PLASTIC

AWARENESS
Thank you...

To all the investigators, the facilitators of knowledge and the institutions that house them.

To my tutor Jérémie Cerman for his time, patience and pushing me to demand more of myself.

To my colleagues for this journey that we embarked together.

To Leo, for becoming my home away from home.

To my family for giving me roots.
# Preface

# Introduction

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As I evaluate my material choices for a prototype, I try to find an alternative for acrylic plastic aiming towards a more sustainable design practice. While debating the situation with colleagues, an interesting debate arose. One assumption was that the selection of common materials was inevitably defined by the interests of the industrial sector. Another assumption was that acrylic plastic was indeed the best solution because it is more “professional looking.” However, both seem to me incomplete answers. The industrial sector is not unidirectional, it is reactive to design trends and consumers demands. The term “professional looking” is not an objective quality of a material such as color or flexibility, it is a subjective social construct on aesthetics. Unsatisfied with the offer of commonly available materials, I question myself what are the reasons behind the specific selection of available commercial plastics, and if I can find a better alternative in a lesser-known material. The research brought me to the history of this “discontinued” plastic that could represent a viable option.
Pavone brooch in Galalith
circa 1930
Galalith is a biodegradable milk-based polymer considered one of the first plastics in mass production history. Although production years differ by country, we can frame the material’s history almost perfectly between WWI and WWII. Galalith entered the common household in the shape of objects such as buttons, combs, board games, furniture accents and costume jewelry. The material reached the peak of its popularity in the context of Art Deco, the artistic movement that consolidated the reputation of the material as a symbol of the modern lifestyle.

The consequences of the mass market production of Galalith’s and its competitor plastics, represented a significant transformation in the means of production and a new ideology. Besides its use as a purposeful material, Galalith is tied to the construction of subjective ideals regarding the concepts of authenticity, taste, class, modernity, femininity and French identity. This project analyses the symbiosis between the technological development of Galalith and the cultural expressions in art and design that drove the material to its peak and after disuse.

During the time of its production, Galalith was sold at a similar price than its contemporary competitors. However now a days, Galalith items are more valued in the antiques market even though they enough similarities with other plastics to make them indistinguishable to the naked eye. I explore the technical, aesthetic and symbolic potential of the discontinued milk-plastic “Galalith” or a derived formula for a possible use today. Biodegradability, the quality that was once considered it’s biggest flaw, is being explored by new designers as a design feature. The category of “bioplastics” has developed as a response to the plastic waste crisis, and several designers have retaken Galalith and derived formulas as a material for experimental design.
1. From Industrial Revolution to First World War.

1.2 From the First World War to the Second World War.

1.3 Galalith in detail and disambiguation with other plastics
Plate of Galalith Made in France by the company Feuillant in Ivory color.

Ivory Pair of Elephant Tusks Jonas Brothers Ivory Mount
Fine matched pair of tusks that were harvested by a professional hunter Wm. (Bib) Rabb in Kenya in 1947.

FROM INDUSTRIAL REVOLUTION TO FIRST WORLD WAR
In the late 19th century and beginning of the 20th century, industrialization was forging the landscape of modernity and paving its way with inventions. The study of knowledge has always existed, but in this era, the practice of scientific knowledge becomes professionalized, and nation-states start developing research institutions. This era brought many groundbreaking changes in materials, machines, energy sources, work organization, communication, and transportation.

Adulteration of food products became common practice as urbanization meant food had to travel longer distances without rotting. Producers focused on maximizing the profit based on volume, and they were under no obligation to reveal their ingredients or adhere to safety standards as regulations were very loose. People could buy chemicals with no restrictions; producers started experimenting with questionable substances to dilute, preserve, and mask spoilage.

In the case of milk, commercial products such as “Preservaline” were becoming readily available. Preservaline had a percentage of 5-1/4 of formaldehyde, and it was sold with the promise of preventing the milk from curdling for days. This solution preserved milk for days just as good as formaldehyde preserved dead bodies.

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This solution preserved milk for days just as good as formaldehyde preserved dead bodies. The practice was eventually banned when children played the role of “Canary in a Coal Mine” as the sudden death of multiple children in orphanages and hospitals was traced back to cheap adulterated milk. Events like this brought attention to the regulation of foods and chemistry products in all industrialized countries. By searching the means for diluting and preserving products, the adulteration of foods created a whole new chapter in the history of chemical science.


4. “AGENT PLACED ON TRIAL FOR SELLING PRESERVALINE” San Francisco Call, Volume 87, Number 138, 16 October 1902, https://cdn.ucr.edu/?a=d&id=5-FCl9021016.2.1268&--en--20-1--inc-inN--------1

In England, the accidental arsenic poisoning of over 200 people (of which 21 resulted in death) known as “the Bradford sweets poisoning” contributed to the legislation known as “the Pharmacy Act.”

In the United States, the chemist Harvey Washington Wiley became a national hero working with the Department of Agriculture to expose malpractices and direct public attention towards food safety. The production sector hated him, but the national press made the general public love him. Wiley and his group of food testers became known as “The poison squad.”

In France, Louis Pasteur and his method that became known as pasteurization provided the solution to preserving milk without formaldehyde or other chemicals. However, another researcher by the name of Auguste Trillat would become head of Institut Pasteur’s applied hygiene research department in 1905, and he had a further interest in the study of formaldehyde and milk reactions. Trillat’s studies between chemistry, biology, and engineering positioned him both in the fields of medicine and warfare.
1.2

FROM FIRST WORLD WAR TO SECOND WORLD WAR

Top. Plate of Galalith Made in France by the company Feuillant in Horn color.

