the commonalities and differences between the Poporo and the Mate. The designers created speculative hybrid objects that merged elements of both, encouraging an open dialogue about the cultural significance of these artefacts in their respective contexts. This approach allowed them to critically engage with their cultural identities, questioning how material culture and craftsmanship are deeply tied to notions of place and belonging.

Locally Embedded Approaches: The Role of Place-Based Practices

The success of Obregón and Bello's collaboration was rooted in their locally embedded approach, which was informed by place-based practices and a deep respect for local knowledge and materials. Both designers conducted extensive research within their own communities, focusing on the materials and techniques traditionally used to craft the 'Poporo' and the 'Mate'. This emphasis on local research and materiality was integral to the project, as it allowed the designers to ground their work in the specific cultural and environmental contexts from which these objects originated.

Obregón and Bello's project also underscored the importance of local materials in design education. For instance, they utilised the totumos gourd, a natural material traditionally used in the making of the Poporo (usually in combination with gold), to craft their hybrid artefacts. This use of locally sourced materials not only reinforced the cultural significance of the objects but also highlighted the environmental sustainability of working within local ecosystems. The project demonstrated how integrating local materials into design education fosters a deeper understanding of place and identity, which is crucial for sustainable practice.

Designing Across Distances: Collaborative Innovation Online

The collaborative nature of Obregón and Bello's project required the designers to collaborate online. Despite the challenges posed by remote collaboration, they managed to maintain a strong connection to their respective cultural and geographical contexts. Their ability to share the design process online while focusing on local research and materials demonstrated the potential of digital platforms to support collaborative innovation in a low-residency educational setting.

This experience laid the groundwork for the development of the low-residency Fashion Artefact course, illustrating how digital tools can facilitate cross-cultural dialogue and collaboration even when physical travel is restricted. By utilising online communication tools, the designers were able to continue their exploration of local identities and materials, proving that a locally embedded approach to design education can be sustained, even in a virtual environment.

Implications for Design Education and Sustainability

Obregón and Bello's project represents a precedent that exemplifies the broader potential of material-led place-based design practices to foster critical dialogue about cultural identity and sustainability. By focusing on local materials and practices, they were able to create artefacts that not only reflected their personal and cultural histories but also contributed to the preservation and revitalisation of traditional craftsmanship.

Their work highlights the importance of integrating local knowledge and materials into design education as a means of fostering a sense of place and identity.

Moreover, the project underscores the role of place-based practices in promoting sustainability. By working within their local ecosystems and engaging with traditional craftsmanship, Obregón and Bello

were able to create objects that were both environmentally and culturally sustainable. This approach aligns with the principles of locally embedded design education, which emphasises the importance of working within the specific contexts of place and community to foster sustainable practices.

Conclusion

The collaboration between Daniel Ramos Obregón and Juliana García Bello serves as a compelling case study of how material-led design education can foster cross-cultural understanding and promote sustainable practices. Through their exploration of the Poporo and Mate, the designers were able to engage in a critical dialogue about cultural identity and regional craftsmanship, highlighting the importance of local materials and knowledge in design education. Their project also demonstrated the potential of digital platforms to support collaborative innovation in a low-residency setting, paving the way for the development of new models of design education that are both locally embedded and globally connected.

Case Study 2: Design Across Geographies

This case study investigates how the essence of regional craftsmanship, deeply ingrained in the original MA Fashion Artefact course, can be preserved and enhanced in a low-residency setting. Central to this exploration is the symbiotic relationship between the creation process and its geographical context, particularly the significance of why an artefact is crafted in a manner consistent with its place of origin. The case study focuses on the academic year 2023-24, highlighting two students, Shiyu Gong and Ruolang Zeng, who exemplified the potential of place-based approaches through their exploration of their own cultural heritage within the current model of the MA Fashion Artefact.

Shiyu Gong: Fusion of Bamboo Craftsmanship and Luxury Design

Shiyu Gong's project serves as a prime example of how regional craftsmanship can be extended and revitalised through innovation. Gong comes from a third-generation family business in bamboo crafts, a legacy embedded in his cultural heritage. For his project, Gong aimed to merge this family tradition with his burgeoning interest in luxury leather goods, an ambition that later earned him recognition at the Bilbao International Art and Fashion Competition (BIAFF) IN 2024.

To bring this vision to life, Gong undertook a short residency in the Cai Hongguang Studio (Dongyang City, Zhejiang Province, China), working closely with local bamboo expert Cai Hongguang, a bamboo weaver and craftswoman, who had learned bamboo weaving skills at the age of 16 under the Chinese Arts and Crafts Master He Fuli. This hands-on experience allowed him to gain a deep understanding of bamboo's properties, its flexibility, and its potential applications in contemporary design. Gong's project was not merely an extension of his family's craftsmanship tradition but a reinvention of it. By integrating bamboo weaving techniques with leather craftsmanship, Gong produced artefacts that married old and new, local and global. His project underscores the value of place-based design education in fostering innovation while maintaining strong ties to cultural roots.

Fig.2 'The Hypocrite' (2024), Shiyu Gong (image courtesy of the artist)

The geographical context of his work played a crucial role in the development of Gong's project. The ability to work with local artisans and access regionally specific materials was fundamental to his creative process. By staying connected to the geographical origins of bamboo craftsmanship, Gong was able to innovate in a way that was both respectful of tradition and forward-thinking.

