

Emerging Dialogues

*The Rise of the Neo Producer and its
Impact on Ornamentation*

James van Caloen

Research Paper

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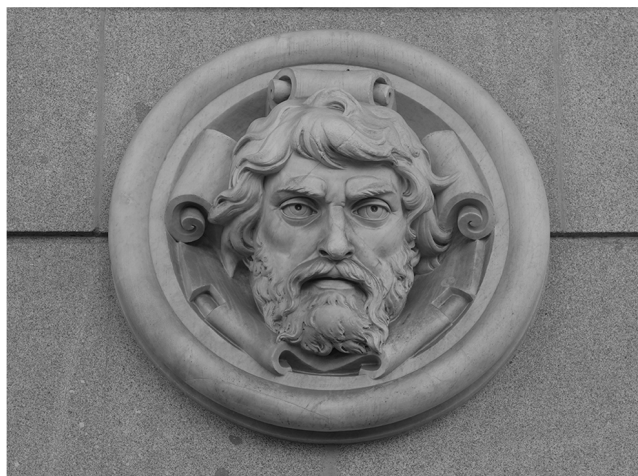


Fig. 1. Ornaments on the facade of the National Bank of Spain building in Madrid. Picture by the author.

Keywords:
**Neo-producers, ornament,
mass-customization, expressive
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Abstract

The notion of ornament is as intractable as it is central to our discipline. The considerable body of work delving into this topic, including recently, serves to illustrate the ongoing interest of our societies for architecture that exudes character. We will explore the ornament from the prism of labour forces, defining the contours of an emerging type of workers we will call the “neo-producers”. To do so, an outline of the theory of Western ornamentation will be sketched to contextualize the research. Consequently, we will delve into the neo-producer’s origins and definition. The worker’s unique characteristics compared to existing actors will be underlined as well as their close links with the mass-customization revolution. Then, their impact on architecture will be studied, arguing they could represent the key to producing feasible, expressive designs. The disruptive nature of this new role will be underlined, as well as the opportunities it represents, notably to produce affordable, condition-specific ornaments. In a wider lens, the topic will be connected to important epochal changes like artificial intelligence, sustainability or technological acceleration, as the ornament reflects and materializes societal conditions. Of course, since the topic of the ornament is inherently a discussion about beauty and how to create it, there can be no definitive answer. However, we will see how many different factors come into play for a society to create ornamental systems it deems fit for purpose, and at heart, no individual change can lead to a ornament’s renaissance. There is hope, though, that the neo-producer could be the first step towards a more expressive architecture.



***"Decoration: baubles,
charming entertainment for
a savage."***

- Le Corbusier, In Decorative Arts of Today, 1925

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Introduction

“Why are modern buildings without ornament?”, art historian Kenneth Clarke asked in 1942; “is it a reaction? After the debauches of the nineteenth century our architects have such indigestion that they are condemned to a diet¹”. One wonders how he viewed the rise of dreary postwar housing blocks, as the ornamental crisis he described was displayed across a whole continent. Clarke’s statement still rings true today, as the profession struggles to define a feasible approach to ornamentation. Too often, the discussion around this topic is reduced to aesthetic debates, whereas this paper argues it is in great part a technical question. Indeed, the ornament must be manufactured and assembled and so relies on specific labour conditions to be realized. Therefore, any major changes to these will alter society’s relationship with this palette of expression. The current rise of a new class of workers, which we call the “neo-producers”, is such a change, and this paper will explore its implications regarding ornamental use. This labour force, which combines traits of both the architect and the craftsperson, is causing an important disruption in the built environment. Although its exact definition and impact are still elusive, we will argue its arrival could play an outsize role in a possible return of expressive architecture. Therefore, how could the rise of the neo-producer lead to greater ornamental use in the built environment? Following a definition of these terms and an overview of the frameworks shaping the use of the ornament today, we will then explore the neo-producer’s rise and the ways it could change society’s approach to the creation of expressive architecture.

1 Clarke, Kenneth. 1942. “On the ornament”. *The Architectural Review*, August 1942 (August Issue).

1 / The Ornamental Ecosystem

“What is architecture’s capacity for conveying ideas? (...) It remains one of architecture’s most intractable and architectural theory’s most fecund challenges”¹. Through these lines Melvin and Willimott show how the debate over the ornament is central to the profession, as it is one of the key ways buildings can express ideas. Part of the ornament’s enduring appeal lies in the fact it is so difficult to define. “Ornament is the figure that emerges from the material substrate, the expression of embedded forces through processes of construction, assembly and growth”, writes Moussavi. It suggests the superfluous, and in many cases it is; a collection of “discontinuous notes that were nevertheless meant to produce a continuous stream of sensations and effects”² in the words of Picon. Its central paradox lies in the fact that it is “all the more indispensable in that it [is] added, and that one could imagine a building deprived of it.”³, suggesting that much of its appeal lies in the indescribable effects it has on the public. It can be anything from a decorated column, a texture, a color; it can be separate from the structure or indissociable from it. This said, let us propose a necessarily imperfect definition of the ornament as the architectural elements and finishes that help the user relate to the building and reflect the conditions that lead to its creation. As we move forwards, we will always refer to this description when mentioning the ornament.

Although difficult to define and less popular amongst architects nowadays, the ornament is still very present in interior design magazines and the wider public’s mind, as the interest in items such as the Pantone color of the Year show, or the relatively recent return into fashion of highly ornamental terrazzo tiles. Indeed, searches for the term terrazzo increased 316 percent in 2017 according to Pinterest’s user statistics⁴. Bold print wallpapers are up too on the website (+401%) as well as painted floor tiles (+1276%)⁵. This points to an enduring appeal for characterful designs. Perhaps, as Architectural Review editor Christine Murray has pointed, “Our desire to decorate says something about who we are and our shared ambition to rise above base needs, to overcome our mortality by leaving our mark, and to seek an experience of the sublime”⁶. Murray suggests architectural expression is key to creating meaningful designs, that will be enjoyed by its users and by society as a whole. In this light, the ornament mirrors the society that creates it: therefore, any conversation on topic must be approached from a wide angle of research.

To understand the dynamics behind the ornament, one needs to establish its context, or at least the driving forces behind its design and its realization. Arguably, these could be defined through a series of frameworks, going from the more generic to the more precise. The resulting diagram (Fig. 1) presents firstly the *macro* trends, cultural in nature, that defined which ornaments were used: these are the Western civilization and Western architectural tradition. For instance, a neoclassical building like the Royal Albert Hall in London, opened in 1871, is the product of both. The mosaic frieze circling its façade presents, in part, a history of Western architecture and Corinthian columns support the structure (Fig. 2 & 3) ⁷. This building is deeply rooted in these twin set of tradition but there are countless others. Arguably, most buildings before the advent of Modernism followed one macro framework or the other, if not both. Continuing with the diagram, we then

1 Melvin, J, and A Willimott. 2018. “Between the Building and the Street.” *The Architectural Review*, September 18, 2018.

2 Picon, Antoine. “Ornament: The Politics of Architecture and Subjectivity”, AD Primer, 2013, p 8.

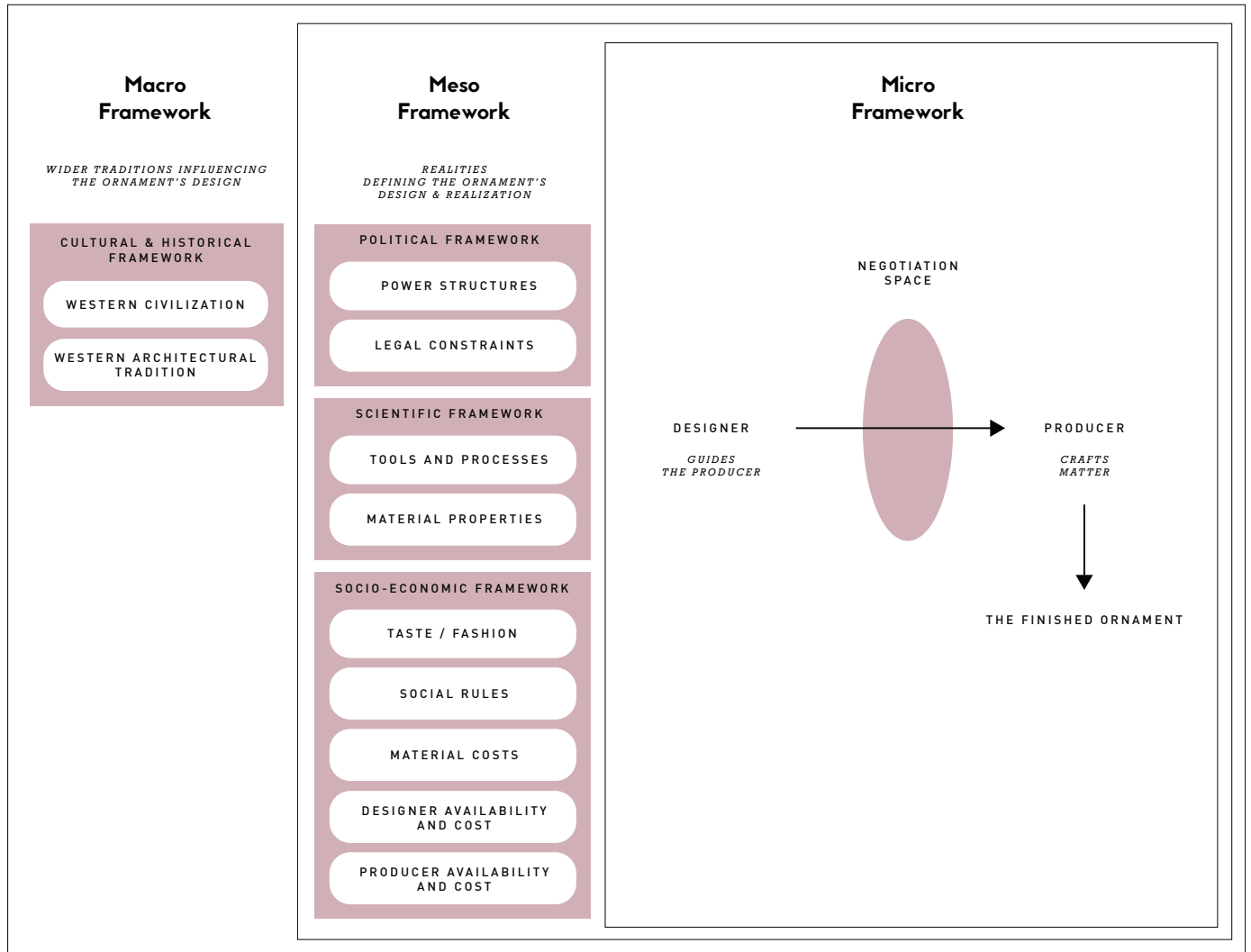
3 Picon, 2013, p 37.

4 Pinterest. 2019. *Pinterest 100 2019*. Pinterest. https://www.aunica.com/wp-content/uploads/2018/12/Pinterest100_2019book.pdf. Accessed 30/03/24.

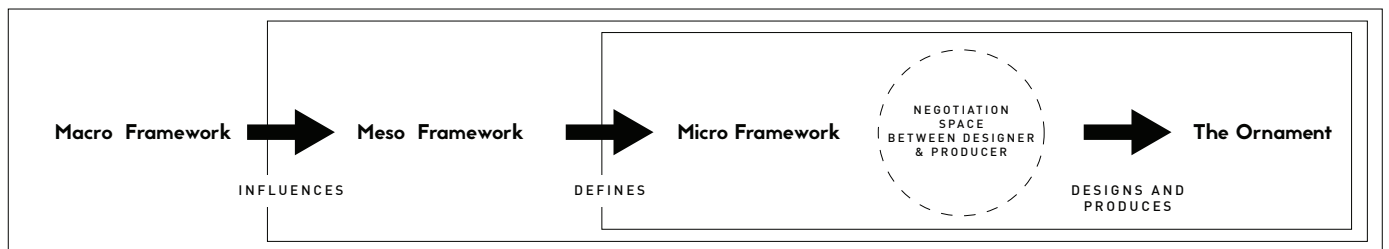
5 Pinterest, 2019.

6 Murray, Christine . 2015. *Editorial. Architecture Review* September 2015 (September Issue): London. p5.

7 Royal Albert Hall, 2023. Royalalberthall.com. 2023. <https://www.royalalberthall.com/about-the-hall/our-history/explore-our-history/building/mosaic-frieze/>. Accessed 30/03/24.



SUMMARIZING THE WORKINGS OF THE ORNAMENTAL ECOSYSTEM



HOW THE PRODUCER'S CONDITIONS ARE ESSENTIAL TO REALIZING THE ORNAMENT



Figure 1. The Pre-Digital Ecosystem of the ornament



Figure 2. Above, the preparation prawning for the Royal Albert Hall's frieze (Royal Albert Hall, 2019)



Figure 3. Left, the frieze and the Corinthian columns supporting the facade. (Royal Albert Hall, 2018)

move onto *meso* trends like legal frameworks. To illustrate, ornaments in Rome were the preserve of its wealthier citizens. In this case, power structures and legal frameworks defined how the ornament was applied, only being used on important public buildings or dwellings belonging to the Empire's elite⁸. These two examples show how the ornament is the expression of who we are as individuals, acting within a society; or in Juhani Pallasmaa's words, "Architecture enables us to perceive and understand the dialectics of permanence and change"⁹. The way we express this evolves over time, according to the shifts of this *ecosystem of the ornament*.

Whereas the first diagram illustrated the underlying logic behind ornamental choices made in previous epochs, a second diagram (Fig 4) aims to show the present situation. The most immediate difference is the vanishing in importance of *macro* frameworks. Indeed, one could argue few architects today consciously work in the tradition of previous architectural styles, and even fewer refer to the Western cultural canon in their works. As Bernard Cache wrote: "our epoch is characterized (...) by the rise of situations of hyperchoice; and how right we are to speak of a floating space, without moorings or markers"¹⁰. This *hyperchoice* is the result of greater freedom, derived by the waning influence of common shared culture and values. Equally, *meso* frameworks apply less and less to the designer: only the most tangible factors like material cost or producer availability define how ornaments are produced today. In democratic societies, no legal framework dictates ornamental use and the designer is theoretically free from the diktats of fashion. As Tom Beeby has emphasized, our society is destroying "the logic of particular styles and freeing ornament as a compositional element"¹¹. The paradoxical effect of this newfound freedom has been the rarefication of expressive designs, noticed even by leading architects like Thomas Heatherwick, who describes a *blandemic*¹².

Moving further within the diagram, we arrive at a micro level, at the *negotiation space* between the designer and the producer of the ornament. For the sake of simplicity, the two are separated, although many if not most craftspeople designed and realized their own ornaments on site too. Auguste Choisy, describing Byzantine building sites, underlined the considerable creative freedom enjoyed by stonemasons¹³. This is why the transition between

8 Picon, 2013, p 104.

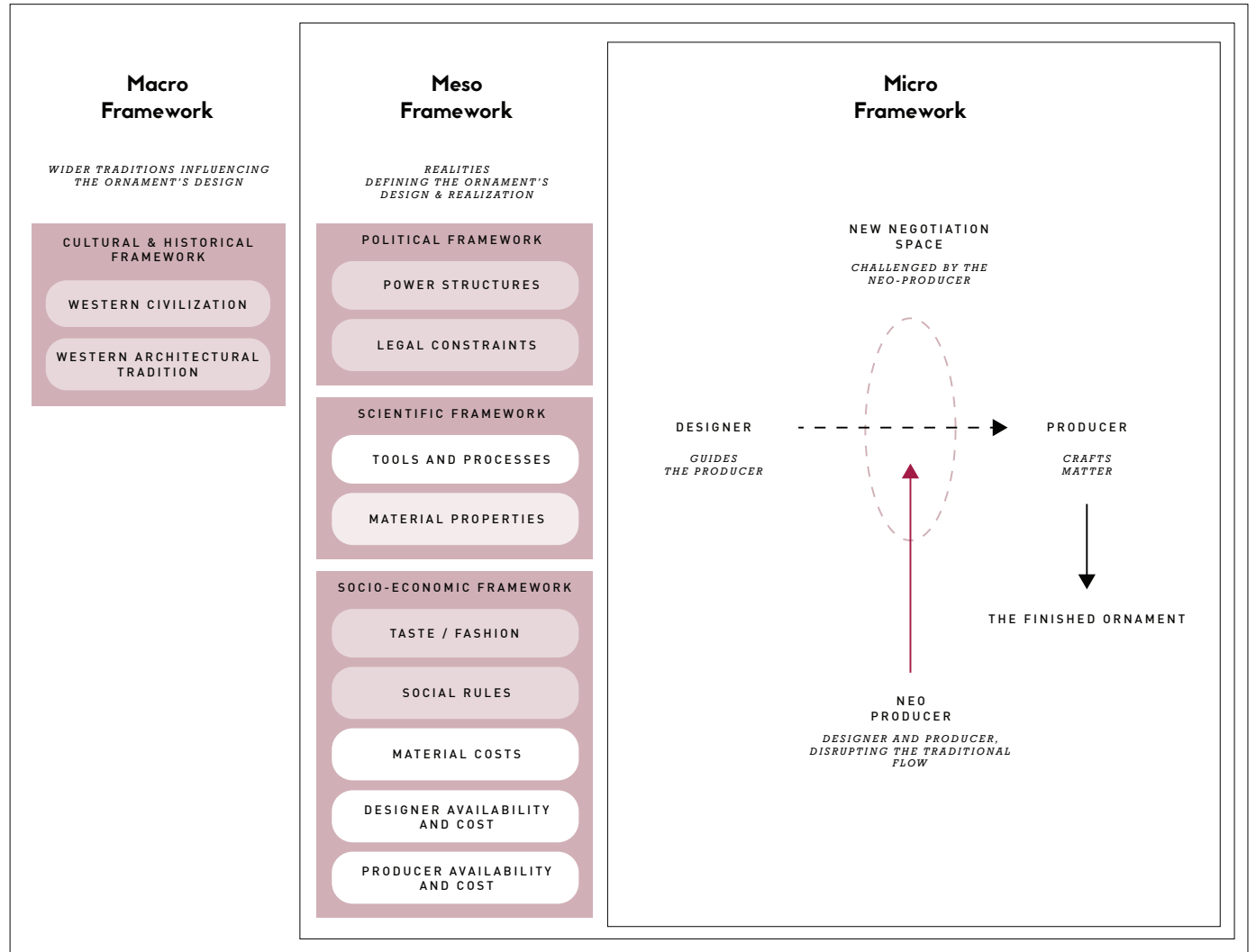
9 Pallasmaa, Juhani. *The Eyes of the Skin : Architecture and the Senses*, John Wiley & Sons, Incorporated, 1996. ProQuest Ebook Central, accessed October 25, 2023, p71.

10 Cache, Bernard, and Michael Speaks. 1995. *Earth Moves : The Furnishing of Territories*. Cambridge, Mass.: Mit Press.

11 Beeby, Tom. 1977. "The Flowering Grid." Architectural Review. October 20, 1977. <https://www.architectural-review.com/archive/ornament-has-always-flowered-in-chicago>. Accessed 18/04/24.

12 BBC Radio 4. 2023. "BBC Radio 4 - Building Soul - with Thomas Heatherwick, the Cult of Modernist Architecture." BBC. October 10, 2023. <https://www.bbc.co.uk/programmes/m001r7x6>. Accessed 10/04/24.

13 "Each sculptor has his stone and is free to manage his ornaments". Auguste Choisy. 1883. *L'Art de Bâtir Chez Les Byzantins*. Paris: Librairie de la Societe Anonyme de Publications Periodiques



SUMMARIZING THE PRESENT DAY ORNAMENTAL CRISIS

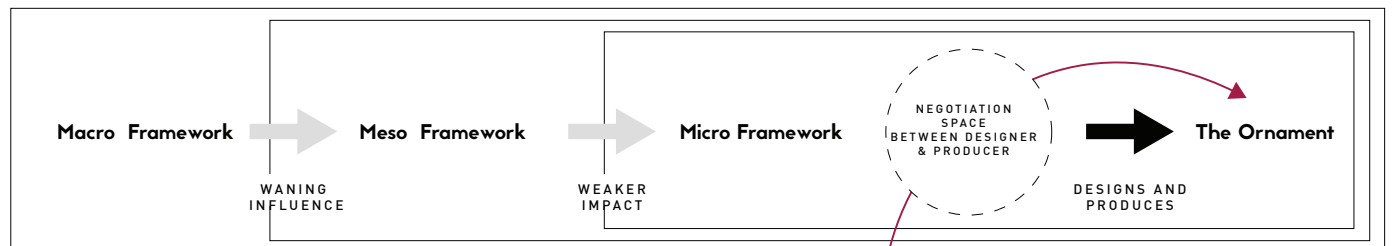


Figure 4. The current Ecosystem of the Ornament

what was designed and what was built was more akin to a negotiation¹⁴, hence the name in the diagram. This last part is the most important to our topic: the negotiation space, although seemingly a small part of the ornamental frameworks that have been described, it is perhaps the most essential. Indeed, it is the last link in the chain between the ornament's inception and its realization: without it, no idea can be shaped into reality. Thus, this is the reason this paper focuses so much on it: in many ways, it is a good prism through which to explore the problem; a fragment to decipher the whole.

Figure 5 zooms into the negotiation space and introduces this new role of the neo-producer as a disrupting force in our current context, where the workforce realizing designs is under pressure due to societal issues like workforce shortages. It shows, ultimately, how labour enables design. Thus, any upheaval in the workforce influences ornamental use. This point had been studied by scholars like Maria Shéhérazhade Giudici; in her case, it was applied to the Roman Empire. According to her, in the later days of the Empire, the building sector was taken over the emperor, destroying the thriving ecosystem of free, private enterprises and replacing it with a monolithic, state-owned entity¹⁵. As a result, less skilled labour was available and more work was done by forced labour, leading to the creation of building systems that were less resource intensive. The bricks grew larger and more material was reused. She gives the example of the 4th century Nymphaeum of Minerva Medica (Fig. 6), where amphorae were used in the dome to limit material use and lighten the structure. Therefore, in Shéhérazhade Giudici's view the changes of late Roman architecture were a direct result of labour conditions. Similarly, we will look at how the biggest change in our workforce in decades could influence the creation of expressive architecture.

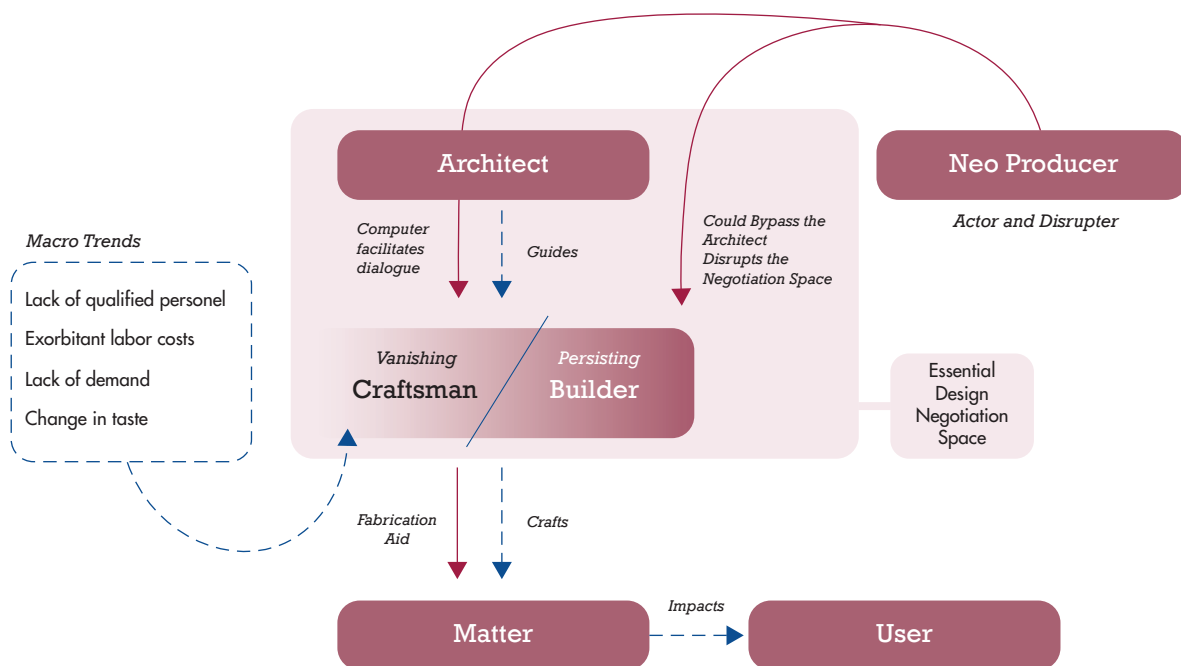


Figure 5. The Negotiation Space

¹⁴ Picon, 2013, p 73.

¹⁵ Giudici, Maria Sheherazade. "God Is in the Detail - Maria Sheherazade Giudici: Hoc Opus, Hic Labour - PART 2/12." The AA School of Architecture. 2021. [www.youtube.com. https://www.youtube.com/watch?v=sggPoefR7JE&ab_channel=AASchoolofArchitecture](https://www.youtube.com/watch?v=sggPoefR7JE&ab_channel=AASchoolofArchitecture). Accessed 18/04/24.

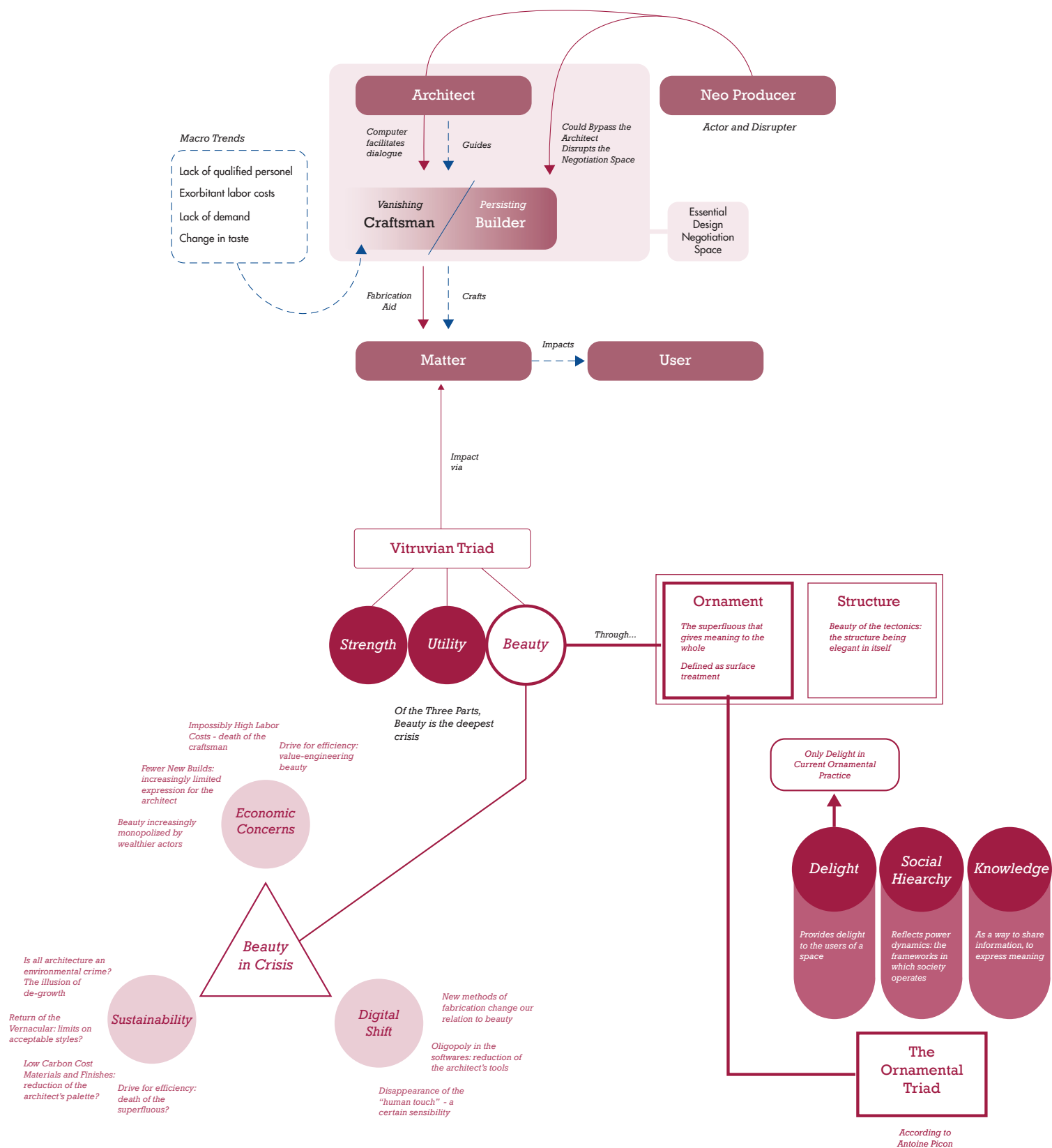


Figure 5 bis. How the Negotiation Space relates to wider concerns

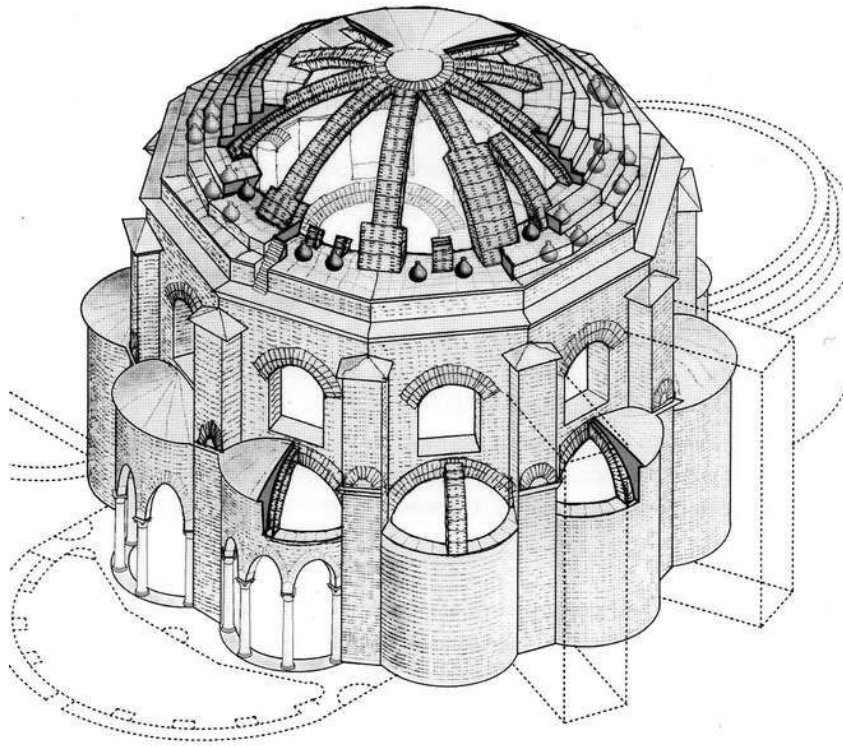


Figure 6. The Nymphaeum of Minerva Medica and its amphorae roof (Italy Rome Tour, 2019)

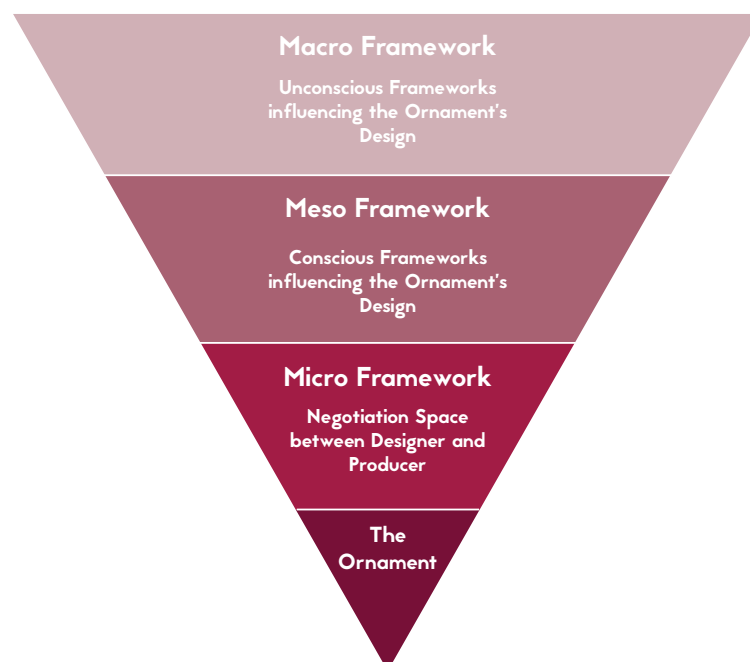


Figure 7. A summary of how the frameworks influence the nature of the ornament.