Bottom. Horn cup Ox Horn Double Old Fashioned Whiskey Tumblers. Brand: SIR JACK’S.
Auguste Trillat published his study on formaldehyde. He tested different concentrations and patented a new derivative compound that he named formol. His interest in the substance was because he considered it as a potential disinfectant agent. During World War I, Trillat built a reputation on investigating microbial agents and dynamics of contagion. The French state demonstrated interest in weaponizing his investigations. Trillat would become one of the first members of the newly founded French program of weaponization of biological and chemical agents.

In between his tests, he noted that he could insolubilize casein protein from milk with formaldehyde. The casein present in the milk agglutinated and the paste would dry to become a white hard solid called “milk stone.” Trillat himself did not have any practical application for this byproduct, but another chemist from the Institut Pasteur would develop Galalith from it.

In a history full of serendipity, Galalith was initially developed with the intention to serve as a washable white surface for children to practice writing. Wilhelm Krische, head of the Edler & Krische printers in Hanover Germany, was trying to develop an alternative to paper and blackboards. Paper was considered expensive, and blackboards were available, but a white surface was preferable. In 1897 Krische partnered with chemist Adolf Spitteler because he had been trying without success to have casein adhere to cardboard, and he thought the chemist’s experience with casein would be useful. They sourced to the previous studies of Auguste Trillat and focused on this “milkstone” byproduct.

They achieved a solid horn-like material that did not work for their original intentions of a washable surface. They could not immediately find any practical applications, but they decided to register the patent anyway. In 1899 they registered the patents for Galalith, with Spitteler having the rights in France and Krische in Germany. The commercial name “Galalith” is derived from the Greek words gala (milk) and lithos (stone). The material was first exhibited at the Exposition Universelle in Paris, but it was still precarious. Unfortunately, Galalith’s formula and processing were promising, but they needed further development, and without a commercial application, Krische and Spitteler were running out of funds. The pair sold the German and French patents respectively. In Germany, it was acquired by Vereinigten Gummiwarenfabriken. In France, it was acquired by Pellerin and Orosdi.

By 1901 the Galalith process of manufacture stills needed much development; it was unstable in the presence of moisture. The two companies that had acquired the patents were merged and absorbed by the Harburg-Wien rubber factory, which founded the International Galalith Gesellschaft Hoff. Until 1902, the International Galalith Gesellschaft Hoff arrived to produce its first product: buttons; it was considered groundbreaking at the time. The buttons were mass-produced for military uniforms for World War I. With commercial success, the International Galalith Gesellschaft Hoff could invest in further experimenting with the formula. In the first stage, it imitated white-ish materials: ivory, horn, marble. Afterwards, they started a new stage of imitation.

Die Kinder müssen schreiben
The children need to write.
of precious natural materials: tortoiseshell, marble, jade, mother of pearl, coral, turquoise, onyx. Natural materials were very coveted and associated with luxury, but the overexploitation of these resources leads to the ban on their sell and purchase. This situation presented the opportunity to establish Galalith as a solution that would not deprive people of the pleasure of having their sought after tortoiseshell items while not killing the turtles. The resemblance is extraordinary; even experts had to become knowledgeable regarding the correct identification of materials as counterfeits flood the market.

By the 1920’s some of the uses were details in the interior of cars, beads, cutlery handles, piano keys, tokens for board games, combs, furniture details and jewelry. By the 1930’s Galalith is a popular material among Jewellery makers that made use of it in almost every possible color. However, parallel to this prosperity, overproduction and other circumstances leading to The Great Depression would also bring scarcity. Galalith objects proved to be a success first as a cheap replacement for more expensive or exotic materials and after sought after with artificiality as a symbol of modernity.

Galalith, being inevitably linked to milk availability, had its production volume affected when reduced milk supply in Germany caused restrictions that limited its use exclusively for food consumption. Around 1914 Germany was still manufacturing Galalith objects, but the casein was imported from France. As war broke out, a competitor plastic named Celluloid was also restricted due to its high flammability and potential use in explosives manufacturing. This positioned French Galalith as the market leader for a couple of years.

With the commercial relationship between France and Germany torn apart by the war, France stopped exporting casein to Germany. Being dependent on french imported
casein, German manufacturers could not continue with production. The frontlines consumed many resources; eventually, France as well had to prohibit the use of milk for non-alimentary purposes.

By 1940 only a handful of European companies were still manufacturing the material. Galalith was preserved relatively well in a household environment, but in the extreme conditions of the war trenches, the material proved sensitive to humidity. Soldiers reported that Galalith dagger handles tended to soften.13 As France and Italy’s production weakened, England took the lead of the market with Erinoid (England’s equivalent to Galalith), but the production faced the same fate as other European countries affected by the war. Other non-European countries such as The United States, Brazil, Australia, Japan and Russia produced Galalith under different commercial names, but the formula and manufacturing process did not significantly develop. Their production was mostly a replica of the industrialization in Europe. With the production of Galalith in Europe brought to a halt, other fossil-based plastics prospered. The properties of new materials had rendered Galalith obsolete.14 The property to decay under certain conditions was considered undesirable. After the war, the stable milk supply reestablished, and the world economy started to stabilize. In 1947 the production of Galalith was resumed in France. The company Les Etablissements Feuillant at Ezy-sur-Eure in Normandy was producing roughly 500 tons a year. However, Galalith never regained its popularity, and its production was (almost) discontinued.

13, Solomon R. Chaos & Classicism: Art in France, Italy and Germany, 1918 - 1939. Guggenheim Museum Teacher Resource Unit, 2019

1.3

GALALITH IN DETAIL AND DISAMBIGUATION WITH OTHER PLASTICS
Galalith was one of the pioneer plastics to be successfully mass-produced, but it is frequently mislabelled with its contemporary competitors’ name. Some plastics can be considered equivalent to Galalith as they were also casein-formaldehyde-based or were the same Galalith formula but produced under a different commercial name. Other commercial names for Galalith were Alkalit (Austria), Zoolite (Italy), Aladdinite (in the U.S.), Casolith (in the Netherlands) and Lactoloid (in Japan).