This fusion of regional craftsmanship with modern design practices exemplifies the potential of place-based education to preserve cultural heritage while contributing to the evolution of traditional crafts.

Ruolang Zeng: Jade and Identity

Ruolang Zeng's project focused on the history of the traditional jade seal, a combination of material and artefact that holds profound symbolic and cultural significance in Chinese history. In this project jade is explored as a symbol of power. Zeng's exploration of this material was deeply personal, as she sought to reflect contemporary dynamic power relations and the broader cultural meanings associated with jade.

To realise her project, Zeng studied traditional methods of jade carving and replaced them with Chinese lacquer work. This material-led approach enabled her to create a series of tools that not only highlighted a jade-like surface but also symbolised the fusion of tradition with personal artistic approach. Her work delved into the rich cultural history of jade, while also exploring new ways of expressing power relations through materiality.

Similar to Gong, Zeng's work underscored the importance of place-based education. By engaging with traditional methods and materials, she was able to preserve and revitalise ancient crafts. Zeng's project illustrates how place-based education fosters a deep connection to cultural heritage while simultaneously encouraging students to innovate and push the boundaries of traditional practices.

Fig.3 'Jade Green, Stamp Red' (2024), Ruolang Zeng (image courtesy of the artist)
Reflection on Place-Based Practice

Both Gong and Zeng's projects demonstrate the critical importance of place-based practice in design education by being a precedent with similar concerns. It is crucial to point out that these projects were not completed within a place-based programme but by engaging deeply with geographically bound materials and expertise, they were able to preserve traditional knowledge while contributing to the evolution of their respective crafts. Their projects exemplify how place-based education can allow students to not only develop their technical skills but also deepen connections to their own cultural heritage. Often, in their project, the students had to order materials from their home countries to be delivered to the United Kingdom, which was far from ideal.

Moreover, this approach has broader implications for sustainability. By working with local materials and learning regionally specific techniques, students are encouraged to consider the ecological impact of their work. This form of education fosters environmental stewardship by emphasising the importance of sustainable practices that are rooted in the local context. If students are not in a low-residency setting, however, some of these connections may be weakened, as students are not always able to engage as deeply with the local context.

Despite the challenges of working remotely, being in the UK they were not always close to their culture or the type of craftsmanship that they were both exploring, Gong and Zeng's projects highlight the potential of place-based, material-led design education to bridge the gap between tradition and innovation. In my view, both projects would have benefitted from a more locally embedded design approach that kept them in closer contact with local artisans and communities which could be developed within a low residency and place-based programme. Such an approach would allow students to remain connected to the geographical and cultural origins of their work, perpetuating craftsmanship traditions while considering local ecologies and the sustainability of their practices.

Conclusion

This case study illustrates the potential of place-based education to preserve and revitalise traditional crafts while fostering innovation. Through the projects of Gong and Zhang, it becomes evident that regional craftsmanship and material-led approaches are essential to maintaining cultural heritage in a contemporary design context. These examples also highlight the importance of geographical context in the design process and the potential challenges posed by low-residency settings in maintaining

strong connections to place. Ultimately, this investigation underscores the value of place-based, geographically embedded design education in crafting a sustainable future for traditional crafts.

Discussion: Contribution and Impact

This paper argues that material-led low residency study represents a promising paradigm for ecological, social, and economic dimensions, this model of education has the potential to transform design education and foster global collaboration.

One of the key contributions of this approach is its emphasis on material literacy, which enables students to make informed decisions about material choices and advocate for sustainable practices in their careers. This knowledge is crucial for addressing the systemic challenges of resource depletion and environmental degradation, particularly in industries like fashion.

Moreover, the incorporation of local materials and ILEK into the curriculum provides students with a context-specific understanding of sustainability. This approach not only reduces the environmental impact of long-distance material transport but also fosters a deeper appreciation for local ecosystems and cultural heritage. By engaging with place-based approaches and local resources, students can develop innovative solutions to complex sustainability challenges that are rooted in their own cultural and ecological contexts.

The case studies presented in this paper highlight the potential of material-led design education to foster cross-cultural understanding and collaboration. By engaging with their own cultural heritage and local materials, students can explore the connections between material culture and identity, leading to a deeper understanding of the role of design in shaping cultural narratives.

Furthermore, this approach promotes a more equitable and resilient future by empowering students to engage with their communities and contribute to local economies. By fostering collaboration between academic institutions and local artisans, material-led low residency programs can help preserve traditional knowledge and promote sustainable practices that are deeply embedded in local contexts.

Conclusion

In conclusion, this paper has provided an exploration of how material-led low residency education can offer a robust framework for sustainable educational practices, deeply rooted in place-based approaches, regional craftsmanship, and cultural heritage. By integrating theoretical insights with practical examples, this research underscores the transformative potential of a pedagogy that not only imparts material literacy but also fosters a meaningful engagement with the local contexts in which students are embedded.

The findings suggest that by embracing material-led, place-based approaches, design education can move towards a more sustainable and equitable future. This approach not only equips students with the skills and knowledge they need to succeed in their careers but also instills in them a sense of responsibility towards their communities and the environment. As educational institutions continue to grapple with the challenges of the Anthropocene, these models offer a promising pathway forward.

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