2 / The Neo-Producer

Having explored the notion of negotiation space, we will define the neo-producer. McCullough defines traditional crafts as an activity “where a master continuously coaxes a material”¹. The notion of *master* suggests tradition, possibly vocational training too, while the *continuous coaxing* points to passion and a very personal, manual relationship to the material. The digital revolution and the subsequent arrival of tools of mass customization like 3D printers have created a new situation, where our machines “bastardize and hybridize”, in the words of Spuybroek², creating new ways to shape materials. In 1980, the futurist writer Alvin Toffler was one of the first to see the potential of the *prosumer*, at the crossroads between consumer and producer³. The neo-producer is an equivalent for the architectural sector, a maker that masters the tools of mass-customization. It is a necessarily loose definition for a group that is so recent. Figure 8 serves as an introduction to the concept, highlighting the similarities and differences with the existing role of the architect and the craftsman. The roles are exaggerated, nothing being black or white in the *negotiation space*, but hopefully it serves as an overview. In essence, the neo-producers seem to share more in common with craftsmen, being specialists and working on fragments rather than the whole building. The key differences with the traditional role of the craftsman are the level of education, as they often spend years in formal education before being able to master the complex machinery and software required by the job. Also, theirs is as much a technical as an artistic pursuit, theoretically fulfilling the *File to Factory* ideal, where an individual can single-handedly create and realize a design with little knowledge of material properties, thanks to modern production tools. Therefore, the neo-producer does not belong to a specific existing class, being a true hybrid.

	ARCHITECT	NEO-PRODUCER	CRAFTSMAN
TOOLS OF THE TRADE	COMPUTER, MODELS, PHYSICAL DRAWINGS	COMPUTER, MACHINES	TRADE-SPECIFIC TOOLS, HAND TOOLS, INCREASING USE OF COMPUTER
FORMAL EDUCATION	HIGHLY EDUCATED (+5 YEARS)	HIGHLY EDUCATED (+5 YEARS, SOMETIMES MORE)	SOMEWHAT EDUCATED TO NO FORMAL TRAINING
MANUAL OR INTELLECTUAL?	INTELLECTUAL	BOTH	MANUAL
TECHNICAL OR ARTISTIC?	ARTISTIC	BOTH	TECHNICAL
GENERALIST OR SPECIALIST?	GENERALIST	SPECIALIST	SPECIALIST
FRAGMENTS / THE WHOLE	THE WHOLE	USUALLY A FRAGMENT	FRAGMENT
ANALOG / DIGITAL	DIGITAL	BOTH	USUALLY ANALOG
DESIGNER / PRODUCER	DESIGNER	BOTH	PRODUCER

Figure 8. Defining the neo-producer compared to existing actors

1
2
3

Mccullough, Malcolm. 1998. *Abstracting Craft : The Practiced Digital Hand*. Cambridge (Massachusetts): Mit Press.
Lars Spuybroek. 2011. *The Sympathy of Things : Ruskin and the Ecology of Design*. Rotterdam: V2_Publishing.
Toffler, Alvin. 1980. *The Third Wave*. New York, N.Y.: Bantam Books.

3 / Potentialities of the Neo-Producer

Maybe the most intuitive consequence of the implementation of mass-customization tools would be the possibility of realizing an infinite variation of designs at a fraction of the cost of other methods. Indeed, while mass-production allowed for the widespread use of the ornament in the industrial revolution, a human hand was still needed to create the initial version that was then replicated. The method was so successful as to be “chiefly responsible for the devaluation of ornament”⁴. On the other hand, it is still too early to say how economically feasible mass-customization is, but some projects point to a promising future. For example, the Swiss company ERNE AG Holzbau possesses one of the largest 7 axis CNC milling machines in Europe and makes it possible to “mass produce complex shapes in an economically feasible way”⁵. Equally, albeit on a high-budget, high-profile project, the Sagrada Familia has been using stone cutting robots since 1989⁶. The fact they still use them suggests the method makes economic sense. ERNE is a private company while the Sagrada Familia is privately funded, so both have an interest in employing cost-efficient methods. Thus, it seems the neo-producer could produce affordable expression, as long as the high costs of machinery and skilled labour are offset.

The considerable capital needed to buy and operate CNC mills or 3D scanners has been an issue for their wider implementation outside of universities. It is also a sector-specific problem, Jolliffe and Crosby argue, with architecture having “very little integration between academia and practice”⁷, stifling innovation in the building industry. The hybrid nature of the neo-producer is an opportunity, as they already act as a bridge of sorts between disciplines. Courses like the “Design for Manufacture Msc” offered by the Bartlett School of Architecture, UCL, propose to form “a new professional workforce” to deliver “increasingly sophisticated and challenging projects”⁸. This illustrates the potential of these actors to infuse innovation in the building industry and democratize products of mass-customization like project-specific ornaments. At the Bartlett, “around 50% of all (the) courses are non-accredited”⁹, according to its then dean, Bob Sheil, showing the scale of the neo-producer movement, as well as the impact it could have on the sector. The speed of change is also impressive, the course having only started in 2018 and important topic-focused conferences like FABRICATE (co-founded by Sheil) only being a decade old¹⁰.

We have described the link between wider frameworks and the evolution of the ornament; how it evolves with societal changes. The digital age is one of these epochal shifts, and the neo-producer movement is really one of its consequences. This age of networks and collaborative designs, seen for example in the wealth of free, independently developed software plugins available online makes the role of these new workers possible. Malcolm McCoullough touches on an unusual point when writing on the digital turn: “businesses and sole proprietorship

4 Moravanszky, Akos. “Truth to Materials’ the Principle of Cladding” - The Language of Materials in Architecture, AA Files, Number 33, 1996

5 Krammer, M. (2016). Individual Serialism Through the Use of Robotics in the Production of Large-Scale Building Components. In: Reinhardt, D., Saunders, R., Burry, J. (eds) *Robotic Fabrication in Architecture, Art and Design 2016*. Springer, Cham.

6 Burry, M. (2016). Robots at the Sagrada Família Basilica: A Brief History of Robotised Stone-Cutting. In: Reinhardt, D., Saunders, R., Burry, J. (eds) *Robotic Fabrication in Architecture, Art and Design 2016*. Springer, Cham.

7 Jolliffe, Eleanor, and Paul Crosby. 2023. *Architect: The Evolving Story of a Profession*. Riba Publishing.

8 UCL. 2017. “Design for Manufacture MArch.” The Bartlett School of Architecture. January 9, 2017. <https://www.ucl.ac.uk/bartlett/architecture/programmes/postgraduate/march-design-for-manufacture>. Accessed 30/03/24.

9 Cousins, Stephen. 2019. “Ideas Burn White-Hot in UCL’s Here East Crucible.” *Www.ribaj.com*. April 1, 2019. <https://www.ribaj.com/intelligence/in-school-university-college-london-here-east-the-bartlett-research-robotics-stephen-cousins>. Accessed 18/04/24.

10 Fabricate. “Fabricate.org | about FABRICATE.” n.d. Accessed March 30, 2024. <https://www.fabricate.org/home-7-2-2-2/>.

flourish again, much as before their yielding to centralized factories". That is, the digital economy is similar in its organization to pre-modernist times, where decentralization was favoured. Perhaps there are more parallels to this era that we might think, specifically with regards to the ornament. At the time of the Royal Albert Hall's construction, for instance, a designer could choose ready-made ornaments from a variety of companies. In this case, Valeriani notes "Gibbs and Canning, a sanitary-pipe factory in Tamworth, Staffordshire, supplied all the terracotta for the Hall"¹¹. Fig 9 and 10 show a later-date catalogue of the same company, with dozens of designs of *terra-cotta trusses* ready to be ordered by architects. In a way, we have returned to a similar time: it is for example possible to order Greek cornice molds from the Taizhou Linhui company in Zhejiang, China on Alibaba (Fig 11). Equally, the Chadsworth company from the United States sells column capitals online (Fig 12). These might represent the start of wider movement of decentralized companies; only, instead of selling mass-produced building items, they might offer mass-customized ones, like one can currently customize Nike sneakers online¹². This could offer new avenues for designers wishing to implement expressive designs, at low cost and without the waste linked to mass-production processes.

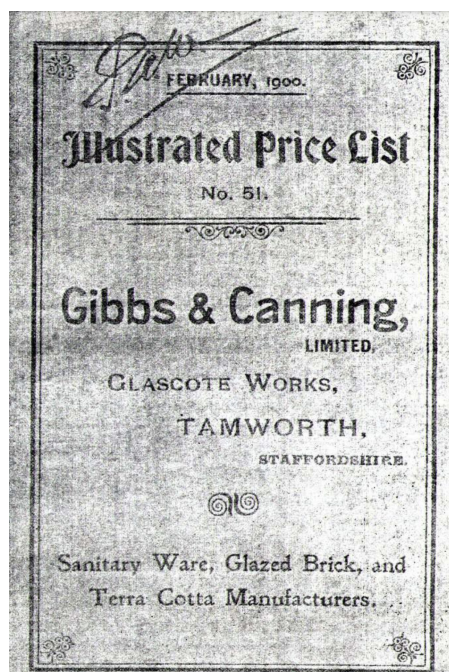


Figure 9. The 1900 catalogue of ornaments of Gibbs & Canning, with price list (Gibbs & Canning, 1900).

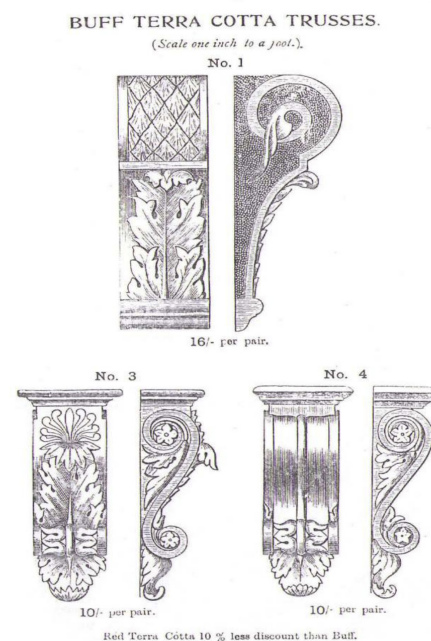


Figure 10. Page from the 1900 catalogue (Gibbs & Canning, 1900)

11 Valeriani, S. "Terracotta and the Royal Albert Hall: The Spirit of Albertopolis • V&a Blog." 2017. V&a Blog. July 7, 2017. <https://www.vam.ac.uk/blog/news/terracotta-and-the-royal-albert-hall-the-spirit-of-albertopolis>. Accessed 30/03/24

12 K.T., Nguyen, Nguyen P.V., Ngoc Le K.A. , and Doan Bui T.D. 2018. Review of *Identity Representation in Customization*.



Figure 11. Mouldings by the Taizhou Linhui company in China (Alibaba, 2024)

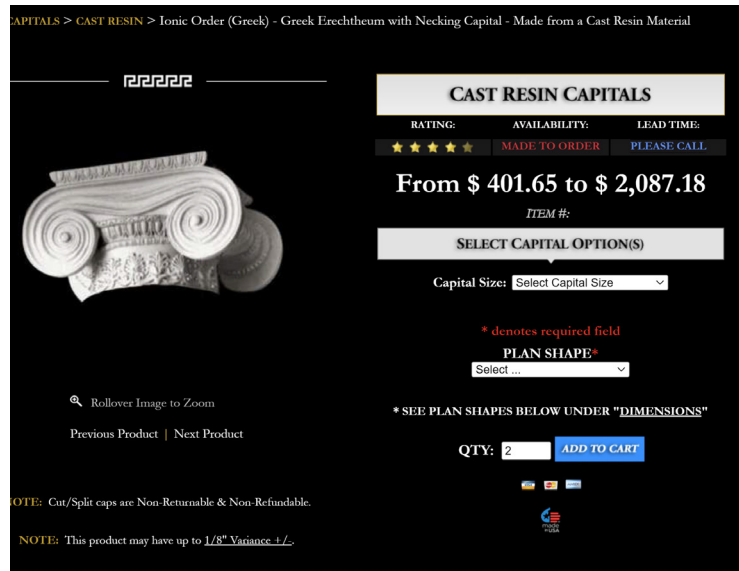


Figure 12. Website of Chadworth (Chadworth, 2024)

Of course, the possibility of affordable, unique ornamental fragments seems like a catalyst for a return of expression. However, we've described how labour forces must still assemble these within buildings. Therefore, neo-producers would have to impact not only the manufacture of items but also how they come together. Some companies are active in the sector, being in between manufacture and assembly, like the Italian company Wasp. They manufacture robotic arms that are used to 3D print houses made from unfired clay¹³. We saw these devices in action while visiting the Polytechnic of Catalunya, where the coordinator of the 3D printed architecture programme, Yara Tayoun, spoke at length of the potential of these techniques. While acknowledging it is "also very labour intensive¹⁴", she saw potential for the technique being applied in a variety of contexts, including in developing countries like India. Wasp has also built houses of its own to showcase the potential of its products¹⁵. All in all, a similar ecosystem of companies used to exist: for example, the Guastavino company in the United States built "more than one thousand buildings, including the Metropolitan Museum in New York"¹⁶, using its proprietary system of Catalan vaults (Fig 13). Architects would specify the dimensions of the spans required and then commission the company to build its system within their overall design. Perhaps we will return to such a method, where an ecosystem of companies mastering tools of mass-customization will tend to specific parts of the architect's design, enriching the overall architecture thanks to their varying expertise and tools.

An ornamental ecosystem will only emerge if a balance is struck between the decentralized nature of the digital revolution and the uncompromising precision of its tools. The strength of CAD lies in part in the minimal tolerances afforded by the system, which is then extended to machinery when these designs are realized by, say, a CNC milling machine with perfect precision. But this precious inflexibility, exemplified by the famous Joseph Campbell phrase "computers are like Old Testament gods: lots of rules and no mercy"¹⁷, could become an issue. If perfection

13 Chiusoli, Alberto. 2021. "3D Printed House TECLA - Eco-Housing | 3D Printers | WASP." Www.3dwasp.com. 2021. <https://www.3dwasp.com/en/3d-printed-house-tecla/>. Accessed 18/04/24.

14 Tayoun, Yara. "Interview". Interview by James van Caloen and Kurt Chan. November 11, 2023.

15 Chiusoli, Alberto. 2021..

16 Mar, L. "Guastavino Co., an Exhibit and Book about the Work of Spanish Architect Rafael Guastavino in New York City." n.d. Www.rafaelguastavino.com. <https://www.rafaelguastavino.com/en/>. Accessed March 30, 2024

17 Moyers, Bill. "Ep. 2: Joseph Campbell and the Power of Myth -- 'the Message of the Myth.'" 1988. BillMoyers.com. June 22, 1988. <https://billmoyers.com/content/ep-2-joseph-campbell-and-the-power-of-myth-the-message-of-the-myth/>. Accessed

is welcome at a product level, reducing costs and potential overruns, it is more difficult to achieve on the building site, where the mechanical meets the manual. Also, the neo-producer provides products but sometimes also systems, which have to align with the man-made within buildings. Architecture is often compared to music, in that it is a collaborative endeavour and works with themes, repetition and development¹⁸. As such, the neo-producer will have to compose with the other actors of its sector, merging high and low tech to be viable.



Figure 13. Advert for the Guastavino Company (Avery Library, 1912)

The Guastavino company primarily sold a process, while the Gibbs and Tanning company of the Albert Hall sold products. They represent two categories that are part of the architect's palette. Today, the designer relies overwhelmingly on mass-produced solutions, for several reasons: custom solutions are costly, rare, and regulations promote efficient and certified products. This leads to greater uniformity in the built environment, as the system favors products from proven companies that can make sure their products comply. As a result, many buildings start to use the same items and look identical. VELUX roof windows, for instance, are so frequent as to have been the target of a recent antitrust procedure in front of the European Commission, where it was claimed that they controlled a 70% share of their market¹⁹. Mass-customization could bring lower-priced design solutions compared to some of the existing products, and the smaller neo-producer companies could help bring local techniques and more stimulation of creativity, to break some of the oligopolies existing in the building industry. In turn, this could help bring more productivity in the sector, and further lower prices. Cheaper, site-specific solutions would arguably

18 Michiel Van Raaij. 2014. *Building as Ornament : Iconography in Contemporary Architecture*. Rotterdam: Nai010, Cop.

19 European Commission. 2018. Case AT.40026 - Velux. Antitrust Procedure. European Commission. https://ec.europa.eu/competition/antitrust/cases/dec_docs/40026/40026_850_3.pdf Accessed 18/04/24.

face a world of standardized, relatively expensive products, therefore allowing for project-specific variations at a fair price, which is central to allowing character to emerge in a project. Of course, many types of building products are inherently oligopolies, like the lift industry, and will remain so for the foreseeable future. But neo-producers can disrupt anything from glulam items to masonry construction, instilling change in a sector that needs it dearly.

Regulations are at the heart of the blandemic as we've seen and are often part of a drive for greater sustainability. Increasingly stringent requirements for everything from insulation values to fire resistance, although laudable, have had the consequence of reducing the architect's palette considerably. Yet, the digital turn is deeply relevant to sustainability. Indeed, whereas mass production was inherently wasteful, turning decoration into "a mechanism for capital to produce and sell more useless crap to the masses" in the words of Heathcote²⁰, mass customization is about efficiency. For instance, 3D printers inherently make sure the minimum amount of material is used to build an object. Machines like these bring the hope of designs made to measure exactly when and where needed, opening avenues for sustainable architecture. This could help turn the drive for sustainability into a creative force. The ecological revolution also requires vernacular architecture and site-specific solutions, which are closely related to the concept of mass-customization. Therefore, many synergies seem to emerge between these greater societal challenges and the neo-producer.

Arguably, great works of architecture travel through time and are designed for the long term. One of the reasons our ornamental tradition was so rich was that it was based on millennia of shared culture and references. This is underlined by Trachtenberg when he writes: "Time itself—especially when of long duration—was made a vital asset in the creation of highly complex, multidimensional works of art²¹". On the other hand, neo-producers rely on digital tools to design and realize their ideas: these are ever-changing and obsolete increasingly quickly, as the technological entropy of our societies increases. This is best illustrated by the constant verification of Moore's Law, according to which the number of transistors on a circuit will double every two years²², increasing processing power exponentially. As we move further into the digital age, the key challenge will be to use shifting tools to materialize timeless ideas. How does one represent permanent values in the era of endless software updates? It is the antithesis of Ruskinian thought: "When we build let us think we build forever. (...) Let it be such work that our descendants will thank us for"²³. Perhaps the importance of geometry and optimization in the producer's software, in operations like Voronoi diagrams or Boolean operations, can separate them from the cycle of fashion. Geometry, after all, is a universal and timeless language and could help tie digital-era designs with past and future ones.

The search for a form of design tying structural integrity with beauty has been at the heart of architecture since at least Vitruvius. In the ornamental field, it translated into a drive to seemingly combine the structure with the façade, a topic that so fascinated theorists like Gottfried Semper. "We might see the pen – the fence of interwoven

20 Heathcote, Edwin. 2015. "The Problem with Ornament." *Architectural Review*. September 3, 2015. <https://www.architectural-review.com/essays/ornament/ornament-is-the-language-through-which-architecture-communicates-with-a-broader-public>. Accessed 18/04/24.

21 Trachtenberg, Marvin. 2010. *Building-In-Time from Giotto to Alberti and Modern Oblivion*. New Haven, Conn.: Yale Univ. Press.

22 Intel. 2023. "Moore's Law." Intel. September 18, 2023. <https://www.intel.com/content/www/us/en/newsroom/resources/moores-law.html>. Accessed 31/03/24.

23 Ruskin, John 1849. *The Seven Lamps of Architecture*. The Old Bailey, London: The Waverley Book Company.

and tied sticks and branches – as the earliest partition produced by the hand”²⁴, he wrote. In Semper’s view, the origin of architecture was to be found in woven shelters and he was fascinated by this primal example. In the age of 3D printed houses like Wasp’s (fig 14), the structure is woven together layer by layer, and the façade becomes structural, thus fulfilling past theorists’ wishes for material honesty and seamless expression. This is important as it expands the designer’s palette considerably, allowing for materiality to become very expressive with little additional effort. The tactility of the “woven” house also reminds us of Pallasmaa’s view of architecture as “the art of reconciliation between ourselves and the world”, with the mediation taking “place through the senses”²⁵. 3D printing specifically offers these sensory possibilities as well as the opportunity for designers to be true to the materials they use whilst producing characterful designs. The fading of the traditional façade/structure divide is quite an epochal shift, with a potentially far-reaching impact on the built form.



Figure 14. A Wasp 3D printer at work: Semper reinvented (Wasp, 2018).



Figure 15. 3D printed moulds being prepared for casting, to recreate the Colossus of Constantine (Factum Foundation, 2024)

The neo-producers are a fragile, shifting class due to their over-reliance on tools that change so quickly. Their proximity to this software allows them to create works of the greatest quality with ease. Traditional limitations like the craftsman’s skills or the material’s properties almost don’t apply to them. The machine sculpts tirelessly, with maximum accuracy. This is the view of Carlos Bayod, director of Factum, a company and foundation that creates high quality replicas of famous artworks for museums across the globe. In our interview, he claimed: “today it is possible to close the gap between whatever the architect is designing and what will be built on site with 3D printing technologies, for example”²⁶. The company’s recent high-fidelity reconstruction of the Colossus of Constantine (fig 15) seems to confirm this theory. Yet, the immense powers of the neo-producer rest on fragile footings. Its reliance

24 Semper, Gottfried. *Der Stil in Den Technischen Und Tektonischen Künsten Oder Praktische Ästhetik*. 1860. Verlag fur Kunst und Wissenschaft, Frankfurt

25 Pallasmaa, 1996, p 141.

26 Bayod, Carlos. “Interview”. Interview by James van Caloen and Kurt Chan. November 14, 2023.

on the mechanical rather than the manual puts it at risk of easily being taken over by artificial intelligence (AI). As startups emerge in this field, its role will necessarily shift. For instance, software like Hypar, which models buildings quickly thanks to AI, using simple prompts, risks taking over the design aspect of the emerging profession²⁷. What would be left of the neo-producer in this case? If the design is taken care of and the material is shaped by the machine anyway, then the neo-producer becomes a simple machine operator, a paradoxical task for such a highly skilled individual. Thus, as we define the contours of this new profession, we must also be aware of its fundamental threats.

The neo-producer, having so much in common with traditional craftsmen, could help stimulate a rediscovery of ancient techniques to then optimize them. In turn, this could lead to a wider use of site-specific, vernacular building details, enriching the design considerably. This is already happening, especially in universities, as is illustrated by the case of Jordi Domenech Brunet. Domenech is an expert craftsman of the Catalan vault and told us he had collaborated with the Block Research Group of the Polytechnic of Zurich (ETH), advising on some of the group's famous catenary structures²⁸. He also mentioned that a colleague of his, Salvador Gomis, was exploring using augmented reality to build the thin brick vaults. The exchanges between academia and practice seem to be particularly fruitful in this case. On one hand, they assure the researchers are using the techniques to their limits and bring these little-known structures to the wider public. On the other, craftsmen adopt some of the tools developed in academia and presumably gain efficiency. Overall, these developments show how neo-producers could lead a better understanding of materials and bring ancestral techniques to the 21st century. Using materials according to their properties is a tenet of traditional designers and this objective is echoed by Nadia Everard, the co-founder of the Table Ronde de l'Architecture, a Belgian association promoting vernacular practices. In our interview, she argues character comes not from conscious decisions, but from "using materials in their local conditions"²⁹. Hopefully, newfound respect for material properties and the optimization of outdated techniques, under the impulse of the neo-craftsman, could help create more ornamental designs.

An optimization of traditional crafts using the tools of the digital age could help make these jobs more attractive, assuring their viability in a world where they are increasingly disregarded. The British association Heritage Crafts compiles a yearly "Red List of Endangered Crafts", which compiles all the trades that are at risk of vanishing in the country. Some of the most vulnerable ones from the 2023 list include piano making, wallpaper making and slating, which is striking since the products of these crafts are relatively widespread, or at least more than parterring (also on the list)³⁰. While conducting site research in Spain, we found a similar issue with the weaving of esparto, a local grass, which is disappearing. The owner of the last esparto shop of Madrid, Juan Sanchez, told us: "you have maybe a few thousand people that know how to weave esparto (...) no young people are learning it"³¹. This could lead to significant problems in the upkeep of heritage buildings, for example. Of course, trades are the reflection of society and there can be no supply without some demand: some trades will have to disappear while others emerge.

27 Hypar's Youtube channel contains videos with ominous titles such as: "Hypar Generates a Mixed-Use Building in 2 Minutes with AI". Hypar.io. 2023. "Hypar Generates a Mixed Use Building in 2 Minutes with AI." [www.youtube.com](https://www.youtube.com/watch?v=zDQmolfZc4E&ab_channel=Hypar). April 3, 2023. https://www.youtube.com/watch?v=zDQmolfZc4E&ab_channel=Hypar.

28 Domenech Brunet, Jordi. "Email interview". Interview by James van Caloen. December, 2023.

29 Everard, Nadia. "Email Interview". Interview by James van Caloen. December 10, 2023.

30 Heritage Craft Association. 2023. "Categories of Risk." Heritage Crafts Association. 2023. <https://heritagecrafts.org.uk/redlist/categories-of-risk/>. Accessed 30/03/24.

31 Sanchez, Juan. "Interview". Interview by James van Caloen and Kurt Chan. November 15, 2023.

Nevertheless, if only for cultural reasons, it is important to promote and protect these dying crafts. This is where tools like CNC mills or robotic arms could step in. In example, stonemasonry, a lot of work is expended on roughly sculpting the stone block, and this could easily be done by machine, then leaving the more enjoyable finishing of the work to the *augmented* sculptor. This is visible on the facade of the Banco de Espana in Madrid, where some sculptures were never finished (fig 16 and 17), leaving strange-looking stones on the otherwise finished building. The futuristic, rough cuts are apparent, and are strikingly similar to what a low-complexity model would look like. Perhaps the machines could help make such trades more desirable and thus lead to more interest in them. In turn, this could restore an ornamental ecosystem, where the architect could use a wider and more affordable range of skills, since the suppliers would be more numerous and drive down prices.

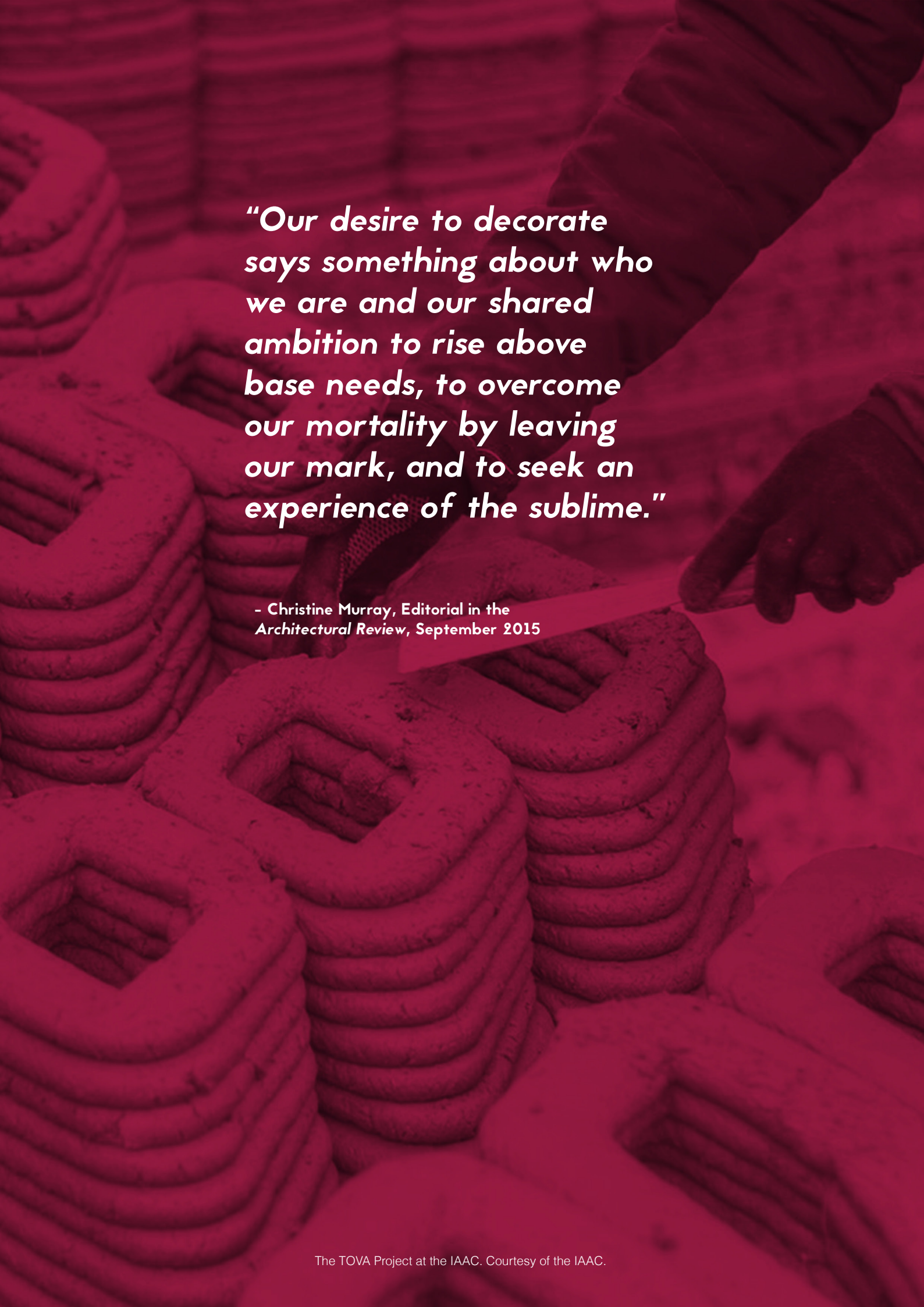


Figure 16. Sculptures on the facade of the Banco de Espana in Madrid (author's work)

Conclusion

The question of the ornament remains as intractable and appealing as always, even though it has largely disappeared from the architects' drafting tables. We have established how the way we ornate mirrors our societies and how a myriad of factors influence what we design and realize. From macro to micro frameworks, a network of forces in constant flux forms the ornament's ecosystem. We explored these and briefly touched on their evolution over time, bringing us to the present day's conditions. The crucial role of the producer in realizing the ornament was identified, as well as the chief innovation disrupting it: the arrival of the neo-producer. Focusing on this new role and its definition, an outline was drawn of its potential to shift the ornamental ecosystem and create new avenues for the creation of expressive, meaningful designs. From more tangible benefits like the reduction in cost of the ornament and the future availability of ornament-producing startups, more speculative routes were then tested. Notions of time, and the seamless blending of structure and ornament afforded by the tools of mass-customization were some of the ideas expressed. Fundamentally, we have underlined the rich potential of this new labour force in changing our approach to expression in the built environment and even changing the way we view our profession, as architects. However, any ornamental renaissance will depend on wider societal shifts framing its use. Kenneth Clarke described such a condition: "We shall have no ceremony in life and no ornament in architecture, until some new and more promising faith reintegrates our lives¹". Whatever this may be, it will be key to allowing a more humane architecture to emerge. Within such a wide topic, our findings are bound to be but a stepping stone for further research into this fascinating topic that is the ornament.

1 Clarke, 1942.



***"Our desire to decorate
says something about who
we are and our shared
ambition to rise above
base needs, to overcome
our mortality by leaving
our mark, and to seek an
experience of the sublime."***

**- Christine Murray, Editorial in the
Architectural Review, September 2015**

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Figure 3. Get Your Guide. 2024. "London: 1-Hour Guided Tour of the Royal Albert Hall ." Get Your Guide. 2024. https://www.getyourguide.com/londen-l57/londen-rondleiding-door-royal-albert-hall-t96342/?-visitor-id=G9HHMZEQMW3LED61E2605Z9U4E5GLRCJ&locale_autoredirect_optout=true. Accessed 18/04/24.

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Figure 5. Authors' work

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Figure 6. Italy Rome Tour. 2019. "The Secrets Color of Minerva Medica | Italy Rome Tour." Italy Rome Tour. 2019. <https://www.italyrometour.com/the-secrets-color-of-minerva-medica-virtually-reconstructed/>. Accessed 18/04/24.

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Figure 8. Authors' work

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Figure 16. Authors' work

Annotated Literature on the Subject

Carpo, Mario. 2023. Beyond Digital. MIT Press.

Good overview of the main issues with design, from a technical perspective, mainly focusing on the role of CAD and mass-customization in the realization of designs. Emphasis on fabrication, and quite practical. A little focus on sustainability, but a more macro view of the economic and social conditions leading to the world of computational design would be nice.

Cook, Peter. "Primer", John Wiley & Sons, 1995.