Other plastics had utterly different formulas, yet the resulting finish was practically indistinguishable to the naked eye, so people used the names of different plastics as interchangeable terms. The identification of early plastics can prove to be difficult, especially because most methods of identification are destructive. However, the antique sector has a great interest in identifying materials as this factor is determinant to establish the price. Galalith is particularly valued as it is considered a rare material.
In 1909 Great Britain, Russian student Victor Schutze patented a milk-based material called Syrolit and set a factory in a disused mill. However, he failed to make it a commercial success, and his company went bankrupt. A New Company was established in Schutze’s disused factories that produced casein plastic under the name of Erinoid. At the beginning of the First World War, as Galalith’s supplies were cut off in Germany, the Erinoid factory reached a volume of production of 5 tons a week. Unlike Galalith, the production of Erinoid continued after World War II, and British Petroleum absorbed the company. After the war, Erinoid was still commercially successful in the U.K., but it would slowly reduce production. By the 60’s most casein and Lactoid firms had ceased production, but it was until the 80’s that British Plastics (formerly British Petroleum) decided to close their Erinoid branch.

Aladdinite / Ameroid
Casein Plastics in the U.S.

In 1918, casein plastic formulas were introduced into the United States under the names Aladdinite and Karolith. These materials were used almost exclusively for the manufacture of buttons. Several parties in the production line, such as casein plants and button manufacturers, merged their assets to homogenize their production under the name of Ameroid and joined the American Plastics Corporation. Casein plastics in the United States did not achieve the same success as in Europe.
Tortoiseshell \[17\] has been used as a precious material for thousands of years. However, the material reached the height of its popularity around the 19th century. It has long been used as an ornamental gem material for art objects, jewelry, and personal items such as combs and eyeglass frames. The advent of plastic imitations, as well as the passage of laws protecting sea turtles beginning led to a drastic reduction in the amount of tortoiseshell in the market. Nevertheless, because older material can still be traded. A study has shown that, typically, tortoise shell can be easily distinguished from all materials used to imitate it, except for casein plastics.

Celluloid \[18\] is a competitor thermoplastic. This material is produced from nitrocellulose and it can be considered the first thermoplastic. Celluloid was created to imitate ivory and shared many of the same uses as Galalith: jewelry and small household items. A unique use for this material was to produce picture film, and given that the material was highly flammable, it was sometimes used for explosive devices as well.
Bakelite was the competitor thermoplastic in America. Galalith and Bakelite were produced around the same time and for the same purposes. This situation led people to refer to Galalith as “French Bakelite” commonly. Although both belong to the thermosetting plastics category, Bakelite’s composition is synthetic and their formulas are not related. Bakelite is a composition of a phenolic resin and formaldehyde. Bakelite is said to be slightly heavier than Galalith.

After the Second World War, Lucite took the lead over other plastics. It was cheaper to produce than Galalith and Bakelite and was more chemically stable than cellulose. Due to its transparency, Lucite enabled practical applications as a replacement for glass.
VALUE AND IDENTIFICATION

The revalorization of early plastics is a relatively recent phenomenon, and it proves to be a most curious demonstration of the construction of subjective value and cultural capital.

At the time of its production, Galalith fit the economic model of perfectly elastic supply. The volume of Galalith supply is highly sensitive to the price point. Both objective and subjective circumstances determined the commercial price point of Galalith at this time. The objective circumstances comprise the price of milk and other prime materials, workers’ wages, energy and transportation cost, etc. As subjective circumstances, we can include the influence of public figures, one designer’s popularity over another, or particular fashion trends.

As a discontinued material, Galalith now fits the economic model of a perfectly inelastic supply. The price does not determine the volume of supply. The price point of Galalith is mainly determined by subjective circumstances, like the preferences of antique collectors. Since the time of its discontinuation, old costume jewellery languished unsold in corners of second-hand shops. Nevertheless, in recent years prices have skyrocketed. Accessories that could be bought for a few cents can now reach up to a three or four-digit price. Galalith items are particularly sought after as rare items. It is a most curious phenomenon that Galalith is sometimes indistinguishable from other materials without rigorous testing, yet a test of authenticity positive for Galalith can dramatically raise the price of an item. Besides a confirmation for a material, other factors considered are historical associations, country of origin, the complexity of the designer’s pattern, and reputation.


In collector identification guides, collectors are warned to test as well for the identification of now-a-day plastics. Ambiguity in the nomenclature for early plastics has enabled falsifications and replicas to be sold marked as “French Bakelite.” Knowledgeable collectors expect items to be marked clearly as either Bakelite or Galalith; the term “French Bakelite” has been identified as indicative of falsifications.

There are several methods of identification; unfortunately, many of them are invasive and require a small sample or other injuries of the original piece. Some plastics have a distinctive smell when heated. An object can be exposed to heat by exposing it to hot water for 20-30 seconds or puncturing it with a very hot needle. Bakelite smells like formaldehyde, Galalith smells like cheese or burned milk, cellulose smells like acetate - vinegar. Epoxy resins and acrylic will not display odour to the water test. Other tests require a background of experience with the said materials; some of the properties observed are brand signatures, weight, patina, transparency, sound, and colour saturation.

2.1 Art Deco
2.2 Ballet Russes
2.3 Chanel
2.4 Bauhaus
2.1 Plate of Galalith Made in France by the company Feuillant in Green.

Jade slab. photo by R Weller/Cochise College.