Cook explores the meaning of all the various constituting parts of modern buildings. Its relevance is in the personal approach he takes to describe the buildings he studies, focusing on the expression of the architecture. He communicates a very personal, visceral reaction to certain spaces, relating it to the feeling of spaces and the use of ornaments. Great to delve into the subconscious reactions to architecture and its symbolism.

Picon, Antoine. "The Materiality of Architecture", University of Minnesota Press, 2021.

Picon's book on ornaments delved more into actors and networks, whereas this one focuses more on the implications of crafting matter, the action of doing so. It also focuses a lot on the expression of meaning through architecture. It delves into the role of expression in a digital context, and hybridization of architecture that it produces, resulting in an architecture that's not quite understandable anymore.

Cyrille Weiner, Benoît Jallon, Umberto Napolitano, Franck Bouttée, and Park Books Ag.

2020. Paris Haussmann : A Model's Relevance. Zürich: Park Books.

A somewhat unusual reference, but delves deeply into the ornamental system Haussmann Paris was able to create, in a context of reduced access to skilled labour, mass-production and economic imperatives. It shows how the new, highly ornamental apartment blocks were made for profit, realizing the symbiosis between commercial interests and a drive for beauty, in part thanks to ornament.

Ingold, T. (2009). "The Textility of Making." Cambridge Journal of Economics 34 (1): 91–102.

<https://doi.org/10.1093/cje/bep042>.

Ingold emphasizes the importance of thinking of designers and the matter they shape as two interdependent entities. He considers that the material's properties lead to the designer adapting the design, and that the idea of a designer having a perfectly realizable design fixed onto matter is quite recent, as well as quite absurd. Useful source to explore the theories of Deleuze and Guattari, Lefebvre, Stewart Brand and others considering matter as something impermanent and alive. However, also complicates further our relationship with the ornament, by establishing a world in constant flux, perhaps too instable for a fixed design.

Moravanszky, Akos. "Truth to Materials' the Principle of Cladding" - The Language of Materials in Architecture, AA Files, Number 33, 1996

Focuses on the various approaches to Truth in materials in turn of the century architecture (19-20th), through the study of facades. Excellent resource to situate the research on ornament just before the advent of modernism and its subsequent theoretical break.

Moussavi, Farshid, and Michael Kubo. 2006. The Function of Ornament. Actar, Harvard Graduate

School of Design.

A practical, technical guide to ornamental choices made in buildings of the 20th and 21st centuries. Delves into the relation between the ornamental façade and the structure of the building, seeing the ornament primarily as a surface treatment, somewhat disconnected from the idea of structure. Its introduction gives a good overview of the recent developments in ornament theory and grounds it in a historical context. However, it is quite dry, not considering fully the human effect of the case studies mentioned, reasoning in terms of systems more than emotions.

***“Beauty still exists to convey
the absolute values upon
which a society must rest”***

– Robert Hewison

in *John Ruskin: the Argument of the Eye*, 1976.





Appendix: The Interviews



Blacksmith Juan Ocampo being interviewed by the author.
Picture by Kurt Chan

Appendix: Interview Transcripts

These are the transcripts of several interviews made in person and over email, in the course of the field research into the changing nature of craft and the emergence of the neo-producer. They were gathered in late 2023, mainly in Madrid and Barcelona, when I met with several craftsmen, experts and neo-producers to discuss their relationship with technology.

Intro - Summary of Notes about the transcripts

1 / Carlos Bayod - Factum Arte, Madrid

2 / Nadia Everard - La Table Ronde de l'Architecture, Bruges

3 / Yara Tayoun - Politecnico de Catalunya, Barcelona

4 / Jordi Domenech Brunet - Barcelona

5 / Juan Andres Rebolledo Ocampo, Madrid

6 / Marisa de Lucas, Madrid

Introduction

Notes on the interviews of Craftspeople in Madrid.

Week of November 13th, 2023.

- **Inter-generational family activity.** A lot of the Masters got into their trade because of family links to it. Juan Ocampo's grandfather was also a blacksmith. Frequently, their sons or daughters also end up taking over, though it seems less and less likely as their trades aren't very attractive anymore.
- Often collaborates or **forms trainees or apprentices.**
- **Facing common problems** – lack of demand, in part due to high costs. Changes in fashion, lack of transmission of skills due to fewer people wanting to integrate the profession.
- **Freedom of creation** – since the architect often doesn't know how to design with the material they work with or doesn't have a similar level of knowledge, he or she often leaves most creative freedom to the craftspeople (especially for Marisa, perhaps less so with Juan the blacksmith)
- They all have incredibly interesting **life stories.**
- The Craftspeople are often at the heart of **networks of artisans**, suppliers, and clients. These networks are very alive and active, as Juan Ocampo was mentioning (conferences, trips to Japan, exhibitions, workshops on learning to make swords, etc.)
- Most of them represent **extremely rare skills** – Marisa, for instance, had a technique that is very personal, if not unique. Juan Sanchez is the last Esparto shop in Madrid. They represent truly dying trades and in most of the cases, few young people are willing to continue their job.
- The world of craft is one of **constant research**, as they develop and improve their techniques, sometimes learning from great masters, but not necessarily. At the end of the day, they represent a lifetime's worth of knowledge on the trade, that often disappears with them.
- For some like Juan Ocampo, the most beautiful thing is being able to **surpass the master.** He didn't have a specific one from what I gather, but he was telling stories of blacksmith friends where the son became more talented than the father, who was already one of the most talented individuals in Spain.
- The love for the material and the technique is at the centre of their choice of life. Most chose it due to a **personal fascination** or even obsession. Marisa was describing living and sleeping next to the kiln where she sometimes bakes her ceramics, checking on the temperature constantly. Juan Ocampo did not count his hours and worked every day, even though he is in his seventies. Most importantly, most do it as a passion more than as a livelihood – of course, they are both related, but again. Juan Ocampo was saying that he would not count on his trade to sustain his family, as it fluctuates so much.
- Most of the artisans worked with very **simple materials, sublimating them.** Rafael Cantero works with lime and plaster and from these two ingredients he can produce an incredible variety of finishes, with so many varying properties. Some finishes are shiny, water-repellent, some imitate marble, concrete....). Iron, clay, lime, grass; these are some of the materials that are transformed through the action of the craftsman, reflecting the centuries or even millennia of common knowledge that our civilizations have gathered and passed on at each generation, reaching us today. In the action of the artisan, one sees the shadow of countless trials and errors, done over incredible spans of time.
- Most of the artisans already had **one foot in the digital age**, although none were at the forefront of it. Indeed, Juan Sanchez used the social media, laser-engraving, and Bluetooth earphones: most of them were very active on Facebook and showed us their networks of friends through it (notably Juan Ocampo). So, there is this mix between progress and permanence, in the sense that the techniques often stay the same, but the research and especially the relationship with the clients is changing thanks to social media and other networking, marketing, and communication systems.

- Often the craftsman is the link between so many odd elements of society. **Artisan's shop as a meeting place for society.** The people that he or she meets in the conduct of their craft is incredibly varied. For instance, Rafael Cantero would work on all the most historic, high-end buildings of Madrid, especially in the Prado area, but along mainly disadvantaged and relatively unskilled immigrant builders. Juan Sanchez sells esparto blinds for high end houses in Madrid, esparto bands to Manchego cheese makers, canes with metal ends to gypsies (who use them as weapons apparently), hemp ropes to enthusiasts of alternative Japanese culture, leather water bottles to tourists, etc. As he mentions, his clients represent a real ecosystem, a sample of society.
- Most of the artisans also mentioned the fact that they **adapted to the evolving situation**; they often **improvise solutions**. Juan Sanchez branched out from the original esparto family business into leather water bottles, canes, chair repairs, personalized objects, shibari supplies, etc. The latest is chair repairs – each time the woven fabric of the chair is broken, one can bring it to Juan. It is both an essential job and one that has practically disappeared – yet these chairs are very common. Juan Ocampo, on the other hand, sells most of his production in Japan, where he has built quite a following over the years.
- The **exchange of knowledge** is frequent and thriving in the communities of craft. They all seemed delighted to share details about their personal techniques and learn from other professionals in the field, at conferences or workshops. They really do it for the passion of the craft.
-
-

Overall, we have seen a great variety of projects that all these Masters worked on. They covered all scales and costs. Marisa de Lucas works on individual tiles or pottery as well as whole facades of important historical buildings. Equally, Jordi Domenech Brunet works on private houses as well as greater public buildings.

A person is shown from the side, wearing a dark jacket, working with a large bundle of dry, light-colored esparto grass. The person's hands are visible, holding the bundle. In the background, there are shelves with various items, including a woven basket and some containers. The foreground shows a large pile of coiled esparto grass. The entire image has a red tint.

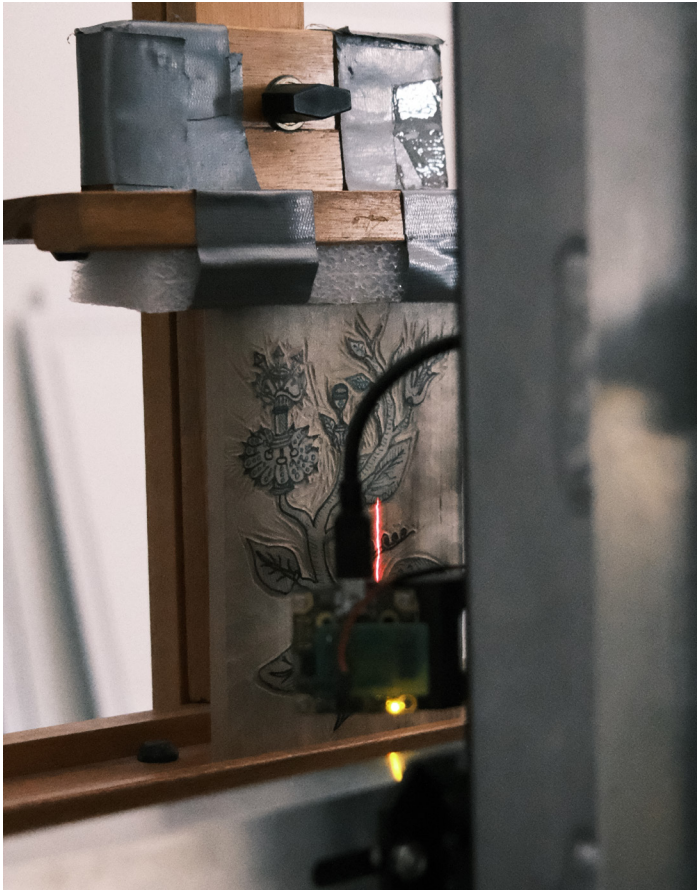
The Interview Transcripts

Juan Sanchez explaining esparto weaving in his "esparteria"
in Madrid. Picture by Kurt Chan

CARLOS BAYOD

DIRECTOR

FACTUM ARTE AND FACTUM FOUNDATION



INTERVIEWED 14.11.23 IN MADRID BY JAMES VAN CALOEN AND KURT CHAN

PICTURES BY KURT CHAN

“Today it would be possible to close the gap between whatever the architect is designing and what will be possible to make on site with 3D printing technologies, for example.”

Key Terms: Mass customization, Replicas, Artwork production, Artwork replica, Institution

Main points of the interview:

Carlo Bayod, director of Factum Arte and Factum Foundation, kindly gave us a wide-ranging tour of the facilities, explaining the role of both organizations, the former being a for-profit workshop realizing the ideas of famous artists, while the latter digitalizes and replicates perfectly artworks around the world, for institutions and countries. A few points stuck in our discussion:

- The importance of emerging crafts. Factum welcomes a huge diversity of trades, some of which have only just been invented, in order to build their high-quality replicas of artworks. The example of the digital sculptor having a traditional background in the trade is an example of such hybridization of skills and the myriad ways one will design and produce in the future.
- The architect between art and science. Bayod, as an architect, justly underlines this crucial theme of our profession, where we are divided between art and science, idea and realization. But this weakness is also our skill in his view - and that's why he oversees all the other trades.
- Creative freedom and its limits. Talking about Antonio Palacios and eclecticism, Bayod reminds us that even at this time, while we have the impression these architects enjoyed more freedom, they were also constrained by the tastes of the academias. Therefore, be careful what you wish for, in a way.

VISIT AT FACTUM IN MADRID

14-11-23

INTERVIEW WITH CARLOS BAYOD at the bar

INTRODUCTION -----

00:00

I'm happy to talk. Well actually with pleasure.

If we're not taking too much of any time though.

No, no, that's fine.

00:18

Yes, they have taken some pictures with a very good invention to reflect the light.

00:38

So how many employees do you have on site or collaborators I guess?

We are around 50 or 60 people in total depending on the projects we can grow or not. And then we have this small studio also in Venice and also in London with two or three people each like an office studio. But most of the things happen here like the actual headquarters and the main workshops are here.

01:09

And how do people who work here kind of describe the work or what they do?

Well, I mean, in a way we are in general in the art production sector. So we are producing pieces of art, no matter if it's for contemporary or for historic art. In a way we are all in this field of... like we are makers.

Because at the end we are never using, or normally we don't do work just to be a virtual outcome or to present things that are not physical. So most of our work ends up being something tangible, you know? And we have to finish a piece, ship it.

It has to arrive well, we have to make sure it lasts. So at the end, even though we work a lot digitally, at the end we are makers who have to be responsible of the object we produce. And they should have high quality and be durable and be reliable.

THE CHANGING ROLE OF THE ARCHITECT -----

02:19

You think it also brings something, the fact that you're an architect and you're kind of used to overseeing plenty of different crafts without necessarily being an expert at any of them?

Yeah, a little bit, yeah probably. I mean, with architects there's always this idea that we can handle both technical and art things, for humanity and technical. But I think it's, in a way, also the way we organize projects and organize in our minds, and the things in an ordered way. Even though, as you said, we don't master any of the specific techniques.

I mean, we don't have many architects here in Factum but those who are, kind of like me, coordinating projects is because of this capacity of understanding all aspects relating to timing, budgeting, but also being able to talk about aesthetics to the client, being able to discuss artistic issues as well as very practical for logistical issues.

And I think that's a value and that's perhaps the best thing you can learn in architecture school is the culture of the project, no matter if it's a graphic design project or if it's urban development or if it's designing a building

or an object or a product. At the end the principles apply to all design activity, they can be shared throughout scales.

04:06

POTENTIALS OF NEW TECHNOLOGIES TO CREATE EXPRESSION -----

It makes sense. On Friday we were welcomed at the Polytechnic of Catalonia and they had this wonderful department where they use the same tools that you use here, so lots of CNC milling and especially 3D printing of clay. They have a Fab Lab.

Exactly. And a really advanced one.

And so, I was wondering what kind of synergies you saw, especially you as an architect, in creating possible new ornaments or a more expressive architecture through these tools? Or whether it's maybe a bit of an illusion?

Not much in that sense.

05:36

We work with architecture schools, mostly for teaching, studio projects or studio classes or something like that. But not because these technologies are directly applied into a building design. Sometimes we are asked to make super complicated models, architecture models.

It's very rare that they ask us to actually make something that would be part of a building, part of a facade or something like that. It's mostly like, please design something like the bronze tree you saw earlier, some kind of independent art piece that could be in the centre of a space, but not actually be part of a building, the fabric of a building.

The trends that are limiting the use of the ornaments are probably the high cost and the lack of skill. Do you think that it might be possible to remediate or answer some of those problems through these tools?

Yes, probably yes. In the 20th century or even earlier, it was more common that the architect was designing from his drawing table every single element in the building. The handle, the chairs, everything in the building was a bespoke design by the architect. But I guess that's also because they were artisans that cost very little, their rate per hour. They could spend a lot of time into making things that are very time consuming, which today are unthinkable because of the cost of the human labor.

Yes, so today it would be possible to close the gap between whatever the architect is designing and what will be possible to make our site text with 3D printing technologies, for example.

08:01

Do you collaborate very often with craftsmen or painters or people like that?

They are in our team. Gilders, carpenters, ceramists, people doing porcelain. They are part of our team. They are integrated in the different teams and projects in a very natural way. And it's very interesting when we have this, for example, a meeting at the beginning of a project and on the table you can see the person that's going to go there to digitize, to scan the original. And then the people who are charged, for example, for making the models and the casts. So then whoever is going to build an aluminium frame structure to support the whole thing.

So different skills and disciplines together at the same table, apparently speaking different languages, but then all discussing the points of each other so that at the end it's like an orchestra as everyone has to play the things into making, for example, the tree or any other big job.

CRAFTSMEN AND NEW TECHNOLOGIES -----

09:20

Is there at first some kind of difficulty for these more traditional craftsmen to kind of adapt to these, I guess, newer ways of making or somehow it flows within their original process already making it somehow more efficient, I guess?

I think it's very natural from what I've seen around. Yeah. There are some very interesting cases, for example, Irene, the girl who is our expert in 3D modelling, using this software invention, ZBrush, was trained as an actual sculptor. She was trained as a fine arts sculptor, working with her hands. And now she has been applying all her knowledge into virtual models.

That software is literally like modelling with clay but in a virtual environment. And she always says that her skills and her training has been key for understanding how this process works. And she's been modelling things like that horse we saw earlier, or the panels that we saw that they were carved in stone.

10:34

This girl, if it's meant for digital technology, should be working as a standard specter, modeling or...

10:48

It's so inspiring because you see the world of tomorrow every day and what you do specifically affects them; you see these hybrid roles and architectures that emerge.

-----DISCUSSION CUTS DUE TO LOGISTICS

(DISCUSSION)

So, are the two of you traveling on your own or is the rest of the class also coming to Spain? So you came all together to Madrid?

Yes. **We're all living in a hostel, the Hat.** It's near the city centre.

The one with the rooftop? **Yeah, exactly.** That's a nice one. Is it famous for this rooftop or...? **Yeah.** Oh, really? I usually go there. Okay. **We just had a little beer up there. It's nice. Very nice.**

AN ARCHITECT AT FACTUM -----

12:50

So how does an architect end up at Facton? Chance, I guess.

Good afternoon, guys. I wanted a double. A double.

While I was studying I was following what Factum was doing, checking their projects, checking their texts, their website, etc. And I was very interested in what they were doing. I was working as an architect for some time, but then I decided to try working here. Initially thinking it was going to be temporary, I've been 12 years, but I'm very happy because it's kind of touching everything that I'm interested on. I suddenly became super interested in art history. History of painting, history of conservation, things like that. And that's been a nice trip, a nice journey.

THE CONCEPTUAL BASIS FOR FACTUM -----

Was it a part of your background in any way?

Well, my background was an architect, so... But it's true that I was working on projects involving exhibition design or museum design, so I was interested in art.

There's this text, I don't know if you know it, by Bruno Latour, the French philosopher that passed away last year, and Adam Lowe, the founder of Factum. The text is very important, about explaining this idea of the copies, for the benefit of the original. And the article is called The Migration of the Aura. So this idea that the aura of the

original has migrated now, in some cases, to the copy and it's not the original anymore.

14:56

So that was very important when I read that.

We've been reading some Latour at uni. A fair amount actually.

Yeah, I mean he's a favourite actually of our two directors. It's weird, I was lucky to meet him personally because he's been a good friend of our director and founder. And his views, the actor network theory, it makes perfect sense, because he talks about non-human objects as something that carries material culture.

Yeah, and complexity of objects.

Well, it's critical how it's all so connected, ultimately.

We've been meeting traditional craftsmen and trying trace back the historical significance of their craft, where it originated, where it has evolved, etc. And this morning we just talked to this ceramicist, this lady that uses traditional making of tile making and it was very interesting.

For tiles or for vases? **For tiles specifically. And she would use this process of oxidation or metallic oxidation that would have a very special finish to it. A special shine to it. So, it's already quite insightful.**

17:05

Not far from Madrid, in Segovia, which is about an hour by bus or by train, is the Royal Factory of Glassmaking. It's a very interesting place to see how they were doing traditional glassmaking. And here in Madrid, in the centre, is the Royal Factory of Tapestries. That can also be visited if you are interested in them. It's a traditional way of making carpets and textiles for fabrics, you know, for royal collections, things like that.

I guess we're really interested also in places exactly like Factum, like that's bang-on what we're searching for, in the sense that it's places that merge all the new technologies, see what kind of emerging worlds of design we can create.

18:00

Possibly places that also challenge this negotiation space that you have between the designer and the producer. In many ways, as architects nowadays, with Grasshopper, Rhino and the CNC-Mill, we're almost like the clients, the designers and the producers, all in one. So, I was wondering if you had any ideas of places that might help our studies?

I am in touch with a PhD candidate, a researcher. 18:28

He's an architect. He's making research about ornament in contemporary terms. And he's looking into what ornamental means nowadays and how it is achieved. He's called Nick Walkley.

18:48

GREAT REFERENCES -----

That's exactly what we're studying. Yeah, I'm looking into ornaments.

So maybe I can put you in touch if you want. **Oh, with pleasure. Yeah, actually it would be great to ask him about it. Especially, as a PhD, I mean it's such a vast topic that even with a PhD you probably only grace the surface ultimately.**

He spent some weeks here with us. 19:24. Yeah, the Oslo School of Architecture on this side.

19:29

Nick Wolclay, I will put you in contact.

Wonderful. Thank you so much.

19:43

His supervisor, this architect and historian, Mary Lending, is doing very interesting work. **Mary Lending?**

Mary Lending. You should check her out, she's also from Oslo, School of Architecture. And he's very much bridging the gap between historic architecture and other contemporary modes of production. **Oh, that must be fascinating.**

And she's starting a very large project with European funding, if I'm right, which is called Provenance, on architecture past and future in the era of circularity. But you can check her out, this is her.

It's fantastic because everyone tells you another snippet of information, it's just another stepping stone of knowledge. That's amazing. That's going to be great, I'm sure. The article by Latour mentioned is the migration of the aura. **We wanted to check it out.** It's from 2006 or so.

21:02

Are you an acquaintance of Larissa or something? **Yes, exactly. They're family friends,. And she had told me that she had been working at Factum for a while now, and I was interested in what she was doing here initially, because my last year's thesis was meant to be more on the evolution of the art world. But then it's one of those things I started one way and then it went on a complete tangent. So I was so happy actually to finally get to see what the company does.**

I'm gonna be in the Netherlands the next week, for a few meetings in Utrecht mainly.21:50

Then we go to Anwerp in Belgium. But another PhD candidate is almost finished from Delft University. And also, Leyden University. She's a law-atheist (CLARIFY). She's super good as well. Her research is about the cultural and technical implications of 3D reproduction of paintings.

in a way like my field of research. And I'm very much in touch with her and she's doing the research in health. I mean, it's not exactly architectural, it's more technical art history, but she's someone very interesting to follow. Like, she organizes seminars and conferences and she's very active. She's about to inaugurate an exhibition in Leiden as well. 22:47

Also about this idea of reproduction of paintings. I think this exhibition is opening on the 3rd of December in the Lakenthal Museum in Leiden. And the name of this lady is Lisa Lorret. Lisa Lorret. You should check her out as well because she's organizing so many things. And we do so many projects together related to reproducing paintings, recording paintings. You can see her now.

23:06

It sounds like you are at the heart of quite a network of scholars and students.

23:33

This is in Leiden. Our goal is to establish an even more active network of people and researchers in the Netherlands. But it's so cool also because a lot of the work that's done here really bridges the gap between theory and practice. 23:58

I was saying to Kurt, when I saw these panels at the entrance, that it reminded me a lot of what we used to do at the Bartlett, with 3D printed materials like bio-concrete and things like that. But then, you know, each batch of PhD students does one thing, and then you forget about it and there's no real-life application for it.

24:42

THE CIRCULO DE LAS BELLAS ARTES-----

I suggest you to visit one building in Madrid that is from early 20th century, it's Art Deco style, one of the few Art Deco style buildings in Madrid. It's the Circo of Fine Arts, Circulo de Bellos Artes. And it's very central. It has a nice rooftop, you can go up there for a cocktail or just to see the city. But it's interesting because it's this ornamental form of art deco, early 20th century. But it's also a kind of a skyscraper, but not as in floors of office, office, office buildings.

It's kind of a stack of spaces of different sizes. So it's like an exhibition space, theatre, then a ballroom, then again exhibition spaces on the inside. 25:37

If you see the cross-cut, the section, it's completely diverse. But from the outside, it's height, height in the skyscraper. **Fantastic.** So I suggest you visit that. **Is that an Antonio Palacios building?** Yes. **Ah, very good.**

The cross section, the famous drawing is very Barlett. I don't know what you think.

I didn't know Palacios at all before doing some research into Madrid. The centre of Madrid, has plenty of his buildings, at least three or four buildings, like the Bank of Spain, the City Council, and this one.

Look at this section. **Oh, fantastic. Wow. So... It's so irregular.** Completely crazy stack of spaces of different sizes, and this is with colour, and so phenomenological, like...I don't know, I think it's a very special place.

This is like the good twin of all the MPRDV projects. True.

27:11

The floor plan. Almost even better.

27:21

ON PALACIOS AND ECLECTICISM-----

I guess you kind of wonder, if you're Antonio Palacios and you have this commission, and you're in front of your drawing boards, and you're at a moment in history where you can possibly build anything you want also with regards to ornamentation and style that's completely open, how do you choose a style and a type of ornament also for your building?

They were very academic at the time, they were not breaking completely with academia, but they had at their disposal reinforced concrete and they had certain technologies that allowed them to do certain things. But the style and the ornaments are still an academic mission, or academic canon, what you want to call it. So they were, you know, after Neoclassical, they were still following certain patterns and they were not breaking, they were not in the modern era yet.

Of course. But now, those are the buildings that are aging better, in a way.

28:25

ON FERNANDO HIGUERAS-----

He's another architect. You should check it out. It's amazing. One of those rather unknown, but great architects from mid-20th century Madrid, Fernando Higuera. This guy, he just died a few years ago. He's been always like an outsider. He was never a professor. He was doing crazy things. Most of his architecture today could be considered brutalists, as you see in Madrid. This kind of supposed concrete brutalism with natural things.

things like this, they are in Madrid here. But one thing I visited the other day for the first time is the house he built for himself. Underground. It fits the character. For building a house for himself, he did not build a new shape. What he did was, he was getting divorced from his wife. And they own a...

semi-attached house with a garden. So, the guy divorced his wife and five children and he decided to build his own place. In the garden, nine meters below ground. You know, to piss off his wife. Imagine, nine meters cube, nine by nine by nine meters cube excavated underground in the garden with light only coming from above. And this is the space he created. And you can visit it if you want. Because it's a very special space. It's super calm, of course no noise, the light is constant. So, it's a place, I don't know, either to get crazy or to live a very peaceful life.

30:38

It's very nicely decorated too. This is how they have it now because now it's a foundation. So, all his projects are in posters on the wall. But the way he usually had it is like with allowing the vegetal, the plants from the garden to come inside from the top. And then he was having the craziest parties and meetings here and you can imagine like isolated from the rest of Madrid and you know welcoming friends and everything. So that's something interesting to see in Madrid.

That's for sure, it's a wonderful reference. Yeah.

You wouldn't think it's underground with all that light. It's a beautiful light, it's constant beautiful. **And that's the**

beauty of Spain too, try doing that in the UK.

You are right. I think the guy had to request permission for making a swimming pool. You know, tricking the authorities saying, I request permission just to make a swimming pool. But a swimming pool for diving, so it must be really deep, 9 meters deep or something like that. That's the story. That's the trick.

I'm surprised that they got it, too.

31:50

MADRID TIPS -----

And do you have any kind of nice neighbourhood you would recommend in Madrid for emerging crafts or places that have like a lot of potentialities?

32:09

There is an emerging art scene, a really emerging art scene. You will find all these studios of artists and new galleries and warehouses here and there. But where the boss of the neighbourhood, you will not find anything. It's called Caravancel. It is slightly outside Madrid. I was actually discussing this with friends the other day, it's a new, you know, up and coming area for artists. But most of it, you will still find it very... like a normal neighbourhood with no artistic scene, it's just only if you know which galleries to go and everything.

32:48

This is the name of the area, the scenario of Madrid, Caraváncel. Because it's where the rent is more or less affordable, for renting a space, as it happens everywhere in every city. So, as artists are being, in a way, expelled to the outskirts, this is where they are gathering now. It's the other side of the river.

It looks like we'll have to check it out. But one of our classmates were talking about this issue as artists move into these areas, it becomes so lively, so lovely. And then it gets gentrified.

Exactly, and then it's just a constant cycle moving around. It's always the same. But I guess, can't help it. So this will be the new. There's a street that is now full of art galleries. Almost every shop is an art gallery because it had it was booming 10 years ago or something. This street near Atocha or near Reina Sofia. I don't know. It's not a massive one. In the street of Dr. Furket.(VERIFY). So it's just a street in the center. And here is, it's not craft or anything, it's pure art galleries, but small, rather independent art galleries. And then you might like to see this place.

34:20

Has Factum Art been located in this area of its entire practice?

No, not really. We've been here for 10 years. Earlier we had a small office in the center of Madrid and the warehouse was outside in an industrial area. That was very inconvenient. We had to be going back and forth. So now for the last 10 years we've been here.

35:14

There's a lady here who is doing ceramics. It's the most beautiful little shop I've ever seen. The typical one that's in all the interiors, magazines and everything, but not of taste.

Calle Echegaray by the way is great for a wine bar. I like very much. Check it out. This is the wine bar. La Venencia. Very curious place. La Venencia is a tool in the winemaking process.

36:51

ON ANDRE JACQUE -----

We also discovered recently this great little, I mean actually quite big practice. The office for, what was it again? Innovation. Political innovation? The office for political innovation. Andres Jaque.

He's the best.

It's really wild isn't it? We went to the cafe Run Run Run and it was such a great time.

He's the best in theory, in practice, advanced to his time. He's a good friend actually. He was my teacher at the school. And now we've been meeting sometimes. **That's so cool.**

37:37

What kind of character do you need to kind of design those things, you know? Is he wild in person also or...?

He's one of those minds that are running and linking things that are apparently disconnected and constantly establishing new links and one of those guys that I think really is coherent with his theory. It's not like on one hand he writes articles and on the other hand he does architecture. What he designs is coherent with his texts and theories and interests. Have you seen his new school that he built in Madrid? **Oh yeah, the Colegio Reggio.** I haven't seen it in person, but to me that's kind of... To be honest, I don't know how it would be to stay inside. It's going to be uncomfortable or not. Some areas on the materials are very rough, very raw. But as a statement, as an architectural statement, I think it's fantastic. **Incredible, yeah.**

This is a small ceramic shop in Calleche, Garay.

And that's quite an exhaustive list.

No, but it's not the typical, it's the little hidden gems. **Amazing. The architects wish list.**

39:09

Totally, I mean that's what I would do one day around Madrid, you know, visit these places.

But what is the kind of theory of André Jacques? Difficult to put it, so he's trying, in a way he's not too different to Latour's actor network theory. I think Jaque's concept in architecture is that humans and non-humans, species and also materials, living and non-living things, they are all part of the same conversation. They all need to be represented like if it was a parliament of things. So, it's like the architecture that he's doing is giving voice to every actor involved in something.

When he's designing just a normal single house for a family. It's not just imposing an architecture into a landscape. It's like taking into consideration and at the same level, that's the key, at the same level the human needs to whatever insects live there in the moment, to whatever the source of the materials, what's happening to that. So it's in a way opening the scope to incorporate more variables which makes the project much more difficult. It's not just like the modern myth of imposing reason and imposing the human centric design. It's about "how can architecture give voice to everything that's at stake in the area". Something as simple as allowing, you know, wildlife and little insects and little animals to continue living in there. 41:02

Or how can they interact with the human's life, or how to give a physical presence to whatever is happening in online networks. I don't know, I mean, it's everything very well explained with all these activities, and you can try to find out ideas in there.

And I think also his approach to ornaments, in a way, this architecture might seem the opposite to minimalism. Because it's not about simplifying things or reducing it to the minimum. In a way, it's quite the opposite. It's like having an aesthetic presence for every actor involved in the project. 41:50.

You can totally see that. I mean it makes a lot of sense when you look at these kind of building blocks also that were used in the basement of RUN RUN RUN. And those were also used in the school. At least I think so. Based on the pictures.

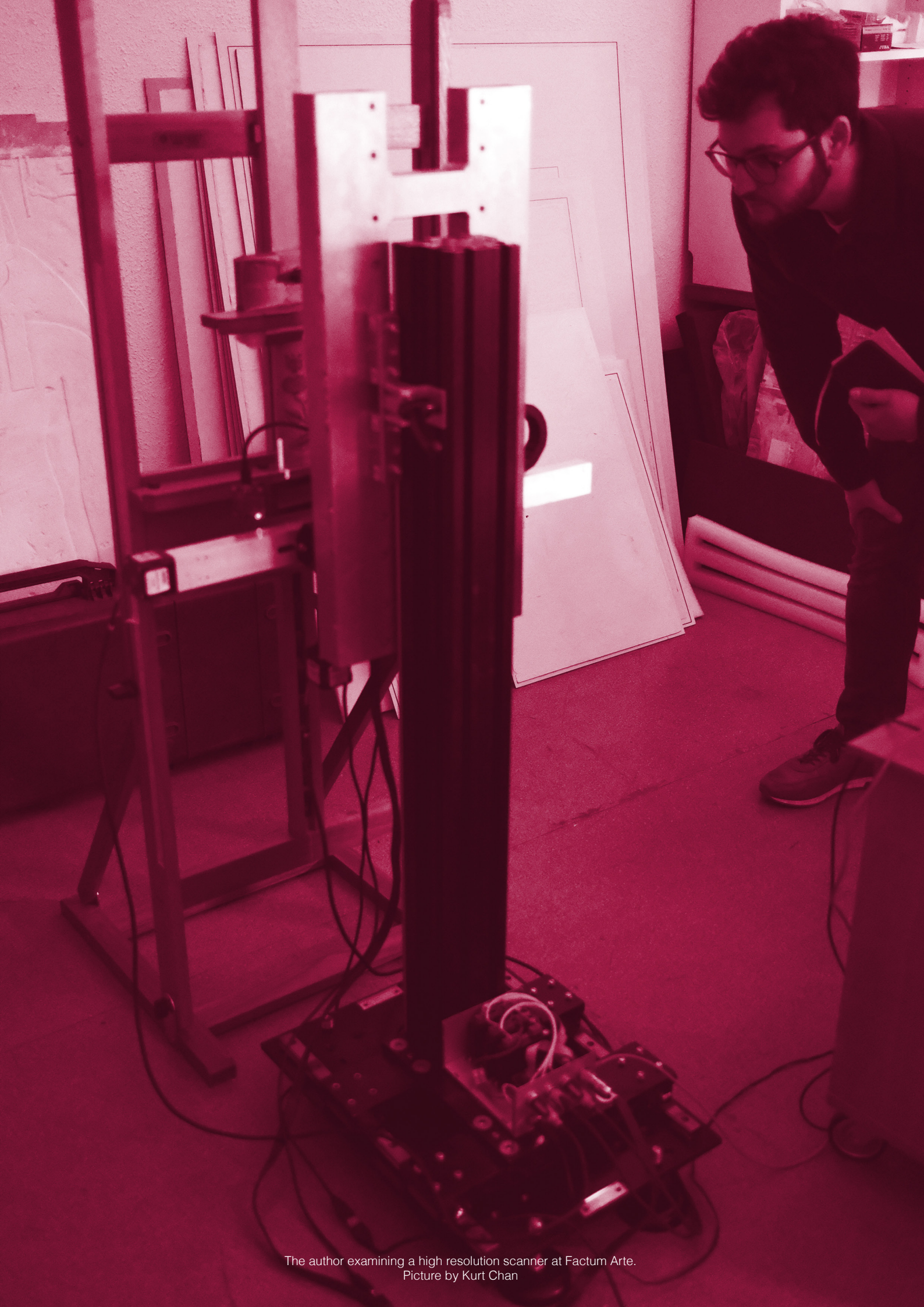
42:16

She uses, I guess, the same type of services. Even the ceiling, when I was in school, I think it might be the finish line. The exterior. The ceiling? Yeah, yeah. Maybe not, necessarily, because of the weathering, but you know.



Trial of a new high-quality scanner with unparalleled resolution in the offices of Factum. We could not photograph the rest of the complex due to privacy concerns, since much of the work produced is confidential.





The author examining a high resolution scanner at Factum Arte.
Picture by Kurt Chan

NADIA EVERARD

CO-FOUNDER,
LA TABLE RONDE DE L'ARCHITECTURE ASBL

EMAIL INTERVIEW, DECEMBER 2023
BY JAMES VAN CALOEN



“The “traditional aesthetic” derives from using natural materials in their local conditions, and not from a conscious aesthetic decision”

Key Terms: Institution, Association, Conservation, Historicism

Main points of the interview:

- A Ruskinian Position. The Table Ronde de l'Architecture, a Belgian association tasked with the promotion of historicist architecture and beauty in the built environment, ultimately has a position quite similar to Ruskin's. That is, that beautiful architecture requires a degree of hand-made craft. In the miracle and unicity of the hand-made artwork lies the beauty of so many of our structures.
- Conflict between the objectives and their realization. The key issue that Everard didn't address was that difficulty of realizing hand-made, ornament-rich architecture in a context where labour is expensive and scarce. It seems to be an issue with a number of conservative movements. Yet, beauty cannot be the preserve of expensive projects.
- Ecology and respect. The respect for local conditions (climatic, cultural, etc) and the materials used, as the Table Ronde promotes, is really current and goes at the heart of their work.
- Innovation vs proven solutions. Everard's position is really to not reinvent the wheel and refuse the diktat of hyper-optimistic scientists, believing a technical solution will be found to all our problems.

Organizations like the « Table Ronde de l'Architecture », INTBAU or the National Trust are spearheading a vast movement of reaction to the International Style and its limitations. From your work in the association, how do you see society's view of Modernism, and specifically the ornament, change?

N.E: Our association was created in 2020. As such, we are not best placed to judge long term opinion changes. However, we have observed a few things about the students and professionals joining us:

Firstly, there is a fundamental difference between today and the post-modern period of the 80s-90s, which reflected a need to rein in a modernist architecture that had freed itself from all limits (form, height, materials, traditional language, etc) and was prospering chaotically and often brutally, negatively altering our cities and countryside. Currently, we do not feel this same need for order, but rather for meaning. We have noticed that students and young architects seek an meaningful, reasonable architecture, far from the excesses of modernism and neo-traditional pastiches.

Secondly, in this context, modernism is increasingly criticised for its important economic and carbon costs (using precious transformed materials such as concrete, metal, glass) as well as its incompatibility with environmental concerns, too often leading to pollution, lack of regard for the local context, rapid obsolescence, etc.

Thirdly, this refusal of modernism hasn't yet lead to a regain of interest for traditional architecture. Traditional methods of construction and materials like self-supporting masonry walls, pitched roofs, earth, timber, or straw, are popular but there's a rejection of the traditional aesthetic, including of ornaments. There's a desire to merge natural materials with a minimalist "contemporary aesthetic". **Our association considers that the "traditional aesthetic" derives from using natural materials in their local conditions, and not from a conscious aesthetic decision.** If we took a step back from the discussion on aesthetics, we would understand that cornices, gables or drip grooves are devices to resist weather conditions and not ornaments based on arbitrary design choices.

I recently discovered the excellent Red de Maestros, a Spanish association that regroups all the best artisans of the country in order to give them more publicity and allow potential clients to contact them more easily. I have had the occasion to meet a few of these craftspeople and I was surprised to discover that many had taken up modern tools of communication and production. What is your point of view on this evolution; do you think we are going in the direction of a hybrid, human-digital craft, where Man collaborates with tools such as 3D printing and CNC milling?

I don't have a simple answer to this question, which at the center of our current issues. But here are a few of my thoughts on it.

We live in the era of the mechanical reproduction, from an artistic point of view (to quote the title of Walter Benjamin's essay). Each day, thousands of Mona Lisas are printed on plasticized posters with a degree of exactitude that even the best artist of the Renaissance wouldn't be able to match. Yet, we don't attach the same importance as the original Mona Lisa, painted by Da Vinci. Why? Because within the original artwork represents the expression of free human will, the risk of failure, the spark of creative genius.

That's also why we prefer to listen to a concert of Bach rather than its recording. What we value more than anything isn't its perfection but the miracle contained in the artist's performance, be it instantaneous like a concert or durable like a marble sculpture. Then, of course, there is the empathy related to the work of a fellow

human, destined to a human audience. In Bernini's sculptures, one is struck by their realism, but beyond that, we feel compassion, pity and perhaps even desire for these figures eternally frozen in ecstasy or pain.

In short, our interest for art, and by extension craftsmanship, comes from our admiration for the artist and the human connection established towards of his or her work. We might also admire the knowledge contained in some of them, such as the many notions of catechism present in Flemish or Italian Primitives. That's why we loose interest in an artwork reproduced or even produced by a machine. We know we won't find much in it that will stimulate our admiration.

Going back to your question, we must underline a phenomenon: the more the machine is used in human tasks, the more human atrophies. The machine erases the need for calculation; few of us know how to do a rule of three or a Euclidian division. In architecture, CAD has almost completely supplanted hand drawing. In music, frequently the artist will know little about musical theory and notes because he or she uses a software to "compose". The end product of this atrophy is the intellectual and physical decline of Man's capacities, whom scientists are already noticing. What will happen when the artisan will have lost the knowledge of hand drawing, sculpting, engraving, weaving,...because these tasks will have been taken over by the machine? I fear it might be the end artisanship.

Of course, I take this extreme as an examples of where this merging of technology and craft could lead us. One could argue the artisan already uses tools like the mallet, the pen, and others and that it is only an improvement of existing tools. One could also see technology as an opportunity to delete repetitive and fastidious tasks...

I don't claim to have an answer to this. One will have to define through research and philosophy the difference between mechanical tools and electrical or digital ones. Whoever knows anything about stone knows there isn't the same freedom in using the drill as there is with the hammer and chisel. One has even less freedom with robotic arms. If the stonemason's future is just about conceiving a 3D model that's then cut entirely with CNC machines, then I don't see much of a future for the profession. The stonemason's survival depends on the total and unique mastery of a physical discipline.

I have noticed that some organizations are quite conservative in the aesthetics they promote. It seems quite difficult to reconcile the respect for ancient building techniques with innovative architecture. How can an association like the Table Ronde de l'Architecture promote an architecture that is beautiful and innovative?

As you will have noticed, our primary concern isn't innovation. We're not opposed to new techniques and materials as long as they result in more robust and durable structures. But we refuse the fetishism for innovation that characterizes our times and push our fellow designers to consider that architecture's salvation (or biblical Salvation, for that matter) will come from technological innovation.

On the contrary, we think many solutions can be found in traditional architecture. The industrial society has abandoned many traditional processes like structural walls, overhangs, natural ventilation and breathable facades, pitched roofs and a myriad of other techniques that have been lost. Instead of reinventing the wheel, architects should revisit the classics and apply these techniques to their designs; often these don't have higher costs or complex technologies to apply.

Architects have to create beautiful designs, with less resources. The climatic crisis, the cost of labour and the rarity of skills in the building industry are some of the factors limiting the architect's freedom and are here to last. In this context, is it counter-productive to wish for the return of techniques ill adapted to our context?

To me, the climate crisis is an opportunity to rediscover traditional solutions. These days, we're often invited abroad to talk about the benefits of using tradition to respond to environmental challenges. The countries of the Global South that are menaced by earthquakes or droughts, like Morocco understand that the model of modern development isn't adapted to their realities, relying on high rises, on rigid concrete structures, on sprawling urbanism, on air conditioning that produced urban heat islands outside, etc.

We witness a regain of interest for traditional architecture and urbanism, presenting simple, cost-effective and ingenious techniques like the ones used in Arab cities, such as narrow streets with maximum shading, urban galleries of stone of raw earth, large overhangs and porches, mashrabiyya, patios with fountains, etc. So I think the changing climate will show the limits of modernist architecture and compel architects to rediscover tradition.

Concerning the cost of labor and the disappearance of vocational training, that a real challenge. The public has to understand: if traditional architecture is more expensive to construct (in part due to the need for skilled labour) it is also more durable. The economic calculation must be made whilst considering a longer frame. The larger initial investment into traditional architecture will allow the building to last several centuries, while the cheaper modernist architecture is also obsolete more quickly – the average life cycle of a typical new build is 30 years. Of course, if the client's objective is to make quick financial gain, then it will always be more convenient to build a modernist building. But only traditional architecture can produce a building that will last centuries and generations.



Interior of Factum Arte. Picture by Kurt Chan

YARA TAYOUN

PROGRAMME COORDINATOR,
IAAC - INSTITUTE FOR ADVANCED ARCHITECTURE OF CATALONIA



INTERVIEWED 01.11.23 IN BARCELONA
BY JAMES VAN CALOEN AND KURT CHAN

PICTURES BY KURT CHAN

“Architects have always been makers. All architects since the middle ages have worked with models. There’s no architect that doesn’t use materials like wood to create, to inform his design decision and then change it. So I think we’ve just scaled it up.”

Key Terms: 3D Printing, Polytechnic university, man/machine hybrid, mass-customization

Yara Tayoun, head of the 3DPA programme (mainly 3D printing of structures) at the IAAC (Polytechnic University of Catalonia), kindly showed us around the building and explained the fascinating programme and its aims.

Main points of the interview:

- The omnipresence of the human. For all the programme’s incredible work on robotic construction, it transpired that the human component is still crucial to setting up the robot, monitoring its work, and then transporting and assembling the pieces all together.
- Link with the local. At the IAAC, a lot is made with local materials like cork, clay, etc. Thus a link with traditional materials and techniques is maintained.
- The architect as a technician. A worry within the school was the possibility of the architect becoming a technician, a robot operator, rather than an actual designer with an agenda and an ambition.
- The slow pace of innovation. A few times, Yara mentioned the fact the construction industry is notoriously risk-averse and slow at accepting new inventions. This is another of the limits to the widespread adoption of mass-customization tools in the built environment.

INTERVIEW WITH YARA TAYOUN FROM THE IAAC IN BARCELONA

1-11-23

00:00

(interview begins in medias res, on top of the School)

YARA TAYOUN:Before they added all the different extensions, what you see on the right is the Fab Lab Barcelona. So if you're familiar with the Fab Lab movement that initiated in MIT, Fab Lab Barcelona is the first European Fab Lab.

00:21

Fab Lab is basically just a concept of making almost anything and they have a program of basic fabrication, so like a Fab Lab diploma and they also have what we call Fabricademy, which is a focus on textile design and wearables and biomaterials. It's more like in the fashion industry, I would say.

00:51

JAMES: Has it opened to the public also? Or is it private?

Not exactly. I mean, that is the concept of the Fab Lab, but because we're a university, like it's only accessible to students. They collaborate a lot with external entities. They organize a lot of events, but it's not like you can just walk in and use a machine.

01:12

That essentially was the concept of the Fablab, right, but then things changed a bit.

This is where all the lectures happen as well, so actually this space has remained sort of a public buffer, because when we have our presentations open to the public, the door is open and anyone can just come in.

01:38

Yeah, we've had great talks throughout the year. And each year we have two series of lectures, like the fall and the spring lecture.

01:50

Yeah, and when there are no lectures happening, some of the programs do the final presentations of specific seminars here. And otherwise, it's just a common workspace for the students. It's a lovely space, for sure. It's very nice. And also, we use it as an exhibition space. Every year, we update the prototypes that are put here on display. I walk you through them so you get an idea of the different work and different materials and different masters.

02:20

This exhibition is not specific to one program, but it gathers all of the programs together. These are made with clay, so you can see that. They are fired and glazed as well.

02:50

So always again you have this sort of geometry development that would allow for the system to be very modular. Also a lot of explorations on new materials.

So these are what I'm assuming like natural fibres, right? It almost looks like coconuts.

Yeah. Yeah, I'm not sure.

03:15

But they have been grown on a negative mold, right? So a mold that was probably milled, and then these were pressed and grown on it. And then you get a geometry on the fibres out of a mold.

03:31

Mycelium mixed with probably other things. A lot of interesting explorations of this material. I think it almost started when I was studying here, like five, six years ago. And then it's very nice to see like every year how someone takes the mycelium.

The Vennice Biennale had a room full of them.

Exactly, yeah, yeah.

03:55

Similarly, this is one of the most recent projects. Also known as ceramics, they've created this wall of greenery and insect habitats, kind of, and they installed it on... They are now also... They did the first prototype in Barcelona, but they are installing the same concept in schools throughout Europe, like in Porto and other places.

04:24

Again, these surfaces, what you see here as well is every time they're developing, let's say facade panels or facade systems, they try also always to work on the channelling of rainwater or humidity drops in the case where they are growing some vegetation or creating like an ecosystem or a natural habitat on the facade. A lot of, for example, students study these as, you know, if you walk around the city, and specifically in this area you have a lot of just, you know, closed walls of buildings. And then when they cut this, or remove, destroy these industrial buildings, you have like small, I don't know, like residential buildings, very old, that have all the facades, like just walls, right? So it's very present. Throughout the years, a lot of students have identified this, let's say, problem and came up with readaptation solutions.

05:31

Plugins that you would add on the facades, not necessarily like construct new buildings with but that you would add on these like closed walls and create an ecosystem.

Have any of them been applied to some kind of building?

Permanently no, they do install them sometimes but permanently I'm not sure. Besides this building, this project, Urbanet, that is now soon to be and these will be there to stay because they are in schools and communal gardens.

06:0

Do you think that this fascination of the faculty for terracotta or clay maybe comes also from the kind of local products?

Definitely, yeah. It's so abundant here, so abundant. Also, very cheap.

06:23

You have even in the area a lot of like ceramic workshops and ceramic schools and a co-working of ceramic like you don't see this anywhere else it's like literally in every two three streets in the city. I was also surprised like there are so much there even a lot of Japanese artists that have established here and they work with ceramics; different techniques. I also got into doing pottery.

06:53

It's really fun, very therapeutic. But yeah, it's very abundant and, also in Spain, specifically in Catalonia, they're

one of the biggest producers of clay for Europe and there's also very big industries that you know have these huge oven rooms where they bake like mass ceramic and pottery. Yep, so this is probably why.

THE TOVA PROJECT -----

07:22

but also because, for example, if you get the chance to go up and see TOVA, anything that is clay and then fired is no longer recyclable the same. You would get maybe mosaic part, but it's already fired, so the integrity of the material has been transformed and changed. But for example, printing with soil or earth, of course if you're printing on a big scale, you're not firing the pieces. This is why a lot of the pieces that you see here are in dark earth tones.

07:52

These are not fired and these pieces if you put them underwater, they are completely degradable.

Interesting.

So you could like of course there's always the issue of how does the structure survive outdoors if it's in direct contact with water. TOVA for example has a wooden roof on top. It's been there for two three years now. It does have cracks of course which we research but eventually you could just deconstruct it and it goes back to the earth where it literally came from because what we do is we excavate for the foundation with gabions with like in metal cages then we start printing basically on a small geopolymer base.

08:37

Then we print the earth that was excavated and run through a sift. Then it's mixed with water and natural fibres. And then it's put in the pipe, pumped, and printed with the crane. So you don't even transport the material from somewhere else. The small scale models that you see here are in clay, that we buy in batches of bags that are extremely cheap.

09:07

For the large-scale building that you have up there, the materials are sourced from a 50-kilometer radius. And the only thing that was transported was the wood from local producers and the agave in for the foundation. That's really a game changer, isn't it? Yeah, but again, you also have extreme challenges, which are the times of printing, the environment that affects how fast the layers dry. You can go ahead and print all of this at the same time because...

09:46

as you're printing, the material dries, right? So if you print a lot of a height, and then the structure will not be stable enough to sustain itself. So sometimes you have to print up until here, wait one day and then reprint so that each layer is more solid to advance for their next one, right?

CATALAN VAULT -----

10:12

This was one exploration that was done actually in 3DPA. So if you see here, so they did this, you know, Catalan vault study and they were able to print. More intriguing. Yeah. This at the larger scale, which they tried last year, is a bit more challenging. Let's say to print a vault on a big scale of, scale of like human habitat is extremely challenging timewise, but also to not have the structure collapse.

ALL THE SCALES OF 3D PRINTING -----

10:42

I see you experimented quite a lot with modules also.

Yes, modules you mean like prefab, prefabricated modules. Yeah. 3D printed I suppose. Yes, so these they were experimenting with before they acquired the crane.

11:06

Of course, the robotic arm even if it's big, it still has limits, so you can only print in prefabricated modules. So bricks or parts of columns, we will see them also now. But since they have the crane, they just can print on site, so they print directly, and they don't do the prefab module anymore. Not that it's discontinued, but just the past two years they've had the crane, so they've been experimenting with it.

I guess the tolerances must be so much better also.

Yeah.

11:36

They explore also with the material because they have three scales, right? Either the desktop printer scale which is the most common printer, that you probably also have. So there you can see, we also hack our printers' system and we trick our own extruder to print with clay.

11:5

Then you have the second scale, which is the robotic arm. This is where you can go one, 1:10 scale, but also 1:1, but in, in prefab modules, depending on the size also of the robotic arm.

And the third scale, which is the bigger scale is the crane wasp, which is the on-site construction.

12:23

where you can basically print the full boundary of a house in one line. That's pretty exciting. It's pretty, pretty nice.

MASTERS ON OFFER IAAC -----

12:40

Other materials are being explored. We have the master's in advanced architecture, which is basically the first masters of the school that was created. Now we have more than 15 masters, but initially it was just only one. So it's basically the master that explores a lot of different materials and different technologies, and students get to choose from different research lines that cover basically a lot of the topics that are dealt more in detail by other masters.

13:10

So they do work with materials, they could work with earth, they could work with data, they could work with robotics, etc. So they explore bits and pieces of all the different fields or potential of advanced architecture that could be applied to construction. Whereas other masters are more specific, right, like robotics for advanced construction or 3D printing earth construction. Like we have ecological building systems etc.

CORK ARCHITECTURE-----

13:39

Cork has made a comeback. A lot of students in the last year also explored. So they gathered the trashed cork from different breweries around the city as well and they turned them into bricks. These are the moulds to form them.

14:08

See here, they would take the cork and then like press it with these heated metal beds.

Oh that's fascinating

And they would have, you know, the surface of a brick.

And again, quite a local material I suppose too

Super local and it makes the bricks lighter because you're actually compacting and you have micro voids like you have only this piece right?

14:36

Do they do pure cork or do you think it's maybe possible in the future to mix it with something else?

I think here it looks to me as if it's pure. But surely, yeah.

14:48

But what would you mix it with? Like, you don't need fibers. It's just great fibers, it's really good already.

14:56

I saw this project by the Instituto de le Vivienda in the Balearic Islands, I think they have an architecture institute that's quite advanced over there that was using Posidonia as an insulation. Kind of wondering, maybe like a Posidonia-Cork hybrid could be interesting for example.

15:01

Yeah, yeah, yeah, definitely. They did that for one of their applications because of course when they explore new materials, they must also assign an application on the architectural scale. And I remember I was in the jury of the students. What they did is they built a data module, and then a 1:1 module of a whole.

15:31

I think a window part and then a seating; and then there was the discussion of using the aggregated part that is not very treated as an insulation.

THE FAB LAB HOUSE -----

15:53

This is a model of a house that was built around 10 years ago, it's no longer there but it was built in prefab for an exhibition in Madrid. It's the Fab Lab house, there's a whole video about it, you can find it. So, they produced here every strip that you see, then they packed them in a container truck, sent them to Madrid to the exhibition. Yeah, it was one of the first modules of a self-sustainable house.

3D PRINTED BRIDGE -----

16:30

The first concrete 3D printed bridge that they did, also for the exhibition there.

HOW THE SCHOOL OPERATES -----

You have quite a few firsts as a department or as a faculty.

Yeah, because the school has been exploring these advanced materialities and technologies for construction since 2006. Not many people were doing that then. I mean now, of course, now it's very current.

17:00

The school is a non-profit foundation, right? So if you compare it to big institutions and engineering schools that have fundings and donations, they've been able to implement the digital turn faster.

Because all of this needs a lot of money. To be able to scale up with these materials, you need a good investment. Especially robotic arms and things like that.

17:43

THE AESTHETICS OF DIGITAL DESIGN AND AI-----

To what extent do you feel perhaps constrained or empowered by these new tools, in the sense that since we all use pretty much Rhino and Grasshopper, you think that we would end up with some kind of similar aesthetics. Also, because the forms are fully optimized also, perhaps there is a range of aesthetics that is quite limited?

18:08

I wouldn't say so. I think the range of aesthetics that is limited is the one that is provided by the generic plugins. For examples, I would, because I'm not a computational expert, produce a rather common aesthetic if I were trying to optimize a module that I created.

But interestingly enough, yesterday I was in one jury of a school were using mid-journey, but in a very different way, which was very cool.

So, they had a site, they had a location, they developed a project, they made a model out of wooden sticks. They took pictures of this model and put it this, together with all the data analysis that they gathered on the location, on the neighbourhood, on social aspect, environmental aspect, et cetera, embedded all this in mid-journey and got a render out.

19:07

And now they will take this back and rework themselves on the models.

Such an interesting hybrid.

That's an interesting hybrid, right? They could have stopped at the mid journey; the faculty could have said okay, Mid Journey is your final image. But no. So this is where things are starting to change. It's true that at first, when these tools came out, everyone was so impressed but now people try to hack it, they go back to the source and try to see: "how can I adapt this?" and here at school, there's still a lot of the architectural aspect that is very present.

19:37

You know, like you come back to earth, it's not like you do like the crazy things. Every time a student group presents a project, they need to have a solution for the scale, one-on-one scalability of this, right? And I feel like today with this movement of trying to see how major research can go back and be implemented in the market, that often schools are doing this. They're working with accelerators or they're helping their students set up

startups out of their research etc.

20:07

I think people are coming back a bit more to, “okay how can this be realistic enough to be implemented?” Also because of the urgency, because we need to think of new materials for construction because the climatic urgency. So there is, I think now you can start seeing also when you people presenting their projects etc

20:37

There has been, I believe, a small shift. Maybe it's a long way to go but there is a sort of groundedness,

20:46

LINK WITH CRAFTSMEN AND INDIGENOUS DESIGN-----

Do you ever go back to the traditional craftsmen and consult them?

Always, for example in 3DPA, so the earth construction, it's true that it's 3D printed, but a lot of the knowledge comes from all these cultures and traditions that built with earth.

21:15

Morocco and Africa even in Europe they used to build with earth so it's not new, we didn't discover anything. The only thing is that this research is trying to do is to make earth appealing again to be used in non-vernacular Architecture. Currently, if you come to someone like a wealthy client who is building their house and you tell them “I'm gonna build your House with earth” they're going to say “no, I want the luxurious materials”.

21:45

So I think this is like the important part; of course there's so much to learn from craftsmanship. I don't think we're discovering anything really. If you actually look at local communities and indigenous people, they are like engineers in using any means that are present and using local materials to construct because that's the resource that they have.

22:14

. There's a very nice book I could recommend it's called Low Key, Low as in L-O-W-Key, as in key architecture. It's a book that goes over indigenous people and all over the world and their methods of construction or dealing with their territory is very interesting.

(NOTE: more like Lo-TEK, by Julia Watson I think)

22:32

So highly recommend and if you look at it a lot of the geometry that was created with these methods is now replicated digitally. They figured it out before. We really we didn't invent anything we just found a method of making it faster and easier than you, weaving a tree and waiting for it for decades to grow and make the bridge over the river, a lot of people did but in generations, right?

23:02

So It's true that when you see the kind of textility of these 3d printed elements I mean, it's so similar to the kind of weaving.

OTHER EXPERIMENTS -----

It's paper recycled paper.

Oh really?

Yeah

23:28

This is cork.

23:31

So this is probably cellulose, cork, fiber, cork waste, mixed with cellulose and printed. That is cool. Oh, with clay. They tell you here is a, so there's clay. Ah, this is, okay, no, this is clay with cork dust.

I mean, you're really testing all the materials possible.

Yeah, and all the methods of doing them, right?

THE ADVANTAGES OF 3D PRINTING -----

24:01

A lot of 3D printing, definitely.

24:06

Yeah, I mean, this prevents you also from creating molds. A lot of the projects are created through molds as well. For example, this one. This was definitely, like some plaster probably poured over, I don't know, egg shells or balloons, and then they were cracked. So not always 3D printing, but 3D printing has this advantage of also reducing the waste and the liberty of shape. Like for you to

to create a mold to have this shape, it would take so much more time.

OTHER EXPERIMENTS -----

24:44

These are bricks, these are not 3D printed. This was an exploration of a brick that from the colour of it, I assume, has graphene in it. So, graphene is this powder that is a black powder that could be as hard as steel when mixed with other materials or with concrete or plaster and probably also with biochar.

25:09

So biochar is just the carbon, like the remains of barbecue carbon, whatever, that are also mixed and made into bricks.

Is there a lot of work around the post-tensioned stone or pre-tensioned stone? So here they've used these tension cables.

25:35

But I don't know, I'm not sure I know what you mean by the post and pretensioned stone.

Oh, it's exactly this.

Ah, the system. Post-tension.

25:49

This material, like biochar, has also been a lot explored. If you see these, this was developed by my colleagues in my year of study. See how it's not heavy. Like you would think it would be very heavy. But I believe their best, I think their recipe at the end, the best one was like 50% biochar and 50% cement, was it? I don't remember. But 50% of this is carbon and it's like super light.

26:34

I mean you can really see the real world uses, and you're using waste to create construction materials.

Yeah. Yeah, this is why you see when one year one student deals with a material then students later take it on the research and then they create other things out of it. So, these are all the explanations of the DPA.

27:04

This is a prefab column, for example. You see, so it was printed in different parts, and then on site it was assembled thanks to these details, right? It's really a beautiful pattern seen from above also. Yeah, it's really nice. Very organic. It's for this project, PILOS. PILOS, okay. Very old model, but an interactive kind of roof system. I believe there were sensors that when you pass underneath, they would structurally move.

THE SAGRADA FAMILIA COLUMN -----

27:44

This is a studio that is called After Gaudi. So, the architect that works on the expansion of the Sagrada Familia is actually faculty here.

Really?

And this is a seminar where students are asked to develop computationally a certain geometry. And then they go, and laser cut the shape in wood, and they build like these plaster columns and then manually shape the plaster. This is where you go back to the craftsmanship because this was the way that they constructed the Sagrada Familia at the time, they would take these profiles and then slide them through the plaster and create these geometries and then they would rotate and have these different shapes.

28:40

So yes, this is a great example, I think, for your previous questions, because they identified a traditional construction method. They went to computation to create an interesting geometry and simulate how this could be done. And then they went back and applied it in the traditional method of fabrication. They could have 3D printed this.

But it's not as interesting, right? It's good to explore also how a rotation can impact the design.

GOING BACK TO ANALOG -----

Do you think in a way also that maybe people have embarked maybe a bit too quickly on these kind of new technologies and perhaps we're kind of going back to more hybrid?

But this always happens with everything, no? It's like when something comes in, we're like, ah, it's crazy. Just like now you go back to the initial analog photography.

29:31

I think that's why both of us are kind of going back to that world. Or like making bread at home. It's a cycle, I believe.

Or pottery classes.

Yeah, like now for example, I think three times before buying a mug because I'm like, I can make it. It's going to take more time because if I need it tomorrow, I'm going to have to go to class, do it, and then wait two weeks for baking and then glazing and then baking it again.

30:01

I don't need to go to a shop where I have a million options. It also depends on maybe if you're talking with someone else, they would answer you differently. But that's what I, or at least how I like to see it.

30:39

The Master in Urban Sciences and Urban Studies, is where they use a lot of data analysis and data capture to kind of guide their interventions in the cities or city planning, etc.

30:55

They analyse the behaviour of users in public spaces and then use this data to inform a design process or a design protocol, which is also pretty cool. But they work more on the urban scale rather than there. So they don't go and explore materialities, right? It's more on planning or community building, public space interventions, and just sort of things.

So you really have all sorts of scale in the kind of masters on offer. Yes.

The fabric scale, the device scale up to actual length.

31:40

It's pretty silent too. Because usually on Fridays it's fabrication day, but this week is midterms week, so all students are now presenting their projects. Because the term ends right before the winter break, we're in the exact middle. So all of this week has been a week of final presentations.

Yeah, we just finished ours, that's why we're here now.

But you're here on vacation, you've decided to come, or do you have a field study that you need to do?

Well, we have this field trip next week in Madrid, but we just thought that it was too tempting not to pass by.

MORE 3D PRINTING EXAMPLES -----

32:15

Of course. So our main hall used to be until here. But this year we have too many students, which is a good thing. So we moved our robotics lab to here. It used to be in the other building where I'll take you now. Yeah, so students use it. This is actually a project from this year. So again, it's a mix of clay.

32:44

So multi-material because this is white and brown clay that was printed at the same time following this geometry.

Pretty cool. It's almost like a Venetian marbling.

Yeah, it's nice, no? So it's clear, you know how you have the two colours of basically of soil, the white and red.

I enjoyed that kind of effort at ornamentation also in a way.

Yeah, this is easy with computation.

33:12

But how would you do it?

You have two filaments and then they would merge. Yeah, they probably had two extruders, like two heads in one go.

And what happens is that we in-house, we produce our own custom heads of robots to accommodate to a class. Because you can bend metal rods with this double extrusion.

34:01

But as you can mill or timber with the robot, like the same robot, so you have to change the head.

I guess it must be fascinating also for companies like ABB to have your work, because it showcases really the kind of almost limitless potential.

We work with all of them, honestly. There is ABB, there's Universal Robotics, and there's KUKA.

Wow.

This is the big robot, so that was the biggest machine we had before the crane.