Top. Jade slab. photo by R Weller/Cochise College.
The volatility of the European interwar period manifested as the polarization of the art movements. People of this era witnessed the extremes of human nature, and art expressions were the sublimation of the collective trauma. Surrealism and dada embraced death and absurdity, others like Bauhaus and Expressionism aimed towards abstraction, Classicism tried to find again the order known before the war. These expressions extended to painting, architecture, photography, film, sculpture, and fashion. Plastics became the revolutionary material of the avant-garde. Many artists from different backgrounds experimented with Galalith, but the material found its niche market in what became known as the decorative arts.

Krische and Spitteler were successful at developing the formula but failed to find commercial applications. Many patented products of the era disappeared into oblivion in this manner. With the first commercial success with buttons, the Galalith production could be sustained. The profits enabled the development of more colours and time for designers to experiment with the material. In the hands of designers, Galalith would become backgammon tokens, cutlery, drawer handles, hair combs, or jewelry. These items were exhibited in the “Exposition Internationale des Arts Décoratifs et Industriels Modernes” in Paris, 1925. This event that gave name to the aesthetic that became known as Art Deco.

Tied to the context of discovery and invention came along new concepts of exhibition in the format of world fairs. These events served as a display of power; nations showcased achievements in science, technology, sports, culture and domination over colonized territories.

After the war, people in Central Europe were facing the loss of cohesion in their social identity. World fairs indulged people’s desire to find comfort as they presented themselves as visions of prosperity and helped build a sense of pride in national achievements.

The jewellery and fashion accessories salons were small compared to spaces dedicated to displays of other nature, like automobiles. Displays were meticulously crafted as they were competing for the public’s attention not only against each other but with the displays of some of the most extraordinary achievements of humanity.

Art Deco presented objects so that they showcased more than how the items served an immediate purpose; they embodied the fantasy of the modern lifestyle. Visits to the fair by notorious characters of the elites increased the
Interest of the general public.

Consumption came as the purchase of goods for their functionality and more abstract consumption, the widespread consumption of the image of Art Deco by the onlookers that validated its symbolic meaning as the embodiment of style, wealth and modernization.

The Art Deco Aesthetic was, in many ways, the opposite of its predecessor Art Nouveau. Art Nouveau was rich in soft curves and ornamental naturalistic motifs. In comparison, Art Deco had abstract geometric shapes and modern materials like chrome and stainless steel. Being modern was not a state achieved as the culmination of a gradual process rather by severing connections with everything that had gone before. However, there are a few transitional pieces that prove difficult to categorize. We can compare for example the

Auguste Bonaz combs. Bonaz shows incredible craftsmanship in working with Galalith and is one of the most successful Art Deco exhibition sellers.

In the Art Deco aesthetic, every object of everyday use becomes a little treasure. This festive style and sense of over-optimism would make the twenties referred to as “les années folles” in France or “roaring twenties” in América. Automobiles change the lifestyle in the cities. Women are more independent and engage in the life that was usually reserved just for men. This new lifestyle makes a market for elegant accessories like cigarette holders, pocket mirrors, beauty cases, decorated lighters.

When the Art Deco aesthetic could be found from high art to window frames, it became a sense of “living in art.”

The movement started in France, but the trend spread to an international level and consolidated Paris as the world’s fashion capital. Every object must be not just useful but beautiful and personalized. Galalith was an ideal material thanks to its capacity to pose as multiple materials.

Marcel Coard is another furniture designer that transcended because he managed to both converge the concepts and aesthetics avant-garde while also creating a particular decorating style as an individual. His most famous for the designs commission for patron of the arts Jacques Doucet.

Galalith was for furniture, however, the material has certain fragility that prevents it from being used as structural materials.
Architect and designer Charles Rennie Mackintosh worked on furniture commissions for the businessman Wenman Joseph Bassett-Lowke. The black square cabinet with two shelves and yellow Galalith inlay was designed for the house remodelation of Bassett-Lowke’s house in Northampton. Mackintosh pioneered the use of Galalith for furniture, he was one of the first designers to test the possibilities of the material as inlay.


Plate of Galalith Made in France by the company Feuillant in Zebra

Jade slab. photo to R. Weller/Cochise College.

Ballet Russes
By the year 1900, The Russian Empire was underdeveloped compared to the industrialized nations of Central Europe. Their economic system was still similar to feudalism, and people used a different calendar system than the standardized Gregorian Calendar, which made international relations challenging to coordinate.

In the eyes of the artists, actors and musicians of the Silver Age of Russian culture, the West was an enigmatic and fabulously wealthy land to earn money with their performance. In 1909 Diaghilev’s Ballets Russes travelled from St Petersburg to Paris. The company’s novelty is that they would reframe the moribund art of Ballet into a Modernist aesthetic. 28

The creative force behind the ballets Russes included characters like costume designer Leon Bakst. Bakst indulged in rich geometric applications in very colourful combinations. The costumes and decor electrified Paris; this led to a complete reappraisal in the arts of decoration, fashion and jewelry. These spectacles made famous the new aesthetics in every city they performed. A combination of conditions drove Europe’s taste for exoticism. French colonies in African lands were already becoming the setting for French imagination thanks to exotic imported goods. In 1922, British archaeologist and Egyptologist Howard Carter discovers the tomb of Egyptian pharaoh Tutankhamun triggering an egyptomania. From Cleopatra to Sherezade, the Ballets Russes exotic representations of foreign lands are a complete success.
Jewellers started working with combinations of Galalith and metals juxtaposed in unusual colour combinations to match the Ballets Russes’ exotic displays. We observe a fascination and reinterpretation of Egypt in the Art Deco style.

The company of the Ballets Russes would accumulate collaborations with some of the most remarkable characters of the era, among them: Cubists Georges Braque and Pablo Picasso, Surrealists Giorgio de Chirico, Joan Miró and Pavel Tchelitchev, Avant-garde painter Michel Larionov, neo-Primitivist Natalia Goncharova, Fauvists Henri Matisse and André Derain, muralist José Maria Sert, and Orphists Robert and Sonia Delaunay.

Leon Bakst wrote to his wife:
“Commissions are raining down on me like nuts from a tree, even England and America are making noises, and I’m even getting a mention in the ‘reviews’. I’m knocked over by all this!”

The performance inspired a young generation of European artists who rebelled against previous depictions of realism in art. Here, Ballet was a celebration of dance and a collaborative and equal partnership between dance, art, music, fashion, design and culture. The ballet company travelled extensively but never performed in their native Russia; after the Russian Revolution disrupted society, the artists never went back.
Top. Plate of Galalith Made in France by the company Feuillant in mother of pearl
Bottom. Luxury nacre seashell background texture.

- COCO CHANEL
Coco Chanel’s little black dress in October Vogue (1926) ft. Galalith costume jewelry. The dress became known as the ultimate dress; Vogue called it “Chanel’s Ford,” like the Model T. The little black dress was calf-length, straight, and decorated only by a few diagonal lines. Simple but chic, accessible for women across social classes.

By accessorizing the little black dress with layering of emeralds and Galalith jewelry, Chanel facilitated the breakthrough and mass popularity of costume jewelry in the luxury category. This Vogue feature became an iconic moment in fashion, with her name becoming synonymous with impeccable fashion sense. As the appreciation of plastic as an imitation of precious materials was still debated, Chanel’s gesture established the fake as desirable.

Chanel was the embodiment of the emancipated woman. She created clothes that privileged comfort as much as style. In Chanel’s vision, if women intended to participate in modern society, they should not be restricted by clothes. The designer eliminated corsets and used comfortable fabrics such as wool and jersey. Although Chanel’s vision of modern femininity was described as boyish by some, the style was a success. The loose, straight-cut shapes of Chanel’s designs and her use of many plain textures provided the perfect canvas for the lavish costume jewelry introduced in the early 1920s.

After the war, Chanel moved to Switzerland and made a decent profit of her perfumes' royalties. In 1954 she would reopen her fashion house with a comeback collection. Even with a successful fashion house, Chanel would be highly dependent on her relationships with men given that until 1965, women in France were not allowed to own bank accounts in their name. As of 2020, the brand continues to produce costume jewelry with plastics of a new generation and is still considered a market leader in the luxury category.

Chanel developed a collaboration with Italian aristocrat Fulco di Verdura that became known as “the Maltese cross.” The pair took inspiration from a Byzantine mosaic of Empress Theodora to create a cuff bracelet with a cross of multi-colour precious stones embedded in a not so precious base of metal and enamel. The juxtaposition of both cheap and precious materials was considered a conceptual innovation. The cuffs have a base of cheap metal - compared to gold - and the surface of the enamel is clearly peeling off. However, the cross mosaic of emeralds and rubies is in excellent condition. Chanel would layer this bracelets with galalith and bakelite ones.

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33. The Law of 13 July 1965 authorised women to manage their own property and assets freely by opening a bank account in their own name, and to choose to exercise a professional activity without the permission of their husbands.
Plate of Galalith Made in France by the company Feuillant in blue.

Luxury nacre seashell background texture.

Top.

Bottom.
Germany underwent remarkable cultural development during the Weimar Republic. This German history period is often mythologized as there is a fascination with the contradiction of astounding artistic and scientific demonstrations paired with extreme economic precariousness and growing political polarization.

The Bauhaus school of design was established by architect Walter Gropius in Weimar, Germany. The school developed a new scientific language for design based on a rational response to problem-solving. This displaced previous views on taste that were rooted in ornament. The school philosophy had grounds on the Gesamtkunstwerk concept (total work of art) that aimed towards the production of work representing the convergence of all the arts.

For the Bauhaus, the study of the materials for design was as important as the design itself. Students were required to experiment and test materials as course foundation. Exercises were developed to challenge the properties of materials in isolation and combination with other materials. Students experiment with wood, glass, textiles, pigments, fiber, clay, paper, metal, and of course, the new varieties of plastics such as Galalith.

35. CThe Weimar Republic is the popular name given the German Reich (Deutsches Reich) which designates Germany’s government from 1919 to 1933. Germany’s government shifted from a constitutional monarchy to a republic.


37. Gesamtkunstwerk can be translated as “total work of art” or “all-embracing art form” meaning a work of art that makes use of all or many art forms or strives to do so. The term was coined by German philosopher K. F. E. Trahndorff in 1827.
We do not always create ‘works of art,’ but rather experiments; it is not our ambition to fill museums: we are gathering ‘experience.’

- Josef Albers.38

This more intimate relationship of the creators with the materials enabled that plastics ceased to be approached as the cheap replacement for something else and were, in turn, appreciated for their own properties and functionality. Laszlo Moholy-Nagy was appointed a teacher at the Bauhaus in 1923 and became one of the most well-known proponents of its educational methods. Moholy-Nagy notably experimented with Galalith as a canvas for some of his compositions. The widespread and long-lasting influence of the Bauhaus on modern and contemporary design is especially extraordinary if we consider that the school was operational for only 14 years.

“Wir schaffen nicht immer Kunstwerke, sondern Experimente. Es ist nicht unser Ziel, Museen zu füllen. Wir sammeln ‘Erfahrung’.”

We do not always create ‘works of art,’ but rather experiments; it is not our ambition to fill museums: we are gathering ‘experience.’ - Josef Albers.
This enthusiasm for Galalith extended to the jewelry market as Jakob Bengel introduced the use of Galalith to the German region of Idar-Oberstein. The Bengal collections were considered groundbreaking in style and choice of material. The local tradition in Idar-Oberstein around the trade of precious stones had hundreds of years, and Bengel was selling plastic in a town of diamonds.