And with this robot, you can easily mill a timber plank on a one-on-one scale. This also we use a lot. A very impressive machine.

34:42

34:46

You know the piece of the column that you saw there? So this is one of the stacked, this was probably one of the failed pieces, but that we keep.

3D PRINTING WITH FORMWORK AND AT AN ANGLE-----

35:00

This was printed on a sub-frame structure like the one you see there, but then they removed it so they were able to achieve this, you know, this distance between prints by first printing it on a wood structure. But then it still stands when after a while when all the drawing was done, they removed the structure.

Yeah, that's really intriguing also how you see the kind of layer that seems like it was 3D printed not really horizontally, but like almost a bit at an angle.

Oh, no, this was printed at an angle. This was printed directly on the wood. And it was printed with the robot. So, the robot has more freedom of access than, for example, the crane.

35:52

So now using the crane, I mean, unless you have a very specific mechanism of the extruder, which might be very complex, you can only print flat, right? But with the robot, you have more access, you have four axis of printing. Beautiful project. I mean, you can already imagine the kind of scale of it.

36:16

If it was like a whole building. Yeah, so this was before they started scaling up to the building scale in the 3DPA program. And you see they do a lot of studies on the infills of the 3D printed forms.

36:33

And here is the woodworking workshop. This is our big CNC. And now there in the atelier, we will finish the visit there and there. We have more machines. I don't know, I spoke a lot. I don't know if you have questions for me.

THE ROLE OF THE HUMAN IN THIS DIGITAL PROCESS -----

36:53

I mean, I think we have a few. I guess you had a very interesting picture with the TOVA project, where you had a hand rectifying the different layers, and then also the beautiful kind of 3D printed patterns. And I guess I was wondering what your take on it was, like the role of the human in a project like that.

Oh, extreme, because earth is a very easy material to manipulate, to work with in your hand.

Almost easier than to print it, for sure. And a lot of times, last year for example, we had a failure. I'll tell you in that specific picture what happened. When you're printing the material, you're constantly rectifying, because of factors like humidity, or if it's sunny, or if it's hot, or the amount of water, etc.

37:52

Because it is mixed with the earth, you might need to vary it every day, if not every hour. So if the material is being extruded and it's a bit drier than it should be, it will print with these intervals instead of a smooth line. So, what probably happened there is that the line was being printed but it wasn't being continuous. So in the picture what you see we had to manually connect the lines, you know, rejoin the line.

38:22

And it works. We had an exhibition in Berlin last year and when the prototype arrived, it was cracked. So, the night before, we took some earth and we started wetting the surface, rebuilding the layers. I mean, of course it showed that it was going to crack again, but at least for a small amount of time we fixed the gap.

So it was man imitating the machine.

Yeah.

39:02

...From machine imitating men.

Exactly.

39:06

I mean, we don't pretend it is. Like sometimes you see the image of TOVA and you can clearly see a crack in the facade. I mean, we don't hide it. It's not perfect, it's a research. It's a work in progress. There are cracks. We try to understand why they appear where they appear. Is it the sun exposure? Is it the printing path? I mean, failure with these natural materials is inevitable.

RELATION WITH LABOUR TRENDS-----

39:49

And so how do you position this kind of work of the school in relationship to kind of bigger trends like labor shortage or the very high cost of labor also? Trends that have kind of plagued the profession for a while now and aren't really going anywhere, I suppose.

40:12

Are you meaning to ask, would this solve the issue? Or will it replace labor? I guess that's the whole question, isn't it? But it doesn't, because for example, on site, when you go outside to build for example TOVA, you don't just leave the crane functioning by itself.

(40:43

Here we have Sissil, our fabrication expert in the program. So a lot of the things that you see here, she's assisted the students with it.

41:20

Do kick us out also when you have to.

No, I usually do visits of one hour, so we're still in time. On track.)

(NOTE: Back to the question).

41:44

We get asked this question a lot. The way now the global trend is going is that for example they are trying to embed the hardcore robotics in, I don't know, like carrying heavy metal panels on site. Yeah, sure, why not? I don't want a human to carry them.

42:14

But can the robot plaster and position it by itself? Maybe they could eventually. I would maybe say I would worry about this if it's really just making a robot that's putting tiles together, you know. But also in a lot of European countries there is a shortage of this labor. Apparently they don't find anymore, like a lot of people who know how to.

42:49

But in our system, the idea from the research of 3EPA is that this crane needs operators, right? It also needs people who mix the earth. It needs people who know how to analyse the temperature of the environment where they're printing and know how to modify the mix of said material, of earth, you know?

So the idea would be that maybe certain people that would otherwise be working with earth making bricks in places like India or in Africa could use this technology to improve their methods of production. I imagine this scenario where one comes to this community and gives them a crane, you would have one engineer that would go there that would actually show the people, the labourers who are already working with earth because they know the material probably more than him. He will show them around the crane.

43:56

but they would keep doing what they're doing, right? Because they know how the clay, the soil works in their own conditions. So they would know how to bet mix the material; it's not something you can do automatically. They know how to work with the material but don't have a lot of money. They live in an environment that's similar to the one we have here in nature.

44:33

We can finance just the acquisition of the crane then we can build a whole community or a whole village using this technology, maybe creating work too.

44:47

I don't know, We would need to make training for people on computation, on doing G-Codes, you know, simple things, or maintaining the crane. So I wouldn't say in that specific case, it will replace labour at all. ***It might look very technological, but at the end of the day, as you saw, it's also very labour-intensive.***

45:21

Of course, it's always a risk. The job of a secretary or receptionist has almost disappeared because today you have your phone, your smartphone, you don't need someone to tell you where you have a meeting. Right? So I feel this argument to fight back technology sometimes is just not very valid.

Of course, I don't know how it happens when we're talking about big companies like Amazon. I don't know. First they don't treat their workers in the nicest way and now they come and replace everyone with robots. These institutions, anyway, were never human-centric to begin with.

46:19

Someone pointed this idea that we would become more and more like technicians rather than these kind of designers or creatives because we're just kind of operating a machine that has limitless possibilities. Yes, but what is the machine doing? Who commands what, who decided what the machine is doing? It's the designer's brain. So, I don't know, I hope it doesn't get to the point where an architect is, let's say, completely useless.

46:48

I don't feel like students today have the same knowledge that I had when I did architecture school back in the 2000s, right? Like in the early 2000s I had to draw H5 lines and electric circuits. Some people still do it. I don't see why. I don't know.

We always thought that in 2020 we would have flying cars but we don't. So I don't see that we're advancing in a very quick chart.

OTHER PROJECTS -----

47:33

This is another project we are working on together. We have this to be installed on Monday.

It's a part of a bigger set of furniture that were actually 3D printed in a large scale. There's a 3D printing company here in Barcelona which is partnering with the school on the project. I actually also work in that company so I'm doing both things.

47:52

The major concept of the project is building furniture, urban elements, decarbonizing urban elements, so creating climate refuge within cities. We've worked closely with communities in the area here, in the neighborhood of Pavliano, to work on the design that Tim worked on. He's been working on fabricating the wooden parts for a while now, and we have printed the rest of the furniture which are like benches, chairs and tables.

48:22

It was printed with UPM, which is SLS (NOTE: not sure), that is mixed with PureTech, which is another specific material of that company that basically neutralizes CO2 and absorbs it when it's put in a paint format.

Would you have the name of that 3D printing company?

Yes, it's called La Machina 3D, or Lumena. I mean, it's a group of companies, they have two companies, you can look them up online.

OTHER PROJECTS -----

48:52

So yeah, more projects. This project's interesting. I worked on it when I was a student. We were given a task where each group had a percentage of a void from a brick that we needed to fill in. It was made with exoduro, which is a material like a mix of plaster and white cement. And we were allowed to use one mold only to pour the

six bricks for each group. So your mold had to be reusable.

49:27

You could use either 3D printing, milling, or laser cutting for making your mold. Ours was, in my group, was this. The point of origami effect was that we printed in a thin wall all the facets of the brick and then we put them together with just bolts and screws and then removed it.

49:59

You put some Vaseline on the surface on the inside, you pour your concrete or your plaster, then you remove the bolts and nuts, then you make the second, third, fourth. And it was up until like this year they changed a bit the exhibition, but up until now it was still there, the mold.

SIX THE CHANGING ROLE OF THE ARCHITECT -----

50:19

I guess on the spectrum from designer to producer, where do you think we all situate ourselves doing this kind of work? Are we still architects?

50:36

Yeah, I mean for me an architect is a very multidisciplinary person. I don't see why you can design what you can produce. And actually architects have always been makers, you know. All architects since the middle ages have worked with models. There's no architect that doesn't use materials like wood to create, to inform his design decision and then change it. So I think we've just scaled it up, we've always been makers. ***And also I feel if you're pretending to develop something for the construction sector, but you're not actually constructing anything, then what are you doing? You're just preaching to the choir, right? So you have to kind of get your hands dirty.***

51:15

You always have to work also closely with engineers. You must work closely with the craftsmen that know the craft work, with woodworkers, metalworkers, to understand the essence of the certain system of the material, then be able to adapt it to architecture. But yeah, I would say maybe the definition of an architect, as we know it, has changed. It's no longer the same.

OTHER WORKS -----

51:44

I'll go quickly through...the last project: these are surfaces that have been made with robotic arm, either cork or wood, or you know the bent metal sheets, these are all developed in the Masters of Robotics and Advanced Construction. They also do pretty cool stuff. The laser cutters you are very familiar with.

52:08

Everything is in Open Access I see.

Yeah, I mean, Open Access; you have to book on a software before you can use them, but yeah. Students have the liberty to use it at the same time. Printing, woodwork shop, a matter lab. We use this to test new materials, etc. And upstairs, you have just the whole floor as classrooms. So there's nothing too interesting happening.

52:53

You can see the printers, the small printers that they have. Our students have their own printers because they hack them into printing clay so the other students cannot use them. So, the program has their own printers.

This is the extrusion system that's actually 3D printed with PLA by the students and they learn how to set up the printer and put it together.

53:22

It's fascinating to see all the different skills, also, at which you work.

They always work on the scale with the research phase. And, the small blocks of material, this is from their matter research seminar. So now they're more in the research phase. So, they would have different topics or challenges that they are developing, together with researching our materials and with an architectural vision. So there's always the architectural part that is very present in our master.

53:52

We're not always going to be making the data train (NOTE: no idea). Can I make a more historic building? How do I make an entire house out of it, etc. And at the end phase, after the winter break, we go to the onset phase and this is where they will actually collectively print a large scale data in the compass mountain.

I spoke a lot but I hope I was able to give you as much information that would be useful to you.

54:19

That's a lot of wisdom, yeah. That's great. I mean really more than we could have ever hoped. Thank you so much for taking the time for this.

54:38

You have my email now, feel free to contact me. Maybe if you're back around in February you can come to our final presentation. In the month? In the cold, but you would see the final prototype. It's happening on the first of March, so if you are interested, you can write me before.

And actually also perhaps the contact of that teacher that also works at the Sagrada Familia would be fascinating, if we could perhaps ask him a question too.

55:08

I'm not sure I can give you a direct contact. However, there is Oriol Carrasco. who is one of our faculty who if you come back you can just have a talk with him. We also work closely with them. Perhaps if you get any kind of email questions could that perhaps work? If you have like...

What about Orriol perhaps?

If you have a specific question, you can send me by email and I can see what I can do or if I can provide you with documents that.

Anything is really useful. Thank you so much again.

You're welcome.

Thank you.

Enjoy the rest of your trip in this beautiful sunny Barcelona. Are you spending the weekend here?

Yes, the weekend and then after Madrid.

56:01

And Madrid is also a great city, but it doesn't have this team. Exactly. It's only a down point.

But we're actually visiting a factory in Madrid. So I think it's going to be really interesting to kind of compare it to the experience we had here also.

Sure.

And see how they collaborate with the cast. That's a nice trip I think they've had.

.....

56:43

I hope you enjoyed it.

It was so inspiring. Really beautiful work. Reminded me so much of what we did back in the Bartlett. And I'm just a bit sad that we don't do it in Tudelft, to be honest.

In the Bartlett, did you do your bachelor?

57:04

I did my bachelor's.

Well, thank you so much again. Have a nice day too. Goodbye.



Works of previous students at the IAAC in Barcelona. Below, the robotic arms that enable the school's famous expertise in 3D printing via its TOVA programme.





Various material tests and prototypes at the IAAC.





Student Work at the IAAC. Picture by Kurt Chan

JORDI DOMENECH BRUNET

MASTER CRAFTSMAN

EXPERT OF CATALAN VAULTS (BOVEDAS CATALANAS)

EMAILED BY JAMES VAN CALOEN IN DECEMBER 2023



“Modern production tools allow us to realize forms that were practically impossible to create only a few years ago”

Key Terms: CAD, Catalan vaults, modern design tools

Main points of the interview:

- Networks of knowledge. Domenech underlines the fact that he knows very well the latest progresses in his field, including those related to more foreign technologies like augmented reality, and that his advice has been sought on similar projects before.
- Adaptation. The master of Catalan Vaults also mentioned his use of CAD to produce novel structures, showing a technological use that is very similar to the one architects would have. In other words, his process of design is fully optimized thanks to digital tools, although the building is made entirely by hand. It represents quite an interesting contrast.

1 Utilizan ustedes herramientas modernas como el brazo robotizado, la impresora 3D, la cortadora láser? ¿Ve usted una utilidad a estas máquinas en su trabajo?

Las herramientas modernas nos permiten realizar formas que antes eran poco menos que imposibles. Mi amigo y colega, Salvador Gomis, ha utilizado la realidad aumentada para construir bóvedas. Yo he empleado el corte de plantillas por control numérico y el uso de AutoCAD es imprescindible.

Do you use modern production tools like robotic arms, 3D printing, laser cutting? And do you see a use for these machines in your work?

The modern production tools allow us to realize forms that were practically impossible to create only a few years ago. My friend and colleague, Salvador Gomis, has used Augmented Reality to build Catalan vaults. I have used virtual templates for digital control and the use of AutoCAD is indispensable.

2 En su opinión cuál son los impedimentos al empleo más frecuente de la parte de designers de estructuras como las Bóvedas Catalanas? Me imagino que los principales sean el alto coste y la paucidad de artesanos?

Muchas veces el diseñador queda limitado por el presupuesto y por encontrar mano de obra que sepa construir su proyecto. Por esto yo aprendí a dibujar en AutoCAD. La mayoría de las bóvedas que he construido las he diseñado yo mismo.

Afortunadamente noto un aumento de interés para realizar bóvedas muy generalizado. Tengo varios alumnos que ya construyen bóvedas por su cuenta.

In your opinion, what are the main obstacles to a greater use of Catalan vaults? I imagine that high labour costs and the scarcity of skills must play an important role?

In many cases the designer is limited by the quote and the lack of labor that possesses the skills to build the project. This is the reason I learnt to use AutoCAD. The majority of the vaults I have built, I also designed them. Fortunately I have noticed a widespread increase in interest for vaults. I also have students that have now built their own vaults.

3 Qué opina de proyectos de investigación como el Block group de la universidad politécnica de Zurich, que emplea software y fabricación robótica para crear estructuras delgadas similares a las bóvedas catalanas? Aquí hay un ejemplo de su trabajo (<https://block.arch.ethz.ch/brg/project/free-form-catalan-thin-tile-vault>).

Conozco muy bien los proyectos de Philip Block. He colaborado con su equipo (David López y Marta Domènech) en diversas ocasiones. Para mí es muy importante recuperar el sistema constructivo de la

bóveda Catalana y para ello las nuevas aplicaciones que da Block Group son para mí muy interesantes.

Por mi parte he buscado también nuevas formas que evitan la reverberación, gran problema de las bóvedas cóncavas y nuevos usos como son utilizarlas de encofrados muy complicados de hacer con madera.

What is your opinion of research projects like the one of the Block group of the Polytechnic University of Zurich (ETH), which uses software and robotic fabrication to create structures similar to Catalan vaults?

I know very well the projects of Philip Block. I collaborated with his team (David Lopez and Marta Domenech) on various occasions. For me it's very important that the structural system of the Catalan vault is rediscovered and I find the new applications of the Block Group to be very interesting.

In my practice I have also searched for different forms that avoid the problem of reverberation, which an important issue with concave vaults. I have also searched for new ways to design and use complex timber formwork.



Examples of Domenech's work, seen on his profile page in the Red de Maestros de la Construcción Tradicional, the national network of craftsmen in Spain: <https://traditionalbuildingmasters.com/masters-search/jordi-domenech-brunet/>





JUAN OCAMPO

MASTER BLACKSMITH



INTERVIEWED 09.11.23 AT HIS FORGE IN THE
COUNTRYSIDE NEAR MADRID.

BY JAMES VAN CALOEN AND KURT CHAN

PICTURES BY KURT CHAN

“Each of my iron fences takes a month to make. It’s not the materials, iron and coal, that are valuable. It’s the labour, the experience.

When I started nobody taught me how to do it.”

Key Terms: Blacksmith, Wrought Iron,

In this wide-ranging interview with Juan Andres Rebollado Ocampo, the master blacksmith took the time to explain his fascinating life story and the nature of his work. Among the really interesting points he mentioned while generously forging a beautiful piece for us, these stood out particularly:

- The importance of networks and continuous learning. Ocampo is at the center of a very active network of blacksmiths spanning the globe and sharing techniques and contacts via social media, conferences, fairs, etc. As we spoke he was preparing a trip to Japan, a country he has visited multiple times and that is his main market.
- Specialization and teaching. Ocampo is constantly learning from others and has taught more than 20 apprentices, all of whom can produce the same metal gates he has become an expert at. Decades of personal experience have led to the products adorning his forge.
- Resilience and adaptation. He works everyday, long hours at the forge, whilst being well into retirement age. He has adapted to a more contemporary context by taking up marketing via Facebook, although his tools are still decades old, some being much older than he is.
- The passion for the trade. As Ocampo showed us, his whole life revolves around these iron fences, these being heavily present in every room of his private home. An all-consuming obsession, one is struck by the breadth of his knowledge and his love for the material.

09.11.23

INTERVIEW OF JUAN ANDRES REBOLLADO OCAMPO, BY JAMES VAN CALOEN AND KURT CHAN.
PICTURES BY KURT CHAN, IN THE COUNTRYSIDE OF MADRID.

Perfecto. Thank you very much. Again. Again, you do it.

00:12

And your character is Japanese? Yes, I have many Japanese friends. And I like Japanese culture, it attracts me a lot. And I would like to get a bit impressed by that culture. But as much as I try, as we have the classical, Greek, Latin formation,

It was a lot.

00:45

I am not capable of assuming that aesthetic and oriental forms. It is not easy for me.

There you go.

Move. Yeah. Get it.

Oh, he was asking for the lights.

If you wanted a bit of light.

Here we are not connected to the power grid. Really? We can't have a power grid because of weird political reasons.

I'm gonna get real.

I don't know the word but... The posters Yes, the posters From the place where they gave me This is a drawing of mine Really? Of the scratch That scratch is at home This is the first drawing I made In the revalid This was a revalid too This is Camille A charm of Mrs. Leo

03:59

I'm crazy about camel sculpture. And I think Rodin was a son of a bitch. And that's the boss. Ah, the boss. They call him the boss, right? The boss.

04:20

And nothing. Chirino, my friend Chirino. He makes vases. Do you know Martin Chirino? **No, I don't know him.** He's a sculptor. He's a herrer who is a sculptor. He's the only forger who has a work in the Queen Sophia. Oh, really? He's a... His name is Martin Chirino. That's Stia. In Stia, every two years, a herrer meeting is held.

Very interesting. This is in the north of Florence, Italy. That's an interesting place. How many members? How many heros? You can put 150 heros. That's a lot of heros. In France we were now at least 130-140 heros. The meeting at Arles-sur-Tèche is this one. 2023.

This one, we are together a lot in the singing. Yes.

And how is the communication? What language do they all speak? Here there is no language. Here everything is done. I know. It's all very visual. Because you see how they do it. Although it is in Japanese. I have given classes in Japan. In a university, because there in Japan the applied arts are university degrees.

So it's been five years in Japan. In Spain, it was five years. They don't exist anymore. I took classes at a Japanese university, the University of Siga, which is very close to Kyoto. And once a Mexican girl came, who spoke Japanese, but she didn't always come. She came when she could. I took classes with them and there were no problems.

06:20

And well, it's in my house, I live here. Very interesting. And how much energy do you need to work on the ice?

06:46

We'll talk to you then.

07:14

I'm going to light the fire. Ah, yes, yes. I'm going to light the fire. Do you want me to light the fire? Ah, yes, yes.

I don't know exactly what you want. We have a few questions, but it's very interesting to see the process. This...

When I have an iron in my hand, I always tell them to touch it. Touch it. In exhibitions, they ask not to touch it. But when I do an exhibition, I tell them to touch it. I want them to touch it. Because it has a very special touch. The forged iron, if you touch it, I really like to touch it. We made this grill in France.

08:20

in that meeting, so that people learn. And it's missing to finish it. You have to straighten it, because this is twisted. You see that it's... Yes. So you have to take it to its place. Here it's also twisted, because that's this way. You have to take it this way. And it's in formation. It's not finished. And these are the laterals.

08:58

You have to make some 16mm drills here, and then put this in here. Then this goes around and the other goes over it. And this is the bar. Kuhn asked me to bring something. I don't know if this is much, but I have it here so he can take it. Like this? Yes, it's a bar that...

09:26

Always, always, when I prepare the material, I make 9 units. But I don't use 9, I use 8 units. Really? Why? Because one can be separated. And if you're working and one is separated, and you're in France, it can be a little more difficult. So I always have one more. And this is one that has more. So...

We are going to pump it, we are going to center the straw, we are going to pump it and we are going to put what we do, what we really do. Ah yes, perfect. We'll take it.

Are you going to demonstrate something? Yes. Oh, wow. I really don't know any good people. It's important to work with a goat skin mandible. Why? Because they say that iron emits radiation. When it's hot, it emits radiation. It doesn't emit a lot of radiation, but it emits radiation.

10:44

and can leave you sterile. Oh, really? Yes. My grandfather was a warrior all his life and had five children and one son. So radiation didn't affect him much. Yes.

I'm gonna go to bed.

I don't want to mess it.

What is the origin of the iron that you use? Industrial. I go to where they sell iron. They are iron that 100 years ago would be steel. Because pure iron does not exist. Pure iron is this.

11:51

This thing here, this is iron that has no carbon. It's pure iron, but it's not sold in Spain. Because it's not good for construction. This is pure iron. It has no carbon.

12:15

without any coal in it. And it's very difficult. It's impossible to find on the Spanish market or in the market in general. That most of the metal that is used is recycled. Like actually all the metal we use is recycled. But not specifically here, but he seemed to say that in general.

It's very difficult for it to burn. You know that iron burns, right? That the geose... It burns. Iron burns. Let's see, it burns. It's like wood. I put some iron in here, it doesn't burn. I don't like to burn iron. Because it always looks like crap.

13:15

Does it always start like this? If I leave the iron rod here, if I leave the iron there, when I pull it, the iron is not there. It's burnt. The iron is burnt. Although it seems that it does not burn, it does. It burns, it burns at 1400 degrees. But it burns.

13:37

And it's very ugly. And what I'm going to do is a fratasse.

Is it a normal or special carbon? It's a cast iron. Cast iron. Ah, yes, yes.

There is now a new system of FRAGUA, which is induction. Is that so? Induction. A medium team costs about 9,000 euros. I am 70 years old and I am not going to spend 9,000 euros because I don't.

Apart from the fact that I like meat.

15:56

No, that's uh, we'll get there eventually. We were just saying that, go be patient. Oh, okay.

16:13

What is the importance of drawing for your work? Is it important to know how to draw? For me it is fundamental. If I don't draw, I don't remember.

You can't do it with graphite, and you can't do it with graphite or carbon, how are you going to do it with it?

Are your clients private or are they institutions? My clients are some institutions.

But above all, my clients are Japanese. **Oh, really?** Yes. What I do, I send to Japan. And they... I have a contact in Japan who is in charge of...

to sell what the world has.

Important. And... And it's a place, I imagine. Excuse me? Is it a Japanese place? Yes. Your contact? He's a man who makes... urban furniture. But he loves iron. He also sells a lot of Andorra. Andorra?

Actually, most of his clients are...

19:49

It works like that. Oh yeah?

And why? Sorry? And why is it like that? Because I can't understand it.

I sell it, I sell it, and if I don't sell it, I keep it. And there are even things that they wanted to buy me and I haven't sold them. Because it is.

20:16

It's been done for me. But I do everything I do for myself.

Again... In Spain they have been a lot

Ultimately, they sell little..

20:58

I was here all day yesterday. I was here all week. But next week I'm going to Toledo because I want to see how a sword is made. A blue one. A sword of...

A 16th century sword, a sword for the age.

Do you travel a lot?

Let's go to Sweden this summer. Let's go to Andorra.

We're gonna say it out.

I imagine that Switzerland has a very important tradition of gyro.

There is a person there who is interested in learning how to do the rest. I'm going to go there to see how it goes. and the trips are an opportunity to learn new techniques.

23:04

Now I'm going to see how you do the sword.

23:10

Yes, and you know what happens? When I go to the guerrilla meetings...

23:16

I usually work, but sometimes I prefer not to work. I prefer to see myself working. Because seeing myself working, I learn a lot. I learn more than working. Because what you know how to do, you already know how to do.

23:37

This is a key to regulate the passage of air. Yes.

23:52

The induction valve is the one that lets you switch it on. And in 30 seconds, you put the iron on.

I'm looking for another one. And what is the use of this?

24:27

This is a keychain.

24:33

And then we'll put the iron here and we'll make the hole.

25:20

But in Madrid, when it's 40 degrees, the temperature must be very difficult. In summer? Yes, in summer.

It's more the summer than the winter. There's very little light.

28:38

Is there water?

28:46

First, so that the fire is centered, so that it does not burn to the sides. I want it to burn in a specific place. And second, because the coal is compacted with the heat and forms an oven. It forms a crust there. And in that crust the iron is boiled. It gains temperature. I do not forge without water, I am not capable. For me, water is fundamental.

29:17

It's a balance between fire and water. When you get out of fire, you have to put water in it. The only way to stop the heat is with water. So it has to be a balance. It's fundamental. Water is for me, it's fundamental. I've seen people who work without water. Horse-riders work without water. Really?

I don't know how to do it, but I'm gonna do it without water.

We have two, they are different. This one and this one are different. First we are going to use this one, then we are going to use this one. See you.

What is the use of the small gas oven that you have there?

30:19

That's a toy. Compared to this, that's a toy. That's what it is. That's to heat a small piece. It gives 900 degrees. This gives you 1400. As you neglect this, the iron burns. Oh, the iron never burns.

And how can you say that it's the right moment? So long. The surface.

The good thing is that the iron has a certain color. I'm going to wait for it to turn yellow. It doesn't turn white, but it has to be a very weak red. Let it turn yellow. We'll see.

31:49

Life has to come here and warm us up more.

What are your main production materials? Iron, lead? No, iron. Iron. What? There are people who work with bronze or steel. Or there are people who work with...

Oh man.

There is one thing that is said in Spain when you have a girlfriend and you go with another, is that you put the horns on the girlfriend. Have you heard that? Yes. Well, I think that going to the stainless steel, for example, is putting the horns on the iron. That is being unfaithful to the iron. The iron has given me so much, so much, so much that I owe it to the iron.

I only make iron, and only iron. And nothing else but iron. I'm going to see the sword, because I'm curious to see it. But I'm not going to make a sword in my life, because that's another profession. That's not my profession.

The first broth, every time we put the iron in, we call it calda. We give it a broth. It is a hot water that we give to the iron. The first broth costs more because the iron comes from ambient temperature. But once we have given it a broth, we make sure it does not lose heat.

The second broth will be faster because it will keep you warm. I'm not going to let it cool down completely.

I'm gonna turn it off.

34:17

I'm turning the rod, I'm turning it around. Because I want the heat to be uniform. It's important that the heat is uniform. So that the hole is in the middle. And so everything is probably going to one side or the other. Not much, but a little.

34:54

This is to help me. I use it when I have to work alone. I don't have a helper. I don't even want one

35:22

What we are going to do now is an extrusion. We are not going to cut anything. We are going to make an extrusion in the iron and we are going to tear a piece of iron. The iron that is between the two drills that you have seen, from there a little piece of iron will come out. Not everything, because they are going to go to the sides. But it is a little bit.

37:05

Let's take advantage of the hot weather we had before. Yes. Because it hasn't cooled down at all. Now it's going to take less time to heat up. I see.

37:18

And what is this machine there?

Very mysterious, like this. Very mysterious. I'll show you how.

This machine is a bit old.

Good luck to you, sweet guy. **I see that there is German quality in the engine. The A and G.**

I give them Vaseline and I cover them with light because light decomposes them. It's very difficult to find them, you have to make them because you can't find them, it's very old. Now they are made of tires.

39:33

If I ask myself how many machines like this are there all over Spain? Again. **How many machines like this are there all over Spain?** There are many, yes.

The engine was burning. It was smoking when I plugged it in for the first time. So I removed it, I rewound it again, and they did it to me. I put the same engine back on and rewound it. I had to change the anchors and stuff. And I preferred to repair it.

And the peas are not good.

42:35

Can you say anything about the machine there? Oh yes, that is a very... Tadosco. Tadosco, he is the one who made this. So the machine over there is a really old machine. And he was saying that he protects it from the light. Because this way the rubber kind of seals that are all to it aren't harmed by the UV rays. And yeah, we were just discussing the fact that there are very few of those machines in the whole of Spain.

and it's really vintage.

43:41

The only new thing I bought was this. This was a gift my parents made me. **Really?** When they saw my parents. My parents are no longer coming.

I told my father when I was little that I wanted to be a warrior.

because a teacher who was in the first year of high school, he was 11 years old, told me that he was going to the art school, I don't know if I liked that. So I went to the art school at 11 years old, and I saw the Venus de Milo with the tits up in the air, and I said, this is my place.

44:35

I was talking about Spain in the 60s and the 1960s. My father was...

The chief of the police of Franco de Merida. I was born in Merida.

46:27

So you're asking? They said they don't have railings there. They use bamboo or run the car or something. Well, he was saying that they don't need barriers for houses or things like that because they respect boundaries so much. So you just put a piece of bamboo and it sinifies. Yeah, but how come he works with this Japanese company?

46:52

Well, most of his clients are Japanese. Oh really? So he has a wholesale, not a wholesale but like an agent, if you want, in Japan, that sells his work. Wow. My father told me that I couldn't go to the art school and the trade school. Because in the art school and the trade school were all the whores, all the maricones and all the reds of Spain. The communist.

and I was admitted to a seminar of claretianos for healing

And from there I left for Sahara, when Sahara was the Spanish province. The seminary was a religious seminary? It was a religious seminary.

Oh really? From which they threw me to the top.

I can imagine. And then I went to the art gallery and I went to Sahara, when Sahara was the Spanish province. Oh really?

The Green Mass movement and the independence of the Sahara... Well, independence... That shit that... Malo Reco.

And you were in the saga? Yes. Ah, yes. I was in the saga. In the year 1975. I was a kid.

I was in those units. Those were the units I was assigned. Oh, really? And when I had an accident, I was left alone. I went to a school of art in Granada. In Granada I was studying artistic force. Five months.

I'm a part-time worker at Montesotallet. I've been here for 20 or 25 years. And now I want to go back. different.

I have the best woman in the world. He's my accomplice and my girl. I've been with her since I was 18. We've been holding hands all our lives. What a story. Sometimes I'm happy.

Sometimes I'm not so happy, but most of the time I do. I like how I do.

52:07

You want a whiskey? Here and now? Well, you want a little whiskey Kurtz? You want? Yes, thank you. I have that bottle of whiskey there.

When I left the army, I was basically alcoholized. Yes. And the transition was to quit alcohol and start a new life.

I wanted to be a warrior like my grandfather. When I was little, I went to my grandfather's workshop. I had my hammer and my grandfather would do some things. I arrived with my grandfather, who was a master.

And... There's someone out there, I don't know who, who says that the father is a man of his childhood. So...

53:45

And it's a very important detail I'm going to hit this

That hit doesn't come from any industrial rod. Because you know that this is sold in the industry. You can buy it with the holes made. But that hit doesn't have any hole that you're going to buy. That's why this hit is very important to me. And second, because it frees the punch. It frees this. Because it dilates a little.

54:58

Joder, soy yo que sé quién.

55:03

And the two hits are the proof of craftsmanship? For me, yes. In that fence, everyone has the hit. If you look at that fence, everyone has the hit. Ah, yes, yes. And if you don't have it, you should have it. This is a really fun little thing, is that... You see the two little...

55:29

hits that he sports, they were to prove actually that it's an artisanal thing. Because in the industry when you have industrially made components like these, you wouldn't actually have this little bump on them. And so, yeah, it was like this. These two bumps are really important to me. Which bumps? So you see here, this is the last two little bumps that he gave. Yeah, yeah, yeah.

I guess this is very therapeutic in some way too. It's very awesome. Exactly. And he was also showing the pictures of the family saying like, oh yeah, I'm a very happy man and I have the best wife in the world. Very awesome.

And very important too.

fundamental.

58:44

So the signature. Yeah.

And the last operation is...

01:00:07

BANG

01:00:20

These are 20 millimeters. 20 millimeters.

And these are 21 millimeters. So we have half a millimeter of the same.

Very precise. So there's a tolerance of half a millimeter.

Well, if you want to come with me... Sure.

And what was the last operation with the... The brush. Yes. Because I remove the peel and impurities that it may have. Ah yes. But when it is a little more dry, I will add a little wax. Because wax is what keeps the lily without rust. Yes. And it needs a lot of maintenance, the iron like this.

In summer, in Andalusia and in the Castile region, houses were covered with lime. Oh, yes. The facades, they were all white. And the iron bars from the windows, the iron bars here, were covered with wax. And you go

through Andalusia and you see bars that are not painted, and that are there.

01:01:54

Perfect.

If you want to come and do some weight training, you can do it. Here we have a place to do weight training.

We are going to drink a couple of glasses. Because the whiskey is not for you.

Well, this is a little house over there. But when I have something to live in, there's a bathroom here. Well, there's a small bathroom here. Oh yeah? If you want to take a piss.

01:02:48

Let's go to the door.

And how is your relationship with the neighbors? Well, my chickens are here, they don't mind. I don't know. Leave her alone!

And the ones downstairs don't bother me either. Since they don't bother me, I don't bother them.

Hahaha

01:03:37

But he doesn't drink whiskey? I don't drink whiskey. I don't drink anything that has alcohol. Nothing. You don't have to drink it, if you don't want alcohol. Or we can put a little bit so you can try it. Oh, yes, yes, with pleasure, thank you. I have it... I have it punished. The bottle. And that's it.

01:04:08

It's for the Japanese visitors. It's for the... The visitors, the people who visit the workshop. Yes. Whoever wants a ouija, I'll give them a ouija. I'll have to buy another bottle soon. Many visits. Not many, right? No. It's a restricted area.

01:04:35

Here are few people. Thank you very much. No, no, no. There was something in the army, that can't be touched now. Because we would get caught. Keep your distance from them. He said that neither thanks nor forgiveness. Yes. There is nothing.

You come here, you are in your house. If you want to see something else, you tell me and I'll show you. And this is what's there, where I say... Oh yes, I'm going to start the engine. Because we are going to... I want you to see this thing. Like this?

But it goes at 380. And this is a 20. It comes from solar panels. So this can't go with solar panels. The battery is too low. Don't touch it. You can't touch it. Just look.

And do you collaborate with architects sometimes With architects? Yes. Sometimes, yes. Sometimes I've done something, a project that I liked, well, very well. Anyway, my fences don't go in the windows. They go in... We've only put one in a Romanesque church in Parenzio.

01:06:46

Yes. An architect came, who was restoring it, and he asked me if I could make a fence for it. A very small window, Romanesque, as you can imagine. It was very small, and we made a very nice one.

And did he draw it or the architect? You or him? No, I measured the window and adjusted it to the frame. Very Romanesque, very Romanesque.

01:07:14

We had to enter in that frame that was there. It was 40 by 40 more or less, it was 40 by 30 and so many. And we put a very nice line.

I'm going to start the engine and it's still making a lot of noise

you maintain the machines independently? Yes, I maintain everything. And by maintaining the workshop, I

have work to do. I have to be on the lookout. Yesterday the leaf of the grass broke, because I was cutting this side.

And... I had to make it up. I was trying to make it up.

But yes, I have to do it.

First, I don't want to call anyone. Second, I don't want to see anyone. Yes, yes, I know how to do it. Yes. So...

01:12:52

In what language? Ah, in English.

It's the universal language. Our courses in the Netherlands are also in English.

I have to wait for it to cool down. Now it's burning. It's cold, but the whiskey is not that strong. Thank you. I've been drinking bottles for 100 years. What are you waiting for? To cool down? Cheers! Thank you. Cheers.

01:14:06

Now let's talk on Facebook. **Do you have Facebook?** Yes, yes, Facebook. Yes, we have it.

Is it connected to the internet, Facebook and platforms like that? I'm on Facebook, otherwise I wouldn't know anything. Because the contacts I have with Japan and with my colleagues make photos of what they do, how they do it. And it's fundamental. For me, Facebook will be a bitch, because they know more about you than you.

But I need Facebook. I wouldn't be able to move without it. I know they're some assholes, but it's the world we have to live in. It's always the dilemma of the artist, who needs marketing, but...

No, it's not my passion, but it doesn't look bad to me.

01:15:36

Ah yes. **It's interesting how you first expressed yourself to your uncle and then to your mentor.** Yes, yes. I'm very proud of my uncle. Yes, yes. But my brand too. Kurt, you did take a picture with him. Yes, perfect. We have it here. Well, when you ask me to do the same thing...

We'll keep in touch, right? We'll keep in touch. And when you get to do something good...

Yes, yes, he is the target. You have to send me a photo of the realization. Now, if you think it's good, this is my life, this is my workshop. If you want to ask something, do something. Even if at some point you come to me and want to come back.

01:17:03

Well, we agree, maybe I'm not, but if we agree, you can come with whoever you want. Thank you very much. It was very interesting. Now we're going to see a work that I have out there, at home. And I want you to see a couple of bars. This is in the process of... this is to nail it. This is the first one I'm going to take.

show the reality.

So this one is a piece from the museum in Galicia. **Wow. Okay.** I put this on so it doesn't get dusty. So it doesn't get a lot of shit. This frame is different. It's all puffy. And we made this fence in a meeting in French Brittany. There's an area that's a pine-pong that has a lot of...

01:18:20

There is an area that is said to be the town of the Mago Merlin. Yes, yes. Do you know it? Yes. Do you know Ping Pong? I know of the name but I don't know... It's under the name of Rems.

01:18:36

And there they have a beautiful meeting, warriors, beautiful, beautiful. And we did that one there in a meeting. For people to know how it was done. And I was then working on a French ship, a frigate from the 17th century, the Herméon. **Ah, yes, yes, the Herméon is very famous.** Herméon is very famous. Well, I was working on the Herméon. I was working. Amazing. Doing all the heroes of the salupas.

The small boats, since there were no ports, had to be flooded in the floodplain. It was flooded somewhere, in some bay, and with the chalupas they would access the land and go up and down material and such. And I had all the iron from the two chalupas that I had. And I had a great time there. I was there for a summer, a couple of

months.

01:19:31

I also have the Tadousko.

Makes sense. Probably do anything.

It's crazy how everything is very much always go always here back to these two things, which is So got out of the familiar like all these craftsmen kind of converge with all these skills there And then there's always some something with japan how it comes back to japan always. Yeah, actually very very often Yeah, **it's really like the country of crafts** exactly. Yeah

connections. Yeah it's really fascinating. Because they seem like independent things.

And how did you start collaborating with the Japanese?

It was a coincidence. I met a guy who was a warrior and he was fired from the workshop because he had financial problems and they fired him from the workshop. And he was preparing an exhibition for Japan. And he called me and asked me if I could help him. He said he was coming here to finish the exhibition and then he would pay me whatever it was to work here in my workshop.

I said, look, I'll help you finish the exhibition and we'll go to Japan. He said, okay, let's go. We were working here for a season, we sent all the material to Japan, and we had to go there at three months to maintain the exhibition. And in that time, I made a fence.

But I made it 30 cm, 30 by 30, very small, with a square of 10, like the one we put in the machine. And I put that in the suitcase. I took it because the exhibition was his, not mine. So what I did was, when I got there, I started showing the fence.

I started to talk to the Japanese and they offered me some classes at the university. Then I returned three seasons to continue giving classes in metal techniques. I gave about 15 or 20 days of classes. Then I did an exhibition in Nagoya, in Kyoto too.

and I will be back in 2025. Oh, really? Yes, I will be back in Japan. Let's see what has changed there. And well, I have a relationship with people from Japan. They are good people. I have students who do things and they teach me. Look what I have done. And I love it, I love it. Yes, yes. I have a colleague, a friend, Mori, who does a lot of punfonao things. This is what I do. He taught me punfonao.

And the truth is that I love it. Because the guy comes to a better area every day and does wonderful things. He does very beautiful things. And I love it. It's unique, yes. Maybe we can take the next one.

The world is very small. Did you come here to Argentina?

And I was invited to a meeting in Texas. Possibly in Arizona.

And what is the importance of the Sagrada Familia for the masters at a national level? Oh, yes.

One is... The master of the family's prayer is Henry Pla, who is a friend of mine, a very good friend of mine. And you can go see him, I'm sure he's delighted that you're going to see him. The thing is, it's not easy to go see him, because he lives in a small town in Catalonia, on the border, already in the Prepirineo. So I don't know how you can do it to go see him.

And I have a friend, a good friend of mine, Vallejo, who speaks for the

01:25:26

It would be very useful. And well, yes... I don't know. You are already looking for life with them. They are charming people. We, the Serreros, are very famous for having very bad milk. Because... I don't know if it's because of the material or... But then we are good people. No, it's nothing. And I want to tell you that they are going to attend you.

If you go to see them, they will try to teach you what they know and what they can teach you. Thank you. There is no longer, or at least I do not observe it, the ancient craftsman who kept the secrets so as not to tell anyone, among other things because he ate with that secret. But I do not eat this, I do not eat these secrets. To me, the Spanish state, for having served in the artillery corps 24 years...I get paid every month. I want to tell you that I don't need this to eat. So I'll tell you, you see it, I'll explain it to you, I'll tell you what you want. I'll send you the bars when you have Facebook, through the messenger, I'll send you almost the entire process of making the

bars. Perfect, yes. So you can see how you've done it. Now let's see the bars, which are bigger.

01:26:53

And that's more complicated than I explained to you. Because in a visit I can't explain it to you. That would have to live with me for a few days. I'm going to close now. Many reasons.

01:29:08

Kurt said it's a very nice landscape.

Yes, it's a nice place. It's very quiet. The only noise I hear is the chicken. **And I was asking if there was a small portion of metal that we could...** Of course, this one, it's going to get cold now. Oh yeah? But it's hot.

And we're done.

It's like a sword.

I think we're gonna water it. It's gonna give us that? I think so. Wow. Can you fit that in your luggage? We'll try. We have a plastic bag.

It's almost like a cross tool. I have one for you. Oh sorry? I had thought of giving one to you. I don't know if you can fit it in your suitcase. It's fantastic. You can take it in your hand. No, I have a very long suitcase.

Incredible, I say. Mmm. How is it, Gacho? Fantastico. Well, that's what they...

Like Christmas.

Actually Kurt, could you see how we say Christmas gift in Spanish?

Thank you very much. It's like a gift of nativity. Ah, it's a gift of nativity.

01:33:27

I'm delighted that you came to see me. Thank you very much for your time. No, no, don't thank me, don't ask for forgiveness. That's something we say in the army. In the army, you don't even thank or ask for forgiveness. In the army you don't say either thank you or like sorry.

01:33:54

then you're just thankful I guess, right? Yeah exactly. Okay. Oh. Ha ha. Tadu's code out. Ha ha. Un momento, espera un momento.

01:34:13

It's kind of a... it's kind of like a peace. Like, I don't know, you're not too happy about anything or not too sad about anything. So you just... it's kind of like this middle ground I think that he's trying to talk about. I think so. I mean, from what I interpret at least. He seems to have reached a wonderful state of peace. Yeah, I mean...

This thing is pretty heavy. Do you think you can even bring it? I don't know. I mean we'll try. I don't care. We'll do it. It's a bit sus somehow right now. It's still warm. Yeah yeah. Like here.

01:35:16

I believe this would. Try to make a little movie montage with all these. Oh yeah, it would be amazing actually.

It's too bad my lens can't zoom in really close. That would be such an amazing shot. Actually, maybe we should have used my camera too. Yeah, exactly. I was going to ask you, but... Actually, I'm so dumb. Yeah, we probably should have done that.

01:36:24

missing some few shots of um i want to capture some shots of madrid just like everyday life to kind of scatter and that would be lovely right like like sound of birds or kids playing

How do you see the evolution of your work?

I've taught a lot of people, come on, a lot of people. There will be at least 20 people who are able to do the fence. **Really?** What happens is that it's a very hard job. And the people who have to earn money can't waste

time.

Because they go to the bosses. It's very difficult to sell it. The bar on the table, once it's finished, is worth more than 2,000 euros. Who pays 2,000 euros?

Yes. He says to any MC that I'm crazy. But... It's been a month's work.

So, what do you want? How much do you want to give me? 500 euros? It's normal, yes. It's handmade. You've seen how it's made, right? That has a job. What's less valuable is the material. And the coal. But the time. And years of experience. And experience. And it's not...

It's not the fact of doing it, it's also knowing how to do it.

When I started, nobody taught me how to do it. I

... **Oh, really?** Nobody taught me how to do it. I saw the fence in Seville. In Seville, there's a fence, which is like one that's in my house now. We call it the Devil's Fence. If you look it up on the internet, you'll find the fence there. The Devil's Fence? If you just... It was my name somewhere around there.

Well, in the master network of construction that you have seen, it talks about my specialty, this one, the Devil's Reh. I drew it for the first time, look, and now you will see it. Well, I have already seen the drawing, but I only took my master to Granada.

And he told me that was impossible. **Oh, really?** That's impossible. You're going to waste time and you're not going to get anything. And it was the last course I was in, because it was in fifth. And he said, you let me try it? Yes, yes, yes, you can waste time however you want. And when I did it, it even helped me finish it. Because it only takes a lot of work. Doing it alone for me, it takes a month.

I do it for 8 hours a month. 8 hours a day in front of the forge, with a hammer of 2 kilos in my hand, you end up with a lot of problems. It's what you like to do, and I like it. I've taught many people to do it, many people who have wanted to learn. There are many people who say, yes, yes, yes, I want to see it, I want to know, I want to know. And when we go into 4 bars, they say, this is a lot of fabric, I'm leaving. And they go to the store.

I'll tell you, it's very complicated. Take it easy, man.

Which is the country of Europe that has the most blacksmith masters?

There are many people in the East, but in France there are very nice people who do very nice things. I don't know many people in Germany.

When you enter my Facebook and look at my friends, there are people in Italy, in Italy there is a guy who drives me crazy. He works with lines, he makes some naked men's bodies, he asks for erotic scenes, that he can give you something what he does. He drives me crazy. But with a fucking rod of ten, so no...

Life doesn't get complicated either. He makes drawings with iron and it's beautiful. I love it. He makes silhouettes and there's not much iron to put in there either. But the little iron he puts in, he puts it very well, very well, very well. Yes, yes. I like it. There's a Talbotero too, which is a good point. There's a meeting that I publish, I publish the meetings when they come out on Facebook.

And it's worth it. If you want to meet people from this world of iron, it's worth it to go to a meeting because you will meet people in France and in Mubu, in the Serrero. I imagine so. There is an association in Paine Pond that I will take you to.

Bruno Lorez is called Tim.

They have a community farm. They gather there on weekends and when they have time they do their little things. They are very nice people.

In all the ways in which we live today, I am going against it.

01:43:03

Here comes a pause, makes a fucking chalet.

Yes. An isolated house. Yes, yes. A chalet that you shit on. With some fucking gold griffins. And a carrana marble solarium. And then he plants four Ikea plastic headlights. Yes. And he stays like God. But everyone gets a

My representative in Japan gives me 2000 pesos for the rail I'm sure he'll charge 4000

They know how to appreciate what it is. And it is what it is.

It's a problem we have in architecture too. There are very good materials, but the ones we are looking for are catalog solutions. Quick solutions.

I think that now isolation is taken care of a lot. That little house next to the workshop, that little house was made by me. And I drew it and said, here, here, here. It's an iron structure. Then I put the sandwich panels on it. Perfect. And I've isolated it with the extruded polypane. And there...

And then we have a family party.

They come, they come, they come, they like to come to the workshop, to the flower, and they play with the iron and the fire, and they burn, and their mother whines at me.

Do you have young people in your family who are interested? No. I have a grandson who is 14 years old. No, he is not 14 years old. And if he is interested, he should go to the art school. He should get a license in the art school, as we talked about earlier.

01:46:52

I am a professional for forging. But I am not a professional.

I'm interested in everything related to the Forge. I'm interested. I'm telling you, I'm going to go see what...

I've been doing this for a while now. But there's a piece of work that I don't have, because it's out there. It's either in private collections, or it's in some museum, but...

But... I haven't been able to do it for a while.

Are there other associations like the Master's network? Or is it unique at a national level? Thank goodness it exists. Thank goodness. Because that association is... First of all, it's not an association.

is a hangman, American, who is crazy with the... who was crazy because the man died.

which was the one that sponsored the story and the foundation continues to sponsor the network.

01:49:14

And that man was in love with traditional architecture. So, in terms of traditional architecture projects, he liked it and supported it. And there are some awards that are...

He's got the name of the guy who talks on the internet about that guy. That guy. And...

01:49:45

And well, because of that, the network was created. But the network has been working here in Spain for 10 or 12 years. It's been no more. **Really? Relatively new.** And there are many, many people, very good artisans. And not only from the iron. There are people who do crazy things.

Now we have a meeting, the weekend, no, the next one, we have a meeting in Toledo, the master network of construction.

And we'll meet up, you know... ..here in Spain.

I could have said public, I don't know.

This is one of the youngest cities in Spain. Really?

This was a fucking solar panel 40 years ago. And I didn't see anything. Everything that has been done has been done in the last 40 years.

I can't imagine the changes I've seen in all the years in Spain. Between the dictatorship, then the phenomenal economic expansion, and now a very normal situation like the rest of Europe.

In Spain, people who have a lot of money in Spain...

It's been the same for 200 years. So, it hasn't changed that much.

It's good that you see it like this. I'm glad you see it like this.

Here are two Spain. And there they are in the congress now, breaking into each other's face.

and I'm out.

It's an implanted monarchy that the king put in a dictatorship. The king put it in a dictatorship. And we have eaten it with potatoes. You want it or not, you don't. The king. The king that nobody has voted for or nobody has.

better one.

I think that the Spanish people, by not killing each other, we have more than enough.

Maybe, maybe he was the world's master.

And after having done... ..not the conquest of America, because that was not a conquest. It was not even a colonization. And the Spaniards who boarded in... ..in Cádiz or... ..or in Sevilla, the Americas... None of them took money back. None. Yes. None. They were not even clear if they would arrive, if they wanted to.

And while the English or the French or...

They were sweeping where they could. I'm not saying they've been sweeping, because if they've been sweeping, they've been sweeping. But we've done universities, the first universities in America, we've done them in Spain. And the first hospitals too.

It happens to me that Spaniards are more like Spanish. And... that's it. Sometimes you feel like... ..changing country. But what are we going to do?

We have a right to Rancia.

People today protesting on the street saying Viva Franco!

Yes. This is not good, right? It's me. I'm ashamed. I'm ashamed in front of you. It's me who's ashamed.

Yes, it's a very difficult situation. It's a very difficult situation. But the worst thing that has happened to him... I don't want to offend you. But I don't think that the worst thing that has happened to him in this country, the worst thing that has happened to him in this country throughout his history, has been the Catholic Church.

I don't want to offend anyone.

Here the church has fucked this country, but very fucked.

Yes, and now it's a very Catholic country, isn't it? Spain. It's been a very Catholic country. Now it seems that they are losing customers, but they are taking money.

I am convinced that the most expensive church in Spain is the Catholic Church. The Banco Santander is not even its mother. The Catholic Church owns everything and does not pay taxes at all.

It's a very unique situation in Europe. I'm telling you, Brussels, why don't they pay taxes? I'm telling you, what is this? And not only don't they pay taxes, but they are some real

Yeah, I think that's what I was thinking.

I'm gonna go on with that.

01:57:44

Here you can rent a flat for 500,000 euros. Here in this village. Yes. I live here. When we built this building, we built it in a cooperative. A cooperative, where we gathered a lot of people. We said, let's build our own house. And they gave us a land here that nobody lived here. I was the fourth person who came to live here in this village. Oh. And it's been 40 years.

Well, my daughters are 40 or 42 years old. Then people came who have 500,000 euros to buy a flat. I have nothing to do with those people, but nothing to do with those people.

I've always lived here. I raised my children here. My children go to college here in the city. Then they went to university. I was able to take them to university.

Now I have grandchildren. One is closer and the other is further away. Thank you. Some live here in the center, but the others live at 50 km.



Juan Ocampo in his forge, kindly showing us his techniques and taking the time to tell us about his incredible life.

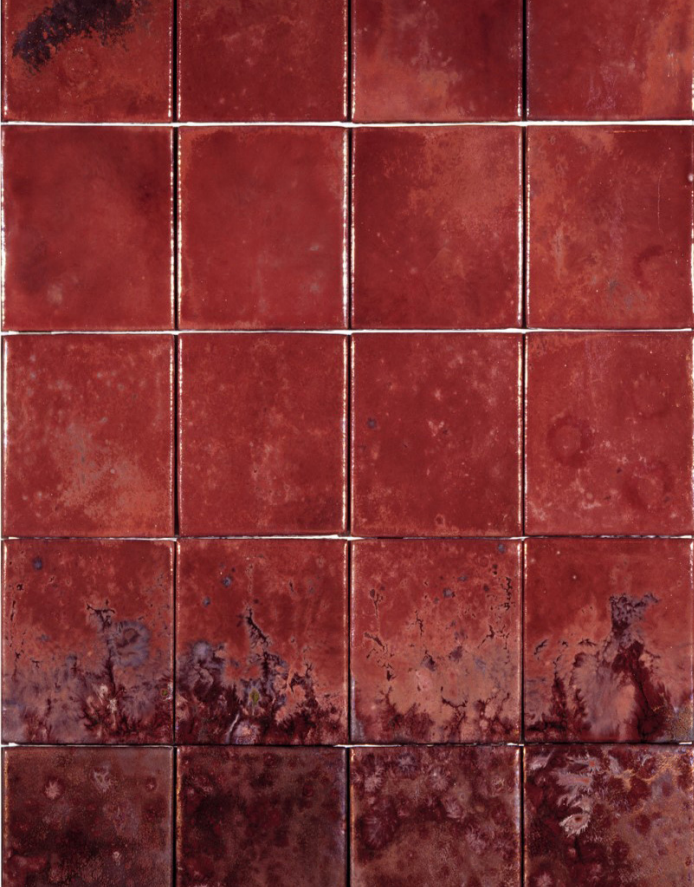




Juan Ocampo in his Forge. Picture by Kurt Chan

MARISA DE LUCAS

MASTER CERAMICIST,
MADRID



INTERVIEWED 01.11.23 IN MADRID BY JAMES VAN CALO-
EN, KURT CHAN AND BENDERT VAN DIJK

PICTURES BY KURT CHAN

*“It’s not easy. It’s patience. It’s
passion. It’s passion because, well,
the people never understand why you
spend so much times to make a color
work”*

Key Terms: ceramics, craft, personal research, implicit knowledge

Marisa de Lucas took the time to come and meet us in person in Madrid, and we had the joy of talking about her work and life over a coffee in the centre. De Lucas is an expert in her field, having mastered many complex glazing techniques over decades. She is part of the Red de Maestros de la Construcion Traditional, in Spain.

Main points of the interview:

- De Lucas has spent many decades refining her techniques, and ceramics are clearly her obsession. She talks of such a close proximity with the material, to a striking degree.
- She speaks of the difficulty of transferring her skills onto new generations, as well as the very site-specific nature of her work - highlighting how her apprentice in California cannot replicate her work due to different clay types, pigments and ovens. Her work is truly the pinnacle of unicity.
- De Lucas does not use any modern techniques or tools beyond Facebook or her website to communicate: she is mainly analogue in the way she works.
- Her work has changed over time: her access to pigments is crucial to changing her work: for instance, she mentions she was able to work with some uranium many years ago, which would be unthinkable today.

INTERVIEW WITH YARA TAYOUN FROM THE IAAC IN BARCELONA

1-11-23

00:00

(interview begins in medias res, on top of the School)

YARA TAYOUN:Before they added all the different extensions, what you see on the right is the Fab Lab Barcelona. So if you're familiar with the Fab Lab movement that initiated in MIT, Fab Lab Barcelona is the first European Fab Lab.

TRANSCRIPT OF THE INTERVIEW OF MARIA DE LUCAS, NOVEMBER 2023

WITH KURT CHAN AND BENDERT

Maria de Lucas: Why do you find me? Why do you find me and why do you want to make something about my work?

Interviewer: **We just noticed within architecture we see that many of the works now are very boring in some ways, very simple, very lacking in this kind of historical culture with craftsmanship. And so we want to bring that back into what we do now or explore how it can be done in that way. And usually craftsmanship is such a hidden kind of process where you have to be involved in the process of the labor, the process of making to understand it.**

And so, hearing from you would be amazing to understand how we can use these traditional ways of making in new ways of architecture.

Okay, so the first thing, do you know something about the ceramic from the Arabs? When they come here in the 7th century, they come from Baghdad.

01:28

Iraq, Baghdad, all the people who come in from the north of Africa come in from over there and they arrive into Spain. So, they develop a kind of special ceramic. But the origin of this kind of ceramic, metallic luster that I call ceramica in carbonation, pottery in carbonation, I will explain you later with this means for me.

They come from far away, they come from China. Because the first enamel that we have some knowledge and experience to make the best enamels are China. Many, many centuries ago. They develop a kind of ceramic, very spectacular, even that I can't remember exactly the centuries. But I have everything in writing, I have investigating too much about this color, because this color is special, you know, this colour coming because they develop this color because they have to think in gods and this is the representation of the gods.

In any mosque there is a tile in the center looking for the Mecca with this kind of luxury colors. And when I was young, I was fascinated because the first, well, for me, it was normal because in Granada we have all this pottery.

And when I started to study pottery, I decided that I have to go that way, in the Arab way, to know how the Arab people reach this wonderful color.

03:28

Well, the history is very long. It's not easy, you know, because I started to investigate, and I came to Baghdad. I arrived in Iran and I've been in the museums of Iraq. Remains some wonderful tiles in lustre, metallic lustre. Very primitive. This is the origin of the lustre.

Well, I thought that it was the origin of the Lustre, but the beginning coming from China. Why? Because China and Middle-Orient, we are here, China, Orient, Middle-Orient, And we have to go back to Alejandro Magnus. You

know, the conqueror.

India, they are arriving, until India. But in the old times, they don't kill the people they conquer. Like we make, of course they kill. But the most important trophy was the slaves. Because they can work free for you. So in this kind of slave.

that they are arriving ways and ways centuries ago, festival with Alejandro Magnus and another, by another conqueror, they wore some potter. And this potter start to make the potter in the place that they were living at that moment, that it was Middle East. And in the Middle East, they don't have porcelain.

05:10

They didn't have many minerals at that time, like the Chinese people developed the manganese, the cobalt, the copper, the silver.

Yes.

They don't have it. Yes. So what happened? That this potter who coming from China, that he was a slave at that time, they decided they look in the herb for new minerals, and they tried to make the same cooking. But they couldn't because there is no porcelain. Even there is no grass, there is only clay. So all of you are studying architecture?

Bendert - Yes, yes. But different topics. So Kurt and James are more into the really the craftsman way of making. I'm actually looking into the symbolism of Islamic culture into al-katado. No, al-katado no. Well, maybe because we have two different kind of handicrafts in Alhambra for example. We have

07:23

Have you been in Granada?

I will go there on Friday. I will also go to for the ones. Yeah, well in Cordoba there is this kind of time in the mirror In the middle they develop this kind of color the I'm talking about the first potter who was discovered, or they were working with this kind of color to give the metal eyes. China people, many generations, not the first China people who arrived as slaves to work in Baghdad. Maybe a lot of generations, I don't know how many because the time there was different.

08:19

And they have to look for this color because it's the representation of God. Why? Because, as you know, there was many religions in the Middle East. One of these religions was the Persians, who are looking always.

So, in the mosque of Cordoba, you are looking for the Mirage. Go there and you are going to see one of the most old...

tiles or luster. In all the midabs, in all the mosques, there is a tile with luster because this is the representation of gods. In the beginning from the Persians, the god was Aura Mazda. Aura Mazda for the Persians. And what does that translate? Means light,

11:22

the lustre color coming with a finality, this sacred finality, looking for gods. Then the Auramada and all these people, they changed and one section was Judaism, another section was Islamic, and another was Christian. That is the moment that we are now, no? So, but the thing is that these people was investigating until they find the right mineral.

the right clay and the most important, how to find the right cooking. Because even that the colors, these looser colors, the ingredient, the most important ingredient are the mineral. But we can't forget that another very important thing that is more important than the minerals are the way of cooking. I want to explain you why.

Well, in the beginning there was only manganese, cobalt, and maybe another copper. Two or three minerals. Not so many. Silver. But maybe they don't have the binding. They don't find the way to introduce the silver at the

same moment with the manganese.

When this arrived, we don't know. Many, many centuries ago. But they happened. And because they are looking for the symbol of God, this is the most important from this color. And then with the time, the Alaskan from the north of Africa until Spain, and they developed the ceramic in Spain. Why? Because during these centuries, We don't know exactly, maybe seven centuries. I have everything written down. So if I find it, I will send you. But this is in Spanish. So you have to translate because I didn't have time to make in English. Yes, of course. So I can pass my notes. It doesn't matter because maybe you are going to make something more.

I mean, you are going to write more interesting thing about the minerals than I can right now because I am very worried, you know. No, not very worried to come back to the history because I have already made it, you know, but maybe to make it clean and to make some of my friends say you have to put in this

Well, I think maybe but I have to translate and I don't have time now to translate.

But so yeah, this other people develop during many centuries this kind of color. When they are arriving to Spain They have already more minerals That they coming from another part of the world this potter also they. Normally, this is my thinking. I was making a lot of experiments, you know, to find the right color, like I was looking for in my life. And they fixed the copper, that this is the normal color that you are going to see in the Alhambra. So the potter in the Alhambra is white color, with the signs on copper and manganese and sometimes in cobalt. But what happened? Well, this is the first part of the history.

The second part of the history is what happened with these minerals.

First of all, what happened when we cooked these minerals? So, a normal cooking. You have a wonderful in Delft, a wonderful pottery. The blue pottery of Delft. It's high tempera because it's porcelain. If I remember, a blue color, white color, very beautiful. This is with oxygens. Yes. The metallic color is without oxygen. That we call, in pottery, we call reduction. 16:06

For example, Reduction. Bernard Leach. Bernard Leach was one of the most important potter in England in the last century, in the 19th century. Why? Because Bernard Leach was a normal potter who was living near London. And he decided to go to Japan to study with the Japanese potter. Bernhard Linz was the first potter who brought to Europe a new concept of the ceramics, I mean the new designs. Because at that moment, for example, the Delft pottery, like the pottery in Nürnberg, in Germany, all this area, the festival was German who discovered the porcelain, the formula of porcelain. Porcelain is high-temperature and we can make with oxygen or without him. Bernard Leach went to Japan to study with Hasima

I can't remember very well but maybe you can find it. It's not complicated because it's the history, the new history of the new ceramic. Who introduced in Europe the new concept to make another kind of shapes, another kind of colors. So in Europe, the panorama was very poor ceramic like the sole ceramic in German. 17:46

or maybe in Belgium, or porcelain. The rest, Italy, Greek, Spain, France, they make normal pots with some lights, with some color, but very primitive. Yes. When the porcelain arriving, they develop the sense of this potter, and they start to investigate more and more which kind of color they can put down in the level of the tempera. 18:16

Because to cook porcelain was very expensive. You need many, many days in the old times, I mean, maybe two days, three days, even that the potters, the normal potters who cook with wood in Spain, in all this area, Mediterranean, and even England and in other places, they have to cook with wood. What happened? That they spent two, three days.

and they have to make communal kilns. It was impossible at that time that a potter can have their own kiln for him. Confidently, no? Now, every potter have their own kiln, but in the old times, they cook all together. Yes. Well, one size. 19:13

This is how to cook with oxygen without oxygen. Oxygen, the normal potter, like the Delft or another kind of potter. For example, here we have Talavera de la Reina. It's a place, normal potter. Everything that you see like this one, for example, this one (shows cup on table).

This is made, this is porcelain, industrial, but with oxygen. Maybe it's high tempera. I don't know, maybe because

this is not real porcelain. It's medium tempera. But what happened with the metal, with the luster, that is the point. The luster cooked in medium tempera.

reduction but it's a kind of reduction you know something about to cook in reduction fire you know no not at all well this is the king when you cook with oxygen okay you open there is the king there is some tubes here who enter the gas and we are talking about gas, not wood, because with wood it will be very, very difficult, gas. And you start your cooking from zero until the degrees you want. I mean, maybe 900, 1000, 1250, this is the highest for sale. Okay? But in Luster, we are cooking medium-tempera. 20:51

The first cook, because normally we have to make in carbonation, to make the colors I make, one cooking but in two steps. First of all, we are arriving for our tempera. My tempera is 1000-1050, the maximum. Why? Because I make my formulas.