The hills of the region were rich in Amethyst, Jasper, Agate, Carnelian, and other minerals. The proximity to rivers enabled the installation of mills for gemstone cutting. With the continuous exploitation of minerals, the industry started exhausting the mines. The town sourced their jewelry production with imported gems from places as far as Brazil. Jakob Bengel had a factory specialized in chains. The jeweller decided to incorporate Galalith taking inspiration from the new wave of modernist creators in the Weimar artistic scene. From the chrome in the Bauhaus to Leon Bakst and his costumes for the Ballets Russes. In the 1930’s the Jakob Bengel company became one of the leading manufactures of Art Deco jewelry and was exporting costume jewelry all over the world. Bengel made a very prolific catalogue of patterns; he identified trends and adapted different designs for every country. In the late 30’s, the Bengel factory produced large amounts of unsigned items for Paris for the famous stores Lafayette and La Samaritaine; the sellers sometimes even intentionally mislabeled the items as “french made.” The factory opted for anonymity as the Second World War broke out because German exports were met with little sympathy. Many Art Deco Jewelry items signed by various brands can be traced back to the Jakob Bengel factory through its vast catalogues collection. As France stopped importing casein to Germany, the production became unsustainable, and the factory closed. The Bengel Factory was rediscovered in 2001; it is considered a monument to industrialization, and the facility has become a museum.
3.1 the individual. The emancipated woman and costume jewelery

3.2 Ballet Russes

Advertisement for IPSWICH HOSIERY demonstrating the “Gibson” look to the left, and the trend that replaced it “Flapper” to the right.
THE INDIVIDUAL.

THE EMANCIPATED WOMAN AND COSTUME JEWELERY

*Plate of Galalith Made in France by the company Feuillant in pink*
THE INDIVIDUAL.
THE EMANCIPATED WOMAN AND COSTUME JEWELLERY

The war brought women into occupying roles they had never occupied before. Women found a new freedom from the restrictions of pre-war attire and the ideology that came with it. Women were engaged in sports, science, nightlife, driving cars, openly expressing their opinion on public matters, and having promiscuous sex just like men did. Women had joined the workforce indeed, but they were assigned what were called “women’s jobs” they were not trusted to fulfill power positions because of “women’s issues.” A woman could aspire to be a nurse but not a career in law, for example. However, the long term goal continued to be marriage, so girls still protected their reputation and most left the working force after getting married.

After one-third of unmarried women joined the workforce, and even though their wages were lower than their male counterparts, women on a broad scale had economic independence for the first time. Just a generation before, jewelry wearing for a woman abode by specific codes that were broken by this new freedom. Wives would be the walking exhibition of their husband’s wealth. Young women were to be warned about publicly wearing their courtiers’ gifts as this could either compromise her with a particular man when given family jewels or brand her as a mistress. Women were tied to tight morality and a sense of family duty. After the war, with the new ownership of their own time and money, women could find their self worth as an individual. Women became consumers in their own right instead of depending exclusively on male providers. Plastic jewelry did not replace jewelry of precious materials, but rather it became a market segment. The economic conditions of the Great Depression contributed to the massive consumption of plastic over other precious materials. The fact that

Galalith was a completely new material meant that it had no historical associations with its subjective value. The newly emancipated woman was exhibiting her independence through the choice of her wardrobe. The symbolic meaning of Galalith jewellery fits perfectly in this ideology as it was constructed around the life philosophy of modernization and Art Deco. For jewelry manufacturers, women’s engagement in a more active lifestyle represented the creation of collections aimed at day and nighttime attire and a new valorization of the women as the canvas. The artistic value of costume jewelry is not just in the quality of manufacturing but also in its harmonization with the female body.
The trendy girl of the time had a “Bob” haircut, shorter hemlines of skirts and dresses, fluid tunics and on top of these, piles of costume jewelry. Conservatives initially mocked the women that engaged in this new style both for their clothes and their behaviour. Modern girls were considered frivolous and reckless. In France, the trend was named “La Garçonne,” playing with a feminization of the French word “garçon,” which could be translated as “boyish girl.” In America, they were called “flappers.” It has been recorded that “flappers” was initially used as a derogatory term, although the meaning is unclear. Some sources say the word used to be slang for a teenage prostitute; others say it referred to the vigorous dance moves that looked like flapping birds. However, the fact that the modern trend seemed to be so triggering to a conservative society further encouraged this sense of rebellion. With the common use of the words “flapper” and “garçonne,” they became more descriptive of a style than an insult. Some feminists claim that women’s great achievement in the 20s was learning to value their individuality.
Plate of Galalith Made in France by the company Feuillant in Tortoiseshell.

Antique Turtle or Tortoise Shell
Height: 19 in. (48.26 cm) Width: 16 in. (40.64 cm) Depth: 4 in. (10.16 cm)
Style Edwardian (In the Style Of)

3.2

THE MASSES
PLASTIC AS DE-
MOCRATIZATION
OF LUXURY.
With its capacity to imitate, Galalith contributed to the history of falsifications and ignited discussions that still seem relevant today, what constitutes good taste, luxury and what materials can be considered precious?

The first World War was the most traumatic event people had witnessed so far in humanity’s history. Warfare technology had reached an incredible power for destruction, and gender roles changed dramatically in a single generation. Around 20 million people died from war casualties and post-war epidemics. War mobilized populations both in the frontlines and in people’s everyday lives from every country touched by the conflict.