I make with the kind of minerals to have this tempera. No upper, no down. Why? Because the enamel, this tempera are soft. And at that moment, you have to make some carbon inside. Like the Arab cook with wood, they arrive into the tempera just by looking the fire. 21:48

And they decided now we close everything and the smoke coming inside the smoke, no fire, we stop the fire only we cover everything and we let the smoke coming into the enamel the enamel is very soft and they make a film it's like a film, eh? so we can see very clear this blue but in the state of this blue, the blue develop the original blue like we find in the earth. You understand? We make the inverse. We have to find the color as we are in the nature, as we find it. But not as we find it now with our eyes, but as there is in the earth, inside, with fire. You know, in the magma. So we have to go back to the magma to recover this color. You understand the processes? And this is fictitious. Why? Because even if we make a smog, we can get this color as the original was. This is a kind of trick. We trick the enamel to arrive to see this beautiful color as it was in the magma. It's a beautiful process. So when I discovered this one, then for every color we have different, not for every color, for every mineral, for example, I have a combination. 23:43

Copper silver and manganese, for example. No, copper silver and yellow, fair. If you change by five degrees, they change completely from one color to another. Five degrees.

Is it very difficult to control?

No, you can't control now with the pyrometers. You control it. But it's difficult to control because maybe this spot, the first time you make it in the middle of the kiln, and the second time you make it in a corner. And the ingredient combination will be the same, but the the colors change. This is the beautiful thing, this kind of color. 24:28

So this is all with the pigment or the minerals already added to the material when it goes into the oven?

Yes, we have to make the minerals we can put like this one. No, no, this is the formulas. You have to make your formula. All my colors are based in my own formulas. This is a very very hard work of chemical way. And every enamel has for example 10 elements. No 1, 2, 3, maybe 10, 15. Between 10 and 15 elements different. For example, feldspar, bores, xylithes. 25:27

Well, we have some fundens. We call fundens that we are going to make like a crystal because the ceramic, the enamel ceramic, is like a crystal that you put it. And the same, silice and car, you know? But for this enamel that are very sophisticated, we have to make a lot of fins. So for example, boras, lead, and feldspath, they are the fundens. They help to fundent the another minerals like silica, the silica is very hard and if you put boras, feldspar or lead, lead is very dangerous. Now later we are talking about the lead. This is to add it to the formula to melt another mineral, otherwise it's impossible. And then you say, well, I want the texture brilliant, or opaque, or with a kind of sign of beluels, you know, or craquelet. So we have to add different kind of minerals. The color is the same. Cooper, with Cooper, is red, but maybe in oxidation is green because the copper with oxidase is green. So we have to come back to Bernard Leach. He discovered that the Chinese people make wonderful red color that they call Sang de boeuf. Sangre de boeuf. This is the special color for the Chinese. 27:19

It was at that time was the most difficult color to find it and it was high tempera and reduction so it's the top you

know the top of the ceramic is the yes because high tempera reduction porcelain we are talking of porcelain because the clay the the grass and the porcelain is like we are in in a land no in the beginning here no for example this is 27:48

the hair that we made our green, the potage. The next step is that we find the clay to make the potter, to make the normal potter. The second degree is a little bit hard. Is the felt spatulas and the grass that they make the floors. And in the end, very deep, is the porcelain.

So as you are deeper and deeper with the material, you have to go higher and higher with the tempera. So more deeper to find it, more higher tempera.. For example, the clay with 800 degrees is enough. It's very strong, but it's enough. As a normal potter that we find even now from 10 centuries ago and still there. 28:47

So do you also use glazing techniques?

This is the glazing. This is the glazing? Okay, so where the colors are not yet present after coming out of the kiln, but you glaze it afterwards. So normally in pottery we have to make two cooks. The first cook is to make the biscuit. 29:16

We call it biscuit. When you make a tile or a pot, it doesn't matter. You left the right and you make the first kiln. To be hard, you can touch it. And then you prepare your glycine, your enamel. That's the second. It's the second. And maybe it could be one third. Until four times we can cook. More than four, normally some people does, but the pots and everything come in like the form, you know. Maybe it's something beauty, you can find something that's beauty because the Chinese people, for example, for the Chinese, they have the kilns or in tunnels. In the end of the tunnel (30:15) If they survive to the highest tempera, they're the most expensive. I saw in German pots like this one, who cost half million, something like that. Because they suffer the highest tempera that we can imagine.

In the first room from the tunnel, they are perfect. The second one, the third one, and in the end, if they resist, they are a miracle, something special. So the potter who finds one pot alive in the end of the tunnel, they are rich, completely. So, we are talking the enamel. 31:09

Because the color of the arrow are the animals and the atmosphere in the kiln, inside of the kiln. So how they are arriving to this Nologen, we don't know, maybe testing, testing, testing. But for me when I was young, I was fascinated, fascinated completely for this color.

31:38

In the beginning I was working with a potter in the north of Spain just to learn everything by observation. We have to go to the barreros we call for the mountains to carve and to take the clay and to melt the clay and everything. It was very, very hard to know the process from the beginning. But basic processes, not from the school. Because in the school, of course, you learn a lot. But there is more theory than practice. And we won't practice. So I've been there, and then in another school in the north of Spain. And then I went to La Vizval, Portuguese school in La Vizval in Gerona, near the Barcelona. At that moment, I told you. 32:33

It was the 80s. Yes, it was the only school in Spain with European level. Ah, well, I was talking about Bernard Leach. He brought and learnt from Japan a lot. And it was surprise for the red, son of birth. And they decided to put the level for the fire.

for the tempera a little bit lower. Why? Because the earth that Bernalits have it, it was gray. Gray. No clay, no porcelain. So he thought, oh, I want to make this red color, China's color, but in another tempera. This. Middle tempera.

and he finds it. But with some of the difficulties, because in the end, as the red color happened, it's the same in the Arabic ceramic, that could be disappeared. It's very volatile. It flies. You know at one moment, but you say, but one pot is green and another is red. You see, but everything is red. 33:56

But the smoke doesn't come inside of the green to develop the real color. Because maybe in the kiln was open air and they come in air and if the oxygen is coming to the pot, it's coming green without oxygen, red. That's so interesting that the fumes actually dictate the color.

The smoke, the Arabs make the smoke, it's smoke, it's very difficult. You are going to see when you arrive to see the wonderful pieces of the museum. They are actually white, painted with this red color that the Arab people became in luster. It's like a gold color.

It's not red, red, China's red, it's another color. But it's made with the same copper, only in another tempera, only with another material.

This is important to know, to see the difference between the China's potter and the Arabic potter, okay? Because one time in the whole Europe, the Arabs came here in the seventh century, they developed the pottery, very quickly in the 12th and 13th century, we have the best pottery all over Europe. At that point, that's all the monarchs, all the kings, all the Kings, they want to have this kind of pottery, the Spanish pottery.

So, in the Vistorian Albert Museum, if you are to be sitting one day, you will see the Islamic or the Spanish section, you will see the most beautiful Spanish pottery coming here from Granada. The first place was Granada, Malaga, and the last one was Valencia, the last spot who remains in Spain from this kind of color, very bad because in the time during the centuries they destroyed in some way because they lose the knowledge and they lose something you know because if you are not so interested if you are not following the same formulas maybe you lose something on the way and the next generation they couldn't recuperate it. So in La Bismal (36:45) I discovered my way.

I said, this is my way. I want to study this one. And I start to go to every place, the old places that they have this kind of portrait. And the only place they have it was in Paterna, in near Valencia. And I was there and I asked them, please, I want to learn this technique because I am very interested in it. They said, no, first of all, you are a girl. Second, this is a family secret. There was no way to work there, so I looked for another way. And I was waiting and continuously making my investigation in my atelier. And one day I find a book who explained me a book, a chemistry book. Who explained me all the processes. (37:45) And I started, little by little, to make my test arriving at the point that you know now. And when I arrive at that point, I start, of course, as a potter, festival, I make the wheel, pots. And then I start to develop tiles, like the Islamic. And I make a lot for decoration.

I make little like this one to make this kind of place like the Arab people make in the Yeserias. Yes, yes. And well, little by little, you know? And then the big murals and everything like this. The Yeserias reminded me a bit of Scraffito as well.

where it's engraved in plaster. Yeah, there is engraving also. And with color, but it's not with ceramic. It's with natural colors and nothing to do with zucchini, nothing. Okay. This one is completely different. But all the tiles I make for architecture, this is the point that we want to...

Well, of course we can make new designs. But if you study very carefully all the Arabic designs, Arabic design, you find that everything is done. This one is done. Yes. When you are looking to the Alhambra, you say, this is very well known for me. Because you are going to find these kind of things.v39:40

And this kind of thing tells us a story about Allah. Because all the Arabic designs mean something about Allah. The animal and human representation is forbidden completely, but not in the beginning. In the beginning we find in Iraq, in the Albert Museum, it's easy to see. The first representation, humans, birds, animals. In this kind, not in tiles, in normal pots, because the tiles for the Islamic is only representation of gods. So if you are going to start with something, you can canalize that way. This is actually precisely the topic of my research. So the Islamic representations in the tile work and the symbolism of Allah, of God, of the religious things, but also the way that the tiles or the mosaics are abstract in a way. So it's more about symmetry and about colors and intricacies so the patterns see the pattern more than about figures or about yeah for them they don't have any any meaning to representation this kind of thing exactly.

So do you work with this zelij or these Islamic mosaics? Because you would call them alikatado, I think.

Mosaicos. Alikatado is more industrial. You understand? Something alikatado is when you are coming out bathroom and you see all the tiles, pottery tiles. This is alikatado. Of course, we have to alikatar wall, even with

these beautiful tiles, but we call it mosaic, it's the right way in pottery. And yes, I make sandals when they ask me by commission. 41:58

because by my own I make ashtrays, but I prefer to have, I make murals like this one, bigger, 17 for 17. At that time was very important because nobody can make this kind of tiles like this one. A mural, only a mural, a one piece. I prefer to develop my imagination with one piece. That make little mosaics, you know, because it's too much work. I make my murals because an architect comes and says: "I want to make a decoration on this wall, in Arabic style". They say to you, Arabic style. "Yes, but which kind of Arabic style? Because there are many. Well, make whatever you like.

No, but I want to know something about the decoration, how to want the local, you know, something to be inspired. Sometimes I make little ones for the floor. I have, you see my work? For example, one tile, that side, and another little one with little mosaic, make something, but (43:15) As I told you, most of the designs that we are going to invite, they are already done. So we don't know anything new. The only new that we can make is the position maybe, or maybe the format that we make bigger. It's the only thing. This is the...

43:42 So how do you then decide on what pattern or which colors, how do you, is it only beauty in a way? Is it only what looks harmonious or what looks right? Or is it also that you incorporate, for example, the color blue or the color green if it's a religious piece of architecture or do you also work with the colors or composition in that way?

Normally if the decoration comes in blue maybe they can ask you, maybe something in contrast. Everything is blue you can make in orange or red or maybe the same color everything on blue. So it depends. Always by commission because if when I make by myself I make bigger. Bigger and I spray another thing, different. 44:40

everything because for me it was most important to develop the right colors. To arrive to develop the right colors that I dream. For example, I saw something green and I said, I want to make this green of color. For example, this bird beautiful. 45:09

The pear? The plum? Yes, yes. You know the bird that has wonderful feathers like this? Peacock? One plum. A feather. What is it called? A feather. It's beautiful. They have blue color, metallic blue color. Have you seen?

And I want to find it. I make, I start to make my tests. How to find this green one with reduction? Another thing very important, the name that I give to this color is no reduction. It's another word. It's carbonation.

Carbonation, because of the smoke?

Yeah, because of the smoke. Everybody thought that carbonation is to cook to high level. No, it's another thing. It's to introduce the smoke into the kiln. This is the most important. In middle tempera, remember, to find this color. No like the China's higher, no like another. In the middle, middle tempera, could be between, because the process of the kiln, I forget to tell you something very important, is.

You start with the kiln, cold kiln. You put all your pieces inside of the kiln. And you start to zero until the degrees you want. 1,050, for example. I arrive in 1,050 and I say, stop. At that time, the kiln is with air all the time, all the time. You have to control it, but all the time. Normally, he spends 10 hours. 47:05

eight between eight and ten hours to arrive it slowly slowly slowly no when you arrive into this tempera that you choose it because your enamel this is very important this is no enamel that you buy the enamel that you make with your own minerals okay and when you arrive you have to let the the keel coming down until 600, for example, no? I have color between 500 and 800. This rank, okay? 300 degrees of difference. In 300 degrees of difference there is enormous. You can find any kind of colors. With the same green, with the same blue, with the same enamel.

So when you arrive at the tempera do you want to make your color by your experience? Because nobody can tell you. This is your experience. Looking inside of the kiln by the hole. Because you can't never, you can't open, of course, the kiln. You have the hole, you have the pyrometer and you say now is the right moment that I want to close all the air and to start to make gas without a fire. It's like a bomb. Imagine, a kill like this one, plenty of

gas. Plenty of gas, no fire around. The only fire is in the chimney. After 20, 25 minutes that you start to put the gas inside, gas mean...

that you make propano gas, you make inside the propano gas, free without fire, start to develop a kind of texture. Because the gas, as I told you before, like enamel is very soft, the gas coming into this enamel, it's a film, and they make darker. 49:24

Maybe sometimes when you open the can you say everything is dark. No. You clean it and it's perfectly. This kind of smoke that they make, the Arab people, they make so dirty the pieces. There is a lot of smoke inside because it was made with olive wood which is very, very oily. They have a lot of, how do you say, well, a lot of material to burn it. Okay? Because the wood that they make was olive trees. And this is coming little by little, softer by softer in this kind of enamel. That this is nothing. It's like a milk or something like that. It's very soft. And they change completely. And when you arrive at your tempera, you say, OK, from 800, 500.

another six, seven hours or maybe more because you have to go very very very slowly at 500 you stop you close everything the gas the air well the air in the beginning we didn't have air only we have smoke you close everything and you leave for 25 hours or 84 depends it's a long process very very long process. 51:09

It's not easy. Patience.

It's passion. It's passion because, well, the people never understand how you spend so many times to make this color. In the end they say, oh, it's a wonderful color. Yes. But in the box, I have the experience for many years, alone in the atelier, working, working, working, working. All investigation was my passion, really.

Now I want to go back to my kill.

About this relationship that you have with the architects, so how much freedom do you have when you create your pieces? Or how much does the architect give you a design, and you inspire their design or vice versa?

52:06

Well, normally with the architects I work, they give me free. They say, I want this one, idea for these places. And I present it by several projects. And he choose to say, well, maybe I like this one or this one. And I start again to make the definitive design, the definitive colors. But normally, I am. 52:34

They give me the freedom, except for someone who says everything red, everything blue, everything like this one, only three colors or five colors, it depends. Normally they give you the freedom. The architects, we are lucky. The artists. Right now, right now, not in the old times.

Well I guess they know that you know better.

Maybe they trust me because the works I make. I don't know because normally I find new architects to make things and they find me by this way or because they know me for another words or for another thing.

I think it's also because as architects we maybe have less knowledge of these materials and these old techniques and so we don't know really how it works

Yeah, I think the architects don't have too much idea of the materials

That's why we are so grateful that you are teaching all this

Yeah, well I think you now, the young people, you investigate more within and see new materials to adapt it. For example, you can make a modern building and to make something like it coming from several centuries ago with a new way of looking, new designs, because we can repeat everything like the Islamic people does. We have to develop another kind of things.

But the technique, the most important is the technique, is the old technique and the same technique. It's like for example here, when you're going to Granada, Cordoba, you are going to see the roofs, the inside of the roofs,

how they make it. The mucarnas. Yes, with this kind of wonderful bigas, no? How do you say it? Pultures in French. Or the bills. 54:36

They are inserted in a kind without any subjection, only tap, tap, tap, they are cutting and they make wonderful artesonados. Artesonados we call them. I write for you, you like it. One more if you want. Sonata. It's for the inside of the roofs. Beautiful one. You have in Granada, you have a beautiful and even here in Segovia, in Toledo. Have you been in Toledo?

you have to go. There is many things to see right now. Also because the Islamic history of Toledo and also with the tile work is much more... Jewish. And Jewish. Jewish is the most important that Islamic in Toledo. In Toledo remains some Muslim and Jewish culture. And in the Jewish synagogues they have yeserias also. Not so colorful like the Islamic task, but in another way, but there are yeserias. And there is a lot of these kind of things.

So now, tell me something, when this talking, if you understand everything, and which way you are going to take for my work. That is very hard to say, but I think it's very clear.

You told us about the whole process and the type of materials and the temperatures, and it's very, very interesting to learn about.

Do you see your technique being used in a different way somehow? Or new ways that you've talked about? This technique? Yes, they have another technique. This is the technique that I make it, OK? But in Paterna, as I told you before, near Valencia, in some way in Granada.

They are still making, but they lose the way to cooking. And this kind of cooking are very, very expensive. And what happened now, that the industry developed a kind of colors, luster colors, that you can apply. You buy the pot, luster color. You buy the pot, you decorate your tile. 57:34

and you go to the king, in oxidation, no reduction. This is false, completely. And now in Granada, in Paterna, in many places, that this reproduces not exactly the thing I do, another kind of thing, more in some way, poor investigation. They don't investigate because now I understand in one way.

because until five years ago, six years ago, in Spain, we can't find any mineral. For example, I investigate because in another hand of my investigation, as I win many prize, this money from the prize, I use to continue investigation new minerals. For example, germanium.

India. Minerals that in the periodic table, they are, it's complicated if you don't know something about chemical. But the most important is that there is some minerals susceptible to be changed the color completely like a copper to make this kind of color because the luster is to give back completely to the natural. So in the periodic tabla there is some minerals that I know what they are, but not all of them was tested in ceramic. Some of them was tested in ceramic to make for example. The coin, the plant of the special co-heats. Oh. They are making in ceramic. The space ships. The top. All the special co-heats are making in ceramic. This is incredible for me when I discovered this. This is incredible. Why? Because the NASA investigate about which kind of minerals.

We can resit more outside. And as the mineral coming from outside, they choose the more hardest and they make like a gruyere cheese because I saw one of these points for special, special co-ed. I saw, I don't know, it was in Strasbourg or one day. I can't remember, it was an exhibition about the special thing.

And I come inside and I say, what? This is made on pottery. It's unbelievable. So the thing is that I continue investigating about germanium, indium, and other minerals if they are susceptible to go back. And I find that, yes, but what happened? Germanium, indium, and another one are so, so expensive.

01:00:48

Maybe I remember Germanium, I paid for 100 grams, maybe 35,000 pesetas at that time. Means that today could be 300 euros. 300 euros, 10 grams, 10 grams of Germanium. Only one piece. I could make only one piece and I have it.

That must be a very precious piece, I'm sure.

I have it. I can sell it. Because it's the only investigation about Germanus and India that exists in the world. Because no potter can spend this kind of money to investigate. And as I told you before, ten years ago in Spain, we find all the minerals. Now, no.

Because the law belongs to the European community. And it's very difficult to find natural minerals, even in Spain. In France, impossible. In England, impossible. In Holland, the same. For example, to buy lead. That is the basic for potter, normal potter. When the lead, another thing. All this mineral are not for use. I mean, you can put this color in a bowl and to eat or drink. Why? Because it's made by lids. And the lids with vinegar, lemon, they destroy it. And you can be ill with Saturnism, malady. In the old times, more people died. Most of the potters were like this one. Because they didn't know that you can touch the mineral. You can touch it. Because by osmosis, they are coming in your hands. You smell it. And sometimes, normally like an artist, like every artist does, like Goya and everyone, you are working, you have your pots, your animals, the cafe, and the pencil is going to the cafe. Or for example, Goya, Goya with the wine, the pencil was on the wine.

01:03:17

And they paint and they drink, you know. And the lead is missing with the wine, the water, the cafe, everything. And you drink it. That's all the room. It's normal for the artists, because when you are in... you are working out of the world, doesn't matter what happens here. Everything is here. And you make a lot of confusion. You drink your... croissant. You drink the lead. Goya have the Saturnism. And a lot of potters died by Saturnism. They didn't know before. Now we know. You have to do this guns. When I decorated, I made the marks. Now I take care, but not in the beginning. In the beginning, I was like this man. And so in this kind of decoration.

is dangerous for this kind of utilitarian for the dishes for example many people are ah I want a wonderful how do you say it service of the house service wear table wear no and I say ok but take care because you can use but very carefully so you use you can eat there

Then you have to clean it, but never put vinegar or lemon. And you have to use the Tamsin thyme, not for everyday tarwara. For everyday we use the normal potter. It's only for decoration. Now for example, I was investigated, the last investigation I make, that I have a wonderful test like this one in Attal, was the orange.

01:05:12

The red, the orange are very, very difficult. It's the most difficult color in ceramics. In the natural way, with minerals. Not when you are to the shop and you buy. This is not, for me, it's not potter. It's not to be a potter. To be a potter is investigate by the colors. If you are going to the shop and you buy this color, this color, this color, you paint and you put on the kiln.

And even the pots you buy ready just to decorate. This is not to be a pot. So the last one was the uranium. Uranium. Because here in Madrid, we have it. And a special source for minerals that now they don't have anymore. And I have a friend over there.

and one day was cleaning the almacén, the storage, and I say, Marisa, I found something wonderful for you. A little puff of uranium. It was here maybe 40, 50 years ago, they don't know, and they give me, make a test. And I make a test, all right, wonderful. But I can continue where I find uranium. It's impossible.

So what can you do with these limitations now on how to get these minerals?

It's quite difficult. Well, for me it's very frustrating when you find the color, the orange, and you say, oh this orange, because it's a real orange, natural orange. But the most important of these colors is that they are not flat. They are deeper. You know? It's like a painter.

You can see and you can see with deeper something inside that is more and more. It's not flat completely, no? And well, I can a little bit frustration if I can continue with the orange. And I try with another minerals, but no, there are no words the same because maybe there are, if you pass the tempera...

they are going to the green, but a very dark green, very ugly green, not beautiful. It's difficult.

But I arrived one moment that they say, well, I can go on, okay? Until here, I can do anything more.

So the knowledge you're talking about is very, through all this investigation, all this research, all this testing, do you have...Are you teaching in some way or writing it down? Because the knowledge is lost, right?

Yes, well, as I told you, I was... ..all investigation, when I start, I write down. I have everything write down in Spanish. And even I propose and I start to recollect many pieces all over the world. 01:08:35

to make an exhibition about the Spanish Luthor. Why the scamming the Spanish Luthor until Spain? Why develop this kind of color, as I explained to you, because it's something about God. And I know where are the most important pieces, for example, in the National Museum of Iran, in the Albert and Victoria Museum, there is a lot. 01:09:03

In Germany there is a lot, but it's impossible to make a kind of exhibition like this one. Because all the pieces, even that they are small pieces, are very very expensive. And I was talking with the Decorative and Arts and Crafts Museum in Madrid many years ago to make one kind of exhibition, it's very expensive. Too tall with every museum.

that they can give you for sometimes this wonderful boat. Imagine the transport, very safe. Very complicated, very complicated. 01:09:48

But I will continue now because you are coming, you are interested in the world and I will put everything in clear, maybe only to give you. And you can develop more. Because the way that you are going to make your thesis is about this kind of types. Not specifically, I think maybe more Bendert here might be testing more about these tiles but it's going to be a part definitely some part of the building will utilize these techniques or ideas that we talk about here.

Yeah, this is very unique. Yeah, because the history is so beautiful. And you have a very good material to explain yourself and then to apply to the things that you want. Know the beginning.

Where is this color coming from? Why in Spain? Why not in Italy?

Because in Italy, the Arab people doesn't pass. Why in Spain, not in Morocco? Because this kind of Arab people, they are not coming from Morocco. And they don't stop. Well, they conquered all the north of Africa, but they don't stop it. They continue to Spain, to Europe, because they want to conquer in Spain. And when they arrive into Spain, first place, Sevilla.

they arrive in Sevilla and they say, oh wonderful, this is like our country in Baghdad and they call Al-Andalus. Andalusia comes from the Arabic name Al-Andalus, the land that we left. Because when they arrive in Sevilla, the color of Sevilla is the land of the desert. Have you been in Sevilla? Not yet. I have been.

You've been in Sevilla, you see the color. It's yellow. The Plaza de Toros, bullfight rim. The sand of the bullfight rim is yellow. It's the color of the desert. And all this yellow we call albero. 01:12:17

And from time to time, the people who love the toro, they say, the toros and the bullfighters, they are in the albero. The people who doesn't understand albero, albero means the ring. And it's the color of the desert. So maybe the Arab people decided to stay here because there was very similar to the land they left, and they call Al-Andalus.

And the history is full of mysteries, beautiful mysteries, ~~who~~ play with the words, with the language. Because

we use the language as we know every word and the origin, but we don't know. We have to go back a little bit and think about, ah, this is that one. Yes, Madrid is also coming from, it derives from Madrid. Coming from the Anabaz people. Yes.

They are right here. But it was nothing. We saw Alcazaba, a kind of a fortress, with the regal palace S. And why? Because it was a hill, and they can dominate it, everything. And the Arabs come there, and they make a fortress, nothing more. Until Philip II. Philip II, they have the capital in Toledo. 01:13:46

and he want to make El Escorial, El Escorial is near Madrid, and he say, no, I want to change the court, I want to change fronto lego to Madrid. And he start da da da da da, and then Madrid stand to be the capital. No, because the burguers and the car pay for that, was the Madrilenian people who pay to make the palace. And all the Madrilenian people who arriving.

Where are they? Because here it was very few people. They are coming around Madrid, agriculture people. And with this money they make Madrid. Because they thought, well, we prefer to have the burguers, the car, near us because we can work more. And at that time more handicrafts, agriculture, this kind of people in this to develop the world, so they change.

So nowadays, do you still have a lot of requests also for your tiles? For the tiles that you produce, is there still a lot of demand that you think is increasing or slowing?

No, it depends because, well, it depends on the architect. Two years ago...01:15:15

Three architects connected to make three different decorations. And last year nobody called me. And we don't know. It depends. And there are more potters than I. But no one of them works in the same way as I, no one of them they make luster because are very expensive you have to to stay many no one to maybe one week depend of of the of your king okay preparing everything like this one and the people want to make the the thing and to sell it you know and you have to be a big In a small atelier it's impossible because you have to make many, many things and I make by hands. I make a plate like this one, I have the pattern and I cut it by hand. By hand. It's easy that they make with a mood. 01:16:29

Because if you have different shapes, you have to make the four different four for different kind of tiles And you have to re-emply and you have to put that It's more work that you have a big big piece and you start to cut it And it's more more beautiful because they are making by hand

So for you this kind of hand-made quality to it is really important.

Yes, for different reasons. First of all because the material that you made by your hands is still porous. Porous and porous. And this is very important. Why? Because in a tile, very polished, the enamel. doesn't work the same. You need the material porous, you apply first first time you apply very soft, introduce the color inside of the porous and maybe you can apply three layers three layers minimum three, one very clear 01:17:49

to introduce inside of the piece. Because you make sure that this enamel, with hot or cold, never be broken. Because the minerals are inside. Make one pieces. No is one piece and beyond the enamel. You know? It's one piece. And you can put in the outside.

But there is another element that we call circonio. That we introduce when I make exterior murals, I introduce always circonios. Everything that you need later, I want to explain you, Why? Because they make higher piece for the exterior. Here in Spain, in Madrid. We are very high, I don't know, and winter is very cold. But maybe in the middle of the day, 12.1 is 25, 30, we can arrive in winter, 30. But in the night, come down. So the material suffer. And the ceramic is alive. It's like the wood, it's not mineral. It is mineral, but they are alive. Because they are spines and they contract. This is important to know also. For that always in the tiles we leave, we call jaga, one finger between one and another. No, all together, because they can't break it. You know very well because you are an architect. This kind of thing.

What else?

I'm going to Cordoba and Granada and you already told me about the Mihrab in the Mesquita of Cordoba and like the tile work.

You spoke about the color right? The very special color. This is the special color that the Arabs bring. The original. Yes. It's Cooper. Very dark by the time. Yeah. But it's there. Yes.

And I was wondering if you maybe have some other tips of what I could look out for regarding the tile work of the Palampra.

Tiles, yeserías or... You are interested in tiles, in yeserías? In the mosaics, so in the tiles. So I've been looking into, for example, the mosaics of the Maxuar. Yeah, those towers. Well, in Alhambra you have everything. It's fascinating, really. Because there is many rooms, all of them are different, completely, and you are going to be fascinated. This is very important because it's better that you can go alone because you can stay longer in every room looking. Because maybe in the beginning you say everything is the same, no. You have to discover it. One room for another, the roofs in these yeserías are, as I told you, writing with letters with different kinds of meanings.

I think in the Alhambra you have a beautiful... Ah, La Cartuja. In Granada, you have La Cartuja. It's a kind of monastery. I think it's a kind of monastery. And you have a wonderful tiles. Okay. And wonderful artesonado. Another beautiful thing, I can't remember if there is many tiles, but it's a beautiful and nobody knows very well, is in Cordoba, La Iglesia de San Nicolás.

In Cordoba, San Nicolas Char is a downtown Near the city hall. It's a San Nicolas Church Yes, San Nicolas Char It's beautiful because you are going to find Bishigoti, the beginning of the Spanish, Bishigoti, Islamic, Christian.
01:22:48

All together. As you are coming, because in the beginning you say, okay, this is barroco, you come in, the first barroco, the second is another style, but you have to come in to the end, because it's visigothic completely. Like the columns in the Alhambra are visigothic.

Because the Arab people take it from another Visigothic Bathimans and they put their They are Islamic and Visigothic And it's beautiful Because it's a kind of wood The wood of the colonies Beautiful Gaudí make the Parque Güell You know Gaudí? El Parque Güell In Barcelona. 01:23:40

is inspired in the garden of the columns of the Alhambra. Gaudi arrives there and says, oh my god, I want to make a garden with this one, I have to make something. And he makes Parque Guell with this inclined columns. Different, because in Alhambra, there are no incliners. But Gaudi wants to make it that way.

I think that we pretty much covered most of the questions. Maybe just a small last one. We were on Friday at the Politecnico de Catalunya and they do a lot of research into 3D printing clay. And so they do all sorts of very nice structures with this. And I was wondering whether maybe you had any experience with this or whether some might have asked for your information on it.

I don't have any idea what they make there.

Because it might be so interesting to have these kind of old glazing techniques that you elaborated and have a translation of those into kind of more modern tools of production, say.

Yes, yes, of course. Yeah, but one thing is a bottle like mine, you know, that I can make only in my atelier.
01:27:54

Another thing is another kind of investigation that another people make in group is different Maybe maybe what did you tell me when you are visited which kind of thing they are making there They are very interesting. I can send you maybe an article and a few pictures also. I am sure that now I don't want to change my mind On my

style of working because I'm 70, you understand? So maybe I have 20 years more to live? Maybe? With the lucky? I smoke, the only thing I do, I don't drink, I take drugs, nothing, only smoke. Maybe, I suppose. This is a talking like I was with my...01:28:44

My son, my son now are 32. And I say, well, now we are living in the countryside, okay, we're living our life. I don't want to stay in the city anymore. And I want the rest of the life that I rest, I want to do whatever I like. So I don't know in which mood, which ideas I want to have when I come into my atelier again.

Sure that you say, well, look at this, it's wonderful. Oh, maybe, why not? I will try it. I will try to make another way. But for this kind of things, you need more machinari. Machines. I don't want to work with machines. You understand? Of course. I want to work with my hands, with my kin, and no more, because I am fed up of the world, completely. Maybe you don't understand now, but I am fed up of the people, I am fed up of the world, I am fed up of the city, I can't. I prefer to live in my way, make it continuous with my investigation that I have, I didn't finish, you understand? For me it's very important to write down all this kind of thing. 01:30:09

Everything with a lot of documentation as I told you I have for every part of the world worries that the more important pottery from other people that yes maybe for example the another day I saw something beautiful pots and things made in three days. It was wonderful!

Wonderful, a pot with many many faces. This is impossible to make by hand, you know Now the three day is wonderful, but I Don't have my mind to work in a computer You understand for me the computer I use a computer and everything but only for work I want to buy I want to look for something but no, for me, it's not my tool. My tools are my hands. And that's all, of course. For you, no, because you are in another generation. You have been born with these kinds of things. Maybe if I knew this one 20 years ago, maybe I may be able to make everything interesting, because I love it. The result is wonderful. They make beautiful things, really.

Only you decide all the weight, da da da da, then give to the machine, and imagine for the stone, I make a stone also. Like in the old way I was making, now it's impossible because my neck is a little bit bad by the hammer, you know, because the hammer are very hard. And if you got a cap, a golpe, no? Tack with the hammer in the stone and doesn't coming off.