Industrialization and war changed not only how goods are produced but also how they are consumed and perceived. With mass production came mass consumption. The art movements of the interwar period represent great exponents of high culture, but the period also saw the rise of low art becoming a new form of expression. With the development of mass media in the forms of film, radio, newspaper, print magazines, and advertising, the consumption of culture was no longer limited to a select few.

Art Deco spread worldwide as more than physical objects; it became a conceptual lifestyle in pages of magazines and newspapers that dedicated a few pages to praise these precious curiosities. The images charmed the audiences in that they presented themselves not just as useful objects of beautiful craftsmanship but also the material representation of a more complex social construct, the modern lifestyle fantasy.
A set of cutlery with details of Galalith ivory handles becomes more than an instrument for eating; it becomes a luxurious wedding gift. A small conspicuous pin decorates an item of clothing, but for the woman wearing it, it identifies her as an emancipated woman. Inanimate objects’ capacity to embody abstract values beyond their physical properties and the labor input in its fabrication is described by Karl Marx that names the emotional relationship between consumer and object as commodity fetishism. The subjective value of the commodity beyond its inherent functionality is, therefore artificial, a social construct.

The accessibility to imitations of precious materials by those who could not afford them was naturally displeasing to those who could afford the originals. The flaunting of opulence has been a symbol of power and success from Egyptian pharaohs to European Royalty. In a nobility system, your given social status is assigned at birth, and ordinary people had no social mobility aspiration. Europe’s ruling elite used opulence as an ideological weapon to impress the lower classes. However, in the new consolidation of the megalopolis, the norms of class would be challenged every day as plastics enabled the exercise of a simulacrum of wealth and the Art Deco aesthetic changed the preconceptions of “good taste.” Philosopher Thorstein Veblen describes the phenomenon in his visionary book “Theory of Leisure Class.” In the capitalist society where the person is judged according to their possessions, the leisure class differentiates itself from the working class with the consumption of luxury goods. In theory, the consumption of luxury goods and services is limited to the leisure class as they can allow themselves to do so because they possess both wealth and time. The working classes have more important priorities to spend their money on and have limited time to indulge in recreational activities because they have to work.

Galalith presented itself as a utopian promise, an infinite material that could transcend nature’s limits and democratize luxury. Class is exclusionary; by engaging in the artifice of pretending a lifestyle, the access to wealth and social mobility feels potential even though in practice, it is not. The nouveau riche want validation of their upwardly mobility, and the typical workers want to mirror the affluence they cannot have. Galalith democratized luxury because opulence ceased to be a commodity accessible only to the elites. With the social acceptance of Galalith as the ultimate chameleonic material, wealth is not indispensable to demonstrate opulence. Art Deco is the aesthetic society has associated with opulence; the materials may be precious or not.

Even if jewelry and other accessories are sometimes classified as secondary items in a wardrobe, these objects give away more complex information regarding its wearer. Accessories can indicate social class, status, formality or informality. The fashion market composed of both essential items (like shoes) and non-essential items (like jewelry) was well on its way to becoming one of the world’s biggest industries.

Nowadays, an artificial shortening of the product’s life cycle makes fashion one of the biggest industries worldwide. The fashion business has segmented at different price points and obeys a cycle of planned obsolescence every six months.

Costume jewelry continues to be an active sector of the...
fashion industry that nourishes from indulging in fantasy. In today’s fashion market, a luxury brand’s narrative around a hero product is sometimes aimed indirectly at targeting the sales of other more accessible commodities of the same brand but different market segmentation. The fashion market segmentation from most expensive to less expensive goes as following: Haute Couture, Ready to Wear, Diffusion, Bridge, mass market. Using as an example the marketing segmentation Chanel uses now in (2020) we can observe:

Chanel crafts a dream with impossible to attain Haute Couture diamond necklace that you might see adorning a famous actress, probably not even the actress owns this jewelry. It is impossible to sustain a business exclusively from Haute Couture because, although expensive, there are not enough customers. However, this hero product of Haute Couture is essential to build the image of the brand. The impossible necklace validates the status of the costume jewelry of the next segment: Ready to Wear, yes expensive but not impossible for the elites. Nevertheless, if we observe the Chanel beauty line, although it is still considered expensive, it is consumption for the masses in behaviour.

The Chanel jewelry might not be available to everyone, but a Chanel perfume is available to many. The impossible sale of a luxurious necklace is actually targeted at selling perfume at a massive scale by the narrative built on the mythology of the Chanel woman.

“You will see in a magazine, on beautiful celebrities, a super-beautiful dress, that maybe you cannot afford, but because of that, then you will buy from the same brand lipstick or sunglasses.”

DE SIGNERs

I

SU.

FERGERS
4.1

RE-USE OF DEAD STOCK OF GALALITH

Top. Plate of Galalith Made in France by the company Feuillant in mother of pearl
RECUPERATION OF DEAD STOCK OF GALALITH

At the beginning of my investigation, I had thought the use of Galalith to be completely dead. A material of rare occurrence in auctions and specialized antique dealers. There are a couple of Italian factories still producing buttons, but other than that, there seemed to be no glimpse of a more complex application. Nevertheless, surprisingly, it seems that Galalith is becoming of increasing interest for several designers in recent years.

The factory of Jakob Bengel had remained preserved as a permanent exhibition presenting the development of the Idar-Obersteiner jewelry and metal goods industry. However, the factory owners decided to reopen production. The factory presented a stand for the first time at the German trade fair “Intergem.” The “Collection Art Déco” presented original pieces from the 19020’-1930’s. As of 2016, they resumed the production of pieces upon request. In the “Collection Privée,” clients can choose from over 3000 drawings of the sample books and reproductions are made directly from factory owned templates and samples of original work. In the “Collection Royale,” semi-finished pieces original from the Bengel company collection are used as the foundation. All chains in the collection are made exclusively in silver and Galalith.