This scoop is coming to you. Yes. It's coming back. 01:32:16

It's heavy work. It's very very heavy work. Now, for example, I love the stomp but... Sorry, I prefer... I come back to the clay again. Makes sense. Better, paid safe.. So, the new generations, you have very wonderful tools to develop your imagination. Really, and you have to use it. For me, no, because to learn this one is going to take me a lot of time. And I say, why I have to spend hours and hours reading this one? No, I don't have interest. I prefer finish when I start. Of course. But you've already done so much research also. Yeah, because...

New things, there is a lot of people who can do it, but the things I do know, I am not so sure. Because I have some, how do you say, alumni, 11 students. I have one student 10 years ago from California and she was a wonderful artist now, but she couldn't continue with my pottery. Why? Because in Los Angeles, with she lives, they don't have the kind of kiln we need. They don't have the materials that now we have in Europe. The clay is different, and this is very important when you make a formula. You must know very well the material when you work, otherwise the enamel is coming off. 01:34:12

and I know and I teach other people in Spain. But what happened? That the minerals are very expensive. And I tell you again, you have to spend a lot of time to make your colors, to make your formulas, everything middle with the balance, ta ta ta, ta ta, un grammo, dos grammos. The people, they don't have patience. They prefer to buy the color and to paint. I understand. And don't spend two days without nearly asleep, just controlling the kill. Who made this piece? A fool like me and other people in the past? Yes. 01:35:04

In my, no, in the last atelier, I have another atelier in the countryside, that I have a bed in the atelier. Because I was in the countryside also, my house was seven kilometers from the atelier, I couldn't come back to sleep. They say, okay, I have here the bed, I sleep, and when I need to control the kiln, I open it, I look at the fire.

That's all. **Almost like Gaudi.** Exactly. That's what I was thinking. We are the old generation, not like Gaudi for the moment. But yes, it's like this one. Very few people, only people from my generation, or maybe very few people even from my generation, can work that way.

It's more easy 3D, of course. It's more easy to buy the things you want, of course. But it's not the things that you have in your mind. And it was very, how do you say it? Testaruda, tattoo. Yes, stubborn. How do you say it in English? Stubborn. Stubborn, it was very tattoo. I want, I want, I want this one, I want this one, I want this one. It was for me the most important in life.

My father said, but you are crazy with the pottery, what happened to you? No, no, I want to find this color, for me it's the most important, to find a way to make this color.

in another hand. This kind of color you can make easily by another technique that we call Raku. Do you know the Raku technique? Japanese? Just look for this one. Raku.

If you see you start to read is the history the most important thing for the technique is what I will explain you to you carbonation To put in the middle of tal the gas Otherwise, I want to write down very clearly for you everything and I will send you. And then you have everything's clear and if you have any other question, you just write me down. 01:37:58

I help you in the way I can. I'm in practice of us.

Thank you for taking the time today also to meet us.

The same for me. Another thing is I will send you some... If you want to reproduce some photos, the tiles, I can send you the original... I don't know... Not the original photo, but it's in the scanner. You can reproduce.

How is the name of this one? The format. Like a file format? A PDF? I can send you something. And if I find little tiles that I have a lot maybe one day you can come back and you visit my atelier, my house because with the rest. 01:38:57

of all the mules I make, I have a lot, I say that I have boxes and boxes, I want to make a big mandala. A big mandala, eh, on the garden. With these little guys. But I will reserve you for you something, and when I have it, I send you. Okay? And you can present something real. This is the time. Yeah, I think the materiality is very good.

And now, so how many days you stay here in Madrid?

Until Thursday. Yes. Not too long. And in those days, what are you going to do?

Tomorrow we will visit the university, actually, with the whole group of students. And most of it is also individual research. So I will be looking into symbolism and also into water systems. So I will probably visit the water museum here, actually, the canal, but also the Viagens d'Agua and the old Qanaat system, the Arabic...

There is water. Another very important thing to visit in Granada are the generalife, the gardens. And in Cordoba also. In Cordoba you have the gardens. Go there. Because they are more original than in Granada does. Because they don't touch it. And you have Medina Zara also to visit in near Cordoba. Medina Zara.

In Sevilla you have to go to several places. Very important because there are tires.

I want to go to Sevilla. Because you have nothing. So Medina? Medina Azara.

Medina? I write for this.

Do you have any suggestions in Madrid? Districts or areas to explore more with... Yeah, you have now a culture with very fashion, which is called Caravanchel. You have to go to Matadero and to Caravanchel. Matadero was the old the holes where they killed the slaughterhouse. Now it's a cultural center, very important, very nice. The place is very nice. Don't forget to pass in by the Cantina because it's a very big kill. And you have to go to Caravanchel, the carter Caravanchel. In Caravanchel there is now is a fashion, there are many artists, many galleries, you find many many things. If you look in internet you can see Caravanchel galleries of art workshop and there is plenty and everybody is very fine, they will open the door, no problem you can talk with them.

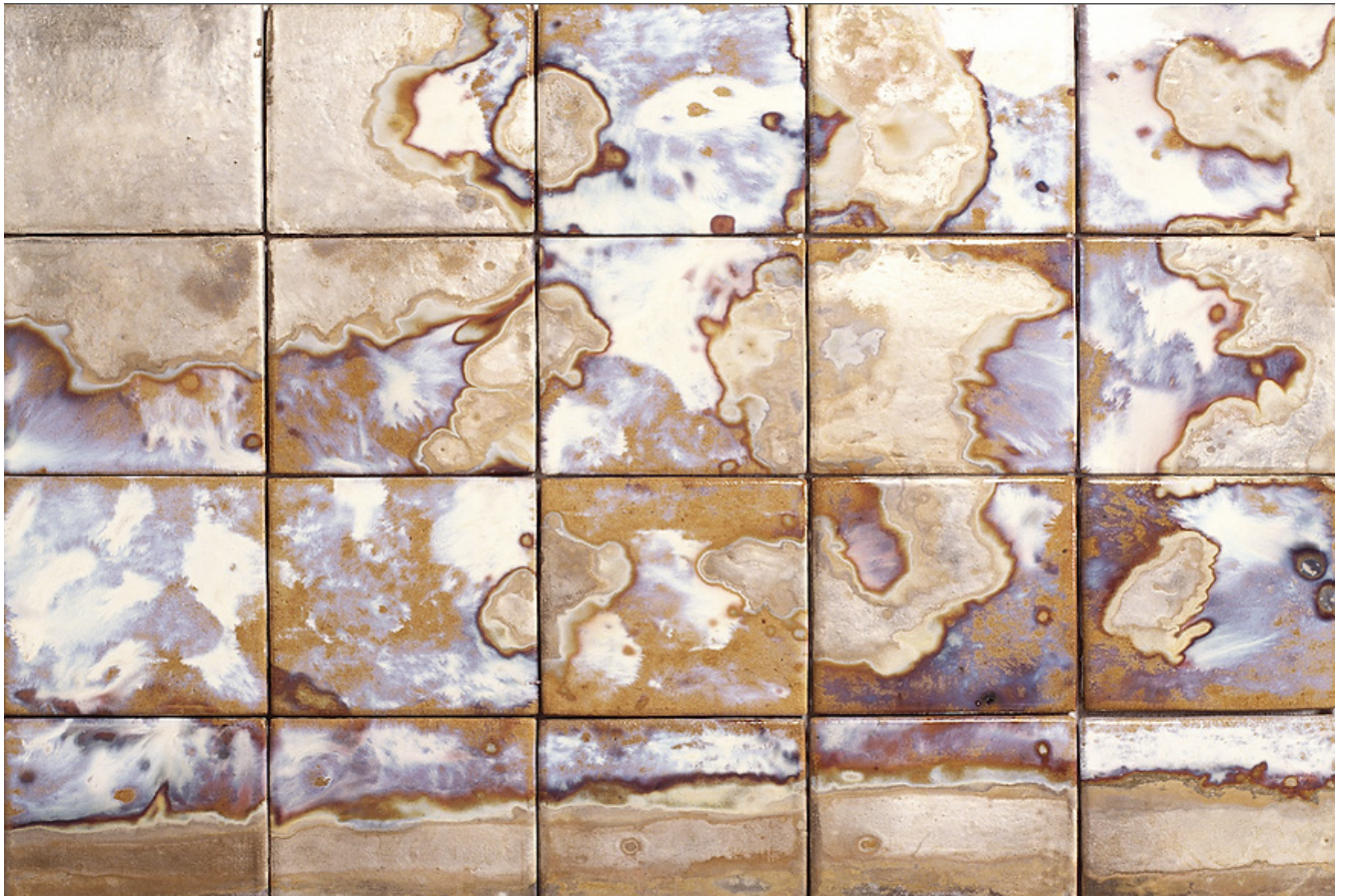
Then you have Lavapiés also, Lavapiés. But Lavapiés, there is some galleries. You can find some workshop over there, even people who make stuccos. 01:43:15

Wow, okay. Eh, people who make stuccos. We're gonna meet a stuccos craftsman also. Very beautiful. Because you have the area from the high galleries is Cartier of Salamanca. Claudio Cuello, near the Retiro, Salamanca Cartier. But there is high level galleries. But the artists are in this site, the real artists.

This is the point, Caravansel, Matadero. Have you seen the Guernica? Go to the Reina Sofia museum, there is the Guernica. It's very interesting really because it's the...

Now it's changed the reina Sofia, the concept, no? But you have two halls, that you have the Guernica, you have Dali, you have Calder, Miró. They are the four, the beginning, the ismos. Calder with Miró, Julio González, and Picasso, the four, are very important. They make the exhibition in Paris with the Guernica boss.

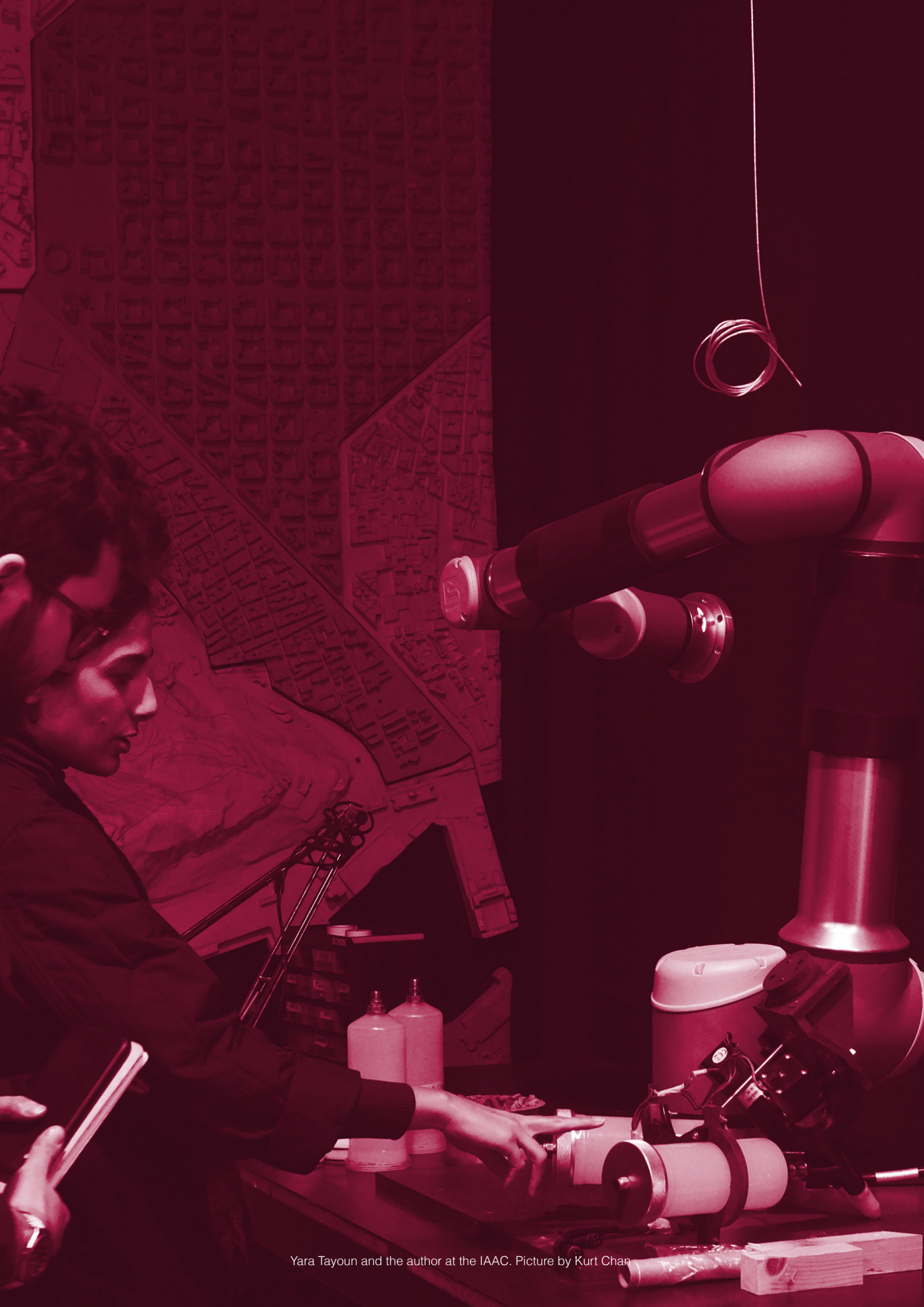
And it's very interesting, you have many pictures, it's very interesting to see the Guernica, of course.. You have a lot of things to do, you don't have time. **No, no, no, barely any.** Okay, so, let's go, if you like. **Thank you so much.** Thank you.



Above, some of De Lucas' exceptional tiles, with their glazing being the products of personal research; truly, a one-of-a-kind work. Seen on her website: <https://en.marisadelucas.com/>

Below, the artist with, from the left, Bendert van Dijk, the author and Kurt Chan.





Yara Tayoun and the author at the IAAC. Picture by Kurt Chan

JUAN SANCHEZ

OWNER, ESPARTERIA JUAN SANCHEZ
ESPARTO SELLER, WEAVER AND EXPERT

INTERVIEWED 03.11.23 IN BARCELONA
BY JAMES VAN CALOEN AND KURT CHAN

PICTURES BY KURT CHAN



“You have maybe a few thousand people that know how to weave esparto, and most of them are old people...no young people are learning it.”

Key Terms: esparto, weaving, natural fibres, shop owner.

Juan Sanchez owns the last “esparteria” or esparto shop in downtown Madrid. We visited him on a mild November afternoon and he kindly took an hour out of his time to share his passion for the esparto grass and show us the wonderful variety of products he sold, from wickerwork to leather bottles, from blinds to hemp ropes.

Main points of the interview:

- Versatility. One thing became clear as soon as we entered his shop - esparto is incredibly versatile and can be formed into any shape and use. This results in Sanchez being an expert in a wide range of topics and items.
- Resilience. Juan mentions he is the last esparto seller standing in Madrid, in part thanks to his online presence and the diversity of the products on offer. He constantly branches out in new micro-activities to fuel his business, the latest being chair caning.
- Adaptation. Being self-employed and not having anyone to help him, Sanchez has had to opportunity to be more reactive than most, adopting new tools like social media or laser engraving to improve his competitive edge.
- A meeting place for society. Through the incredible diversity of products on offer, the whole of society visits this humble shop, to find goods that have disappeared from the rest of the city, if not the country.

00:00

Yo solo voy a decir todo. Pero sí, él decía que, según la región de España, también hay diferentes plantas que pueden ser usadas para ello. Entonces, él especializa en esta, el esparto. Pero también hay estas y estas allí, y esas son todo un tipo de diferentes. Entonces, creo que por ejemplo, esta es probablemente el Salix. Sí.

00:25

Sí, me he olvidado el nombre de inglés para ello. Willow. Por ejemplo, eso es muy similar a lo que tenemos en Italia y en el norte de Europa. He visto eso en lugares en China también. Sí, eso es probablemente el más frecuente. Esparza es realmente único para España. ¿Y qué son estas ropas? Esta es, entre otras cosas, principalmente para la receta de queso.

00:55

Sí, así que cuando veas manchego o queso en los tiendas, tienen esta forma presa en ellos. Y eso es por la esparta. Eso es muy bueno.

01:08

¿Y es que se trae por las botellas para insulación? ¿O es que se mantiene caliente?

Bueno, es mucho para la protección, más que nada. Pero creo que también no puede dañar. Si tienes vino ahí, no te da daño el vino. Si se trae por ahí. Es más estético, creo.

EXPLAINING THE TERRACOTTA "THERMOS"-----

01:28

¿Y también escuchaste sobre el botón de agua? Sí, lo vi un poco en el traductor. Es como un proceso natural de calentamiento o algo así. Exacto. ¿Cómo funciona? Bueno, porque el tipo de bifes de terracotta, también...

01:48

¿Sabes el proceso? ¿Es una mini circulación de aire? No tanto, tienes un pequeño drop de agua que se forman en su superficie y eso lo hace con los humanos y eso se hace con el líquido por 3 o 4 grados así que tienes la sensación de que es mucho más frío que lo que vas a hacer

(START OF DISCUSSION IN ENGLISH BETWEEN US) ¿Cómo se persuele el agua? ¿Dónde viene de la superficie? pero también en parte por la porosidad del material. No sé exactamente cómo funciona, porque creo que esto es español. Por ejemplo, este es otro. ¿Puedes preguntarle más tarde cómo se lograron las diferentes texturas o colores? ¿Son solo diferentes tipos de grafitos?

No, no, no. Me interesa saber cuánto tiempo se lleva para hacer algo así. ¿Y, como decirlo, ¿se ve a las máquinas haciendo esto? Creo que ya te lo has preguntado. Sí, es bueno que nos recuerden las máquinas. Pero no, él dijo que para la producción no hay una máquina en general. Y él no ve la importancia de una máquina.

Y luego él decía que para su propio trabajo, que es vender el Esparto, es realmente necesario. ¿Certificar que es humanizado? ¿Es algo válido por sus compradores y cosas así? No, fue más en el sentido de que las nuevas tecnologías son muy importantes para él porque le permiten conectarse con los clientes diferentes. Así que él estaba mostrando WhatsApp, las redes sociales y todo eso. Pero luego los productores mismos...

Dijo que no era importante para ellos tener algo mecanizado. No es importante, no es relevante en el sentido de que es tan difícil de manipular que no puedes hacerlo. Porque tendrías que ajustar constantemente a las estrellas y la longitud. Quizás.

Estoy seguro que hay procesos que ya están... ..pero no estoy seguro. ¡Basta de la boca! Voy a entrar más cerca.

(END OF DISCUSSION BETWEEN US)

04:29

Y tenemos una pregunta. Dime. Estos son... Alfombras. Como bastizar. Ah, sí. Y son...(CONFUSED) **¿Son de la misma materia?**

No. De la misma materia. Los de abajo son de cuerdas de algas, cigras. Lo llaman. Algas? Sí, eso vendrá de bien. No, eso está cético.

Y lo de arriba son de sisal. Lo llamamos a quepita, sisal. Igual que esa cuerda amarilla. Mira, para el techo mejor lo que llamamos rollo de cañizo. Entonces, para el techo este es mejor. Que son cañas con...

05:17

pueden ir rajadas o pueden ir enteras, también lo hay de bambú y de otros materiales, pero esto lo que tienes que tú lo pones en el techo, mira para arriba, tienes todo lo del mundo, mira para arriba, incluso te elombra el sol, pero como tiene sol y sombra no te quemas abajo y además como tiene huecos entra y sale el aire, que echas un toldo y hace una cámara de calor. Sí.

calor. Entonces esto es muy típico, es que estaba buscando alguna instalación que también he hecho.

ON JAPANESE ROPES, GYPSY CLIENTS-----

05:56

Normalmente va para vallas o como ves para tejados. Sí, sí. Y es una ombra muy bonita que es proyectada. O sea, te da una luz agradable y está muy fresco. Y luego pues más te vas actualizando. ¿Te acuerdas que estas señores son para si, varios japones? Bondage.

Sí.

O muchas cuerdas.

Ah, sí.

también es espartano creo que es para japoneses oh sí shibari shibari o kimbaku ah sí son populares en España también yo tengo muchos clientes que se dedican a ellos. vosotros modernos si es sexual en el japon feudal vamos a ver

En el Japón feudal, los samuráis cuando ataban a un prisionero, creo que, dependiendo del castigo o del delito, la ataban de una forma determinada. Y tenían que atar muy bien para que no se escaparan, sino se los cargaban. Y ha ido cambiando y se ha puesto aquí como arte, como moda y como BDSM, como sadomasoquismo. Pero es muy llamativo.

07:30

Una evolución del material.

Sí, sí. Es muy visual, luego las cuelgan.

You really have the whole of society that comes to your shop.

Sí, qué variedad de clientes. De todo, de todo. Mira, por ejemplo.

Un stick, que estos se lo llevaban antes los tratantes de ganado (NOTE: SHEPERDS) antiguamente y ahora se lo llevan los gitanos. Los gitanos. Iban abajo con una cantonera de metal y esto es un arma.

¿Puedo? Sí, sí

08:13

encuentran necesidades intenta cubrirlas increíble

mucho tipo de público

sí, sí, ecosistema de público por ejemplo, portapelucas o sombrero para colocar el sombrero esto está bien,

he hecho alguno y lo vendo toda la sociedad.

EXAMPLES OF OTHER WORKS-----

08:37

Estas son fotos que me han ido pidiendo clientes y no las he tirado. Mira, estas son cuerdas que tuve que preparar un bucha por así. Sí. No, no vine aquí. No se adivina dónde tendré las otras fotos.

09:11

¿Había dicho algo sobre los colores o algo así? (NOTE: INTERNAL DISCUSSION)

Yo le preparé estas cuerdas para un cliente para una separación de un restaurante.

Ah, estupendo, sí.

Luego utilidad este en muchas... A ver si hay alguna de cañizo o no. Estas son instalaciones de presiones. La teniendo aca es un poquito rústica, lo más bonito que hay. Pero luego también he instalado fotos de cosas modernas.

He visto por aquí, mira, para un museo les hice unos paneles. Me trajeron la estructura y yo se lo monté.

ON MADE TO MEASURE WORK-----

Y hay muchos trabajos que son Únicos?

10:26

Sí. A ver, que la cosa que haces con el parto es única. Aunque repiten las mismas 20 veces, hay que hacerlo a mano. Sí. Hay que hacerlo a mano.

ON TIME NEEDED FOR ESPARTO WEAVING-----

¿Y cuánto tiempo necesita, por ejemplo, esto?

Depende de la experiencia. Eso se va a enseñar. Lo voy a enseñar, que no he cogido yo pleita.

Esto es el principio de hacer el esparto. (SHOWS THE ESPARTO BEING WOVEN)

Esto tiene que tenerlo en remojo una noche. Porque si no se queda muy duro y se parte. Tienes que mantenerlo en remojo una noche y luego lo puedes manipular así. Y no te dejes de ver.

11:40

Esto lo que se va haciendo es, se van partiendo en más materiales y cuando se van quedando sin material se le va metiendo material que por eso se queda fíjate en los flecos, los remates por fuera. El lado que tienes delante, fíjate esa alfombra y la parte de arriba y la parte de abajo.

Esta es la parte visible del experto, pero los remates se le quedan por aquí. Entonces se va metiendo material. Y esto igual, se hace por arriba y por abajo queda sobrante.

persona que te haga esas tiras que se llaman pleita por lo mismo se tiene un día para hacer 20 metros. Y eso le vuelven las manos o sea tú no ves los dedos veis que va metiendo material pli pli pli pli pli sin la pena mirar cada grupo de hebras perfectos sin cruzar unas encima de otras yo lo hago despacito cuando lo tengo que hacer pero

ON THE HIGH COST OF LABOR LEADING TO LESS DEMAND-----

12:58

antes es que la mano de obra no se pagaba, ahora hay muy poca gente que lo haga, pero luego eso hay que coserlo, luego te dar la forma, o sea, si yo tuviera que hacer... mira, por ejemplo, esto es una esporta leñera.

La llevas como un capazo de bebé. Y le echan más o menos leña. Esto lo venden 55, si tuvieras que hacer esto, tengo que venderlo en 200, 300 euros. O sea, si me viene ya el material hecho, pues lo mismo le quito 50 euros, pero llevo un trabajo. Entonces, hay otro factor, en España la artesanía no se valora, no se parra.

13:55

Hay un chaval que entró hace pocos años aquí que le voy a empezar y hace unas piezas únicas

ON ARTISTS REINVENTING THE TRADE AS A HIGH END PRODUCT-----

Ah si si, es el artista que es muy famoso

Y este ha entrado a lo grande porque ha vendido piezas para lo web, para muchos sitios extranjeros y bueno, pues un piezo de 350, 600 euros depende del tamaño. Es un trabajazo. O vas de arte. Sí, este sí. Este chabaci hace cosas únicas.

ON LACK OF YOUNG BLOOD IN THE PROFESSION AND RARITY OF CRAFT-----

14:35

¿Y cuántas personas hay en el todo de España que conocen la técnica?

Ah, que conocen la técnica, puede haber miles. Lo que pasa es que la mayoría son abuelitos que se van a morir ya, si no son muertos. Sí. Y gente joven no entra. Yo creo que los españoles ya no queremos trabajar.

15:03

y por lo que veo ni españoles ni fuera que mucha gente joven no quiere trabajar y no quiere esforzarse cuando sin esfuerzo no hay nada nadie te regala nada pero ahora hay un pequeño repunte de gente que le gusta la artesanía pero lo mismo te hace esto que te hace esta mira yo antes estaba viendo porque hay técnicas que son iguales para todo el mundo joder, supleito

pero mira esto por ejemplo con palmito que es palma de... o con palma de unas palmeras pequeñas o también son hojas de palmera grandes, palma, pero es el mismo tipo de trabajo hay trabajos que son iguales con todos los materiales, varía porque son hebras más finas tienes que meter material

16:20

pero hay un montón de vídeos por ahí. Luego también hay una página.

And do you do Panama hats?

No, eso se hace en Centroamérica, eso no es típico de aquí. Y eso es más un panamá bueno en lo que oprecia.

ON NEW WEBSITES AND SUPPORTS TO KEEP KNOWLEDGE ALIVE-----

Y lo tenéis esta página si queréis verla, Espartopedia. Y luego por lo menos hay gente que está intentando potenciarlo, extenderlo como la religión, prosoletismo, que diga a más gente y que no se pierda, pero por ejemplo yo te digo una cosa curiosa, un mal padre es parto del sitio donde hay, las direcciones en Madrid creo que estoy yo

o no. El museo del traje. Pero aquí te viene, por ejemplo, de los sitios. el... vamos ahora aquí en Guadalajara Museo del Esparto pero luego tienes... te explican algunos procedimientos el punto Cofin

ON ESPARTO NETS TO PRESS OLIVES FOR OIL-----

lo que te decía, las almaceras del aceite, se le va prensando, aquí se echa la aceituna y la va filtrando, y lo que pasa es que llevan agujero en el medio para poderlo meter, entonces esto se llama punto cofín y por ejemplo te vienen gráficos de cómo se empieza, cómo se va haciendo, esto puede ayudar sacarle una foto para que no se os olvide el título de la página de la partopedia.

ON THE FACT THE TECHNIQUE IS 30'000 OLD-----

18:20

Sí, con los vídeos de YouTube y el Esperto Ospedia. Mira, esto por ejemplo. Esta es una persona que está en la Universidad de Albacete. Que está enseñando referencia. Mira, referencia de 30.000 años en la cueva de

Esparto.

18:40

de hace 30.000 años

7000 YEAR OLD ESPARTO SHOES-----

7000 años, una... Esto más a patillas y parto

muy interesantes ha estado siempre cuando todo se hacía mano uno se va al material que te daba la tierra que tenía mas cerca

ON THE FIRST SHELTERS BEING OF WOVEN MATERIAL, POSSIBLY ESPARTO

19:23

No podías comprar un cesto en la tienda. Te lo hacías tú o te lo hacías el pueblo. Sí, las primeras habitaciones fueron probablemente de espartos. Aquellos partidos se utilizaban también para separar habitaciones.

ON THE FACT CONTEMPORARY LIFE IS SO MUCH BETTER THAN THE PAST

lo que ha cambiado todo, que ven vivir con sabra. Es que no hace muchos años, hace 200 años no tenías un grifo en casa con agua corriente. Y hasta hace 80 años no tenías agua caliente. Y ya tener una lavadora es una maravilla. Y darle a la luz. Son cosas...

que cuando la gente dice que vivimos mal y que comemos mal, que antes se comía mejor, digo, soy gilipollas, soy tontos. No sabéis lo que decís. Nunca se ha vivido mejor que ahora. Y lo malo es que vamos a ir a peor, pero... Tenemos una vida maravillosa comparada con la que tuvieron nuestros abuelos. Que tenía... Mira, esta es una finca que es una corrala. Salí de un momento fuera.

20:40

No sé si distinguís esa fachada de que son como terrazas al aire. El acceso a las viviendas es a través de unos pasillos abiertos, es un patio. Esta casa tiene una. Y tiene unos huecos en la corrala por planta que era el servicio de cada casa.

En todos los edificios, hasta 1918-1920, solo había un cuarto de baño por toda la planta para los cinco, diez o veinte vecinos. Muy difícil, sí. Eso lo cambiaron cuando llegó la gripe de 1918, al final de la Primera Guerra Mundial. Se obligaron a tener un servicio en cada casa para que no se extendiera la epidemia. Sí. Hace dos días, hace 100 años, exactos.

y como eso todo, todos esos avances, vivimos un momento maravilloso y tenéis que adaptar, hay cosas buenas, cosas malas. No todo lo que hay ahora es malo, no todo lo que había antes era ni bueno ni malo, tenéis que adaptar.

ON THE FACT HE USES A FEW MODERN DEVICES -----

21:41

Yo cuando monto una persona de esparto antes la ceda se hacía con clavos o cosiendo. Ahora no, tengo una grabadora neumática. Sí. Antes correo con cortador con serrucho. Tengo esta máquina para quitarme trabajo. Sí, estos métodos de producción son esenciales. Sí. Más preguntas, que me arrolló mucho. ¿Tienes más preguntas? Creo que está bien. Tal vez...

¿Es posible tener...un pequeño sample para poder mostrar al profesor?

22:18

igual, lo que puedo lo mantengo, aunque tenga tijeras nuevas, ya tiene más años que yo.

ON THE ROMAN SCALE HE STILL USES -----

¿Sabía lo que es una Romana para pesar?

No sé.

Lo voy a enseñar. Perfecto, así es.

(SHOWS PICTURES OF IT)

23:14

Toda la vida yo llevo aquí en esta tienda diez años, antes estaba en otra y yo antes pensaba con este aparato que se llama Romana.

Así ahora comprendo, sí sí.

Aquí hay un cesto o un gancho y aquí tienes una serie de marcas para el peso. Me pesaba hasta 50 gramos, o sea el ajuste para peso pequeño es hasta 20 kilos hasta 10 gramos. Pero luego esto, tú eres la vuelta, enganchas hasta aquí y tiene, en vez de pesar hasta 40 kilos, lo mismo pesa hasta 120 kilos.

pues yo pesaba todo ahí, ahora, bueno, tengo esto para pesar las cosas pequeñas pero yo todavía tengo roma en la testa, si yo me he tirado...

ON HAVING BEEN USING THE ROMAN SCALE FOR 45 YEARS-----

24:18

45 años, hasta los 45 años pesando con la romana. ¿Y dónde está esta? La tengo en mi almacén. Porque aquí ya no cojo cosas, ya no, por ejemplo, la mercancía, hay cierta mercancía que cuando te viene, te viene al peso y tú la compruebas. Sí. Ya prácticamente no lo hago. Y hasta 40 kilos por esto, pero si no, me llevo la mercancía a mi almacén

Romana.

25:08

¿Es algo que te fascina?

Un poco, sí. Que no tenemos más preguntas. Encantado de informarles.

ON HAVING DIVERSIFYING THE OFFER TO SURVIVE-----

Muchísimas gracias por toda la información. Fue muy, muy interesante. No sabéis que sabía que tenéis una variedad de productos y materiales así.

Sí. Es que tú no puedes vivir de un solo producto, de unos gestos especialices. Y a medida que has visto que van viniendo productos, o sea que la gente necesita y uno te pregunta y otro lo traes. A veces funciona y a veces no funciona ese negocio.

26:16

Muchas gracias por su tiempo Juan. Encantado.

Muchas gracias. Y son seguros que el resto de la clase sería muy feliz de ver esto.

Si tenemos una cerveza, que vengan.

Muchas gracias. Hasta luego.



Above, sa variety of pructs sold by Sanchez. Over the years, he has diversified into canes, leather water bottles, blinds, carpets, ropes, etc.

Below, the Sanchez and the author visiting the Esparteria.





Inside the Esparterio Sanchez, with Juan Sanchez. Picture by Kurt Chan



Student work at the IAAC. Picture by Kurt Chan