The Jakob Bengel factory is now part of the identity of the Idar-Oberstein jewellery tradition. The local industry had to adapt itself to accommodate market demands such as changes in fashion trends and preferred materials and war vicissitudes. The town has experienced both times of abundance and scarcity. Numerous vestiges of the jewelry craftsmanship from other eras can still be found in Idar-Oberstein and influence new designers.

Danni Schwaag is an example of these contemporary Idar-Oberstein Jewel makers using old stock of Galalith. The jewellery in the Danni Schwaag collections maintains an enduring bond with pearls and mother-of-pearl while also experimenting with other materials.

The series of brooches called ‘Organ,’ made in mother-of-pearl and Galalith, is inspired by the shapes of the organs of the human body;

“the two subjects are compared while maintaining their defined identities, perhaps to further accentuate, through the contrast, the link between the organic nature of the material and the vitality of life itself. The jewels are a representation of the world, where a dual category plays a fundamental role: the definite and the indefinite, the material and the immaterial, the organic and the inorganic.”

- Danni Schwaag.
In 2019 Danni Schwaag’s fusion of the past and the present were presented in the exhibition “Wearing Change” of the association Not Only Decoration (NOD) as part of the exhibition program “Idar-Oberstein adorns itself.” Not Only decoration is a non-profit organization that offers a platform for art and design projects that deal with social and ecological issues. The platform offers a showcase for wearable items, projects representing issues such as migration, feminism, and the impact of industry on the environment.

The use of Galalith’s dead stock is a possibility that could be explored using technology that was not available at the time of its production. For example, laser cutting technology offers the possibility of exploiting Galalith sheets with a precision that was impossible with more manual techniques. Dead Stock of Galalith is becoming commercially available on the internet. A.R.C.C. Galalith Store sells Galalith in the standard shapes at the time: plates, rods, tokens. The store sells 35 - 50 years old Galalith made in France by the company Feuillant. The viability of this material with laser cut is not noted on their website. However, in written correspondence, the company claims it is possible.
4.2

GALALITH DESCENT MATERIALS

Top. Plate of Galalith Made in France by the company Feuillant in Green.

GALALITH DESCENT MATERIALS

The degradation of Galalith, the chemical property of Galalith that was once considered its biggest flaw, is now being exploited as its biggest virtue for modern casein protein formulas.

TESSA SILVA-DAWSON

Tessa Silva-Dawson is a graduate of the M.A. Design Products course at the Royal College of Art. Her practice is focused on the process of developing innovative manufacturing methods. The work is often intended as outcome both a physical result and a catalyst for discourse and challenging the perception of materials. Projects are born from an awareness of culture throughout the past, present, and into the future. Her ongoing project, Protein, is an investigation into the use of milk proteins as a natural material for the handcrafted production of objects. The formula is different from the original Galalith; however, it is based on the same principle of the synthesis of casein protein. She runs a workshop in London. She teaches how to adapt the production techniques of the past to influence the future of making.

MARION SEIGNAN

Marion Seignan is a graduate from the Industrial Creation course at Institut français Milano and “Explorations Galalithiques” is her diploma project. Halfway between science and design, the project addresses the need to correlate the lifespan of materials with their intended purpose of use. Marion takes into account the viability of Galalith-derived materials and pays attention to the sustainability of the milk industry. The milk industry in itself is controversial regarding environmental issues and the ethical treatment of animals. However, Marion sources it from milk products that have been identified as unsuitable for human consumption and were destined to be discarded. In France, almost 500 million litres of milk are wasted each year, upstream of the chain.

Marion met with French breeders and collaborated with researchers and chemists to turn milk waste into fully biodegradable materials. Marion has achieved a range of variations from the most flexible to the hardest, porous or dense, translucent or opaque through different processes. In 2019 Marion shared her discoveries at a workshop named “Atelier d’initiation au design expérimental” in the context of the Do it! Design workshops of the Centre Pompidou, Paris.
QMILK

Qmilk is a group of companies engaged in the development of biopolymers based on milk casein. Anke Domaske, managing director of QMilk, is a microbiologist and has developed several recipes over the years to produce plastics with a wide variety of properties. The formula and processes are based on the Galalith formula, but the exact details are kept as industrial secret. Initially, the founder was trying to develop chemically untreated clothing for a relative suffering from Cancer. Formaldehyde or other chemicals were avoided entirely. Qmilk offers a fabric described as texture velvety like silk, ideal for moisture absorption, antibacterial efficacy and dermatologically tested. Fibres can also be woven into yarn, similar to wool. The company has various applications for the formula, such as tissue for clothes, discardable tissue like toilet paper or wipes, hydrophilic film and microbeads for beauty products.

LACT.I.P.S.

Lactips is another company that developed a new formula based on Galalith. The technology resulted from ten-year research by professor Frédéric Prochazka in a polymer materials engineering laboratory at the University of Saint-Etienne. Lactips focuses on creating market opportunities for a biodegradable plastic that suits the needs of the consumer and the environment. Industrial properties Lactips technology are water-soluble, biodegradable, mass-producible, print-ready, and edible, and also has strong barrier properties to oxygen, fats, and mineral oils. The company’s main practical application for the material is packaging and single-use products.
4.3

THE NEW
BIOPLASTICS
CATEGORY

‘THERE IS SO MUCH IN FASHION THAT IS
UNEXPLORED’ - IRIS VAN HERPEN

Iris Van Herpen
video interviews with Dezeen for Vir-
tual Design Festival, 6 May 2020.

Top. Plate of Galalith Made in France by the company Feuillant in Zebra.
Bottom. Jade slab. photo to R.Weller/Cochise College.
THE NEW BIOPLASTICS CATEGORY

Galalith was the first bioplastic in composition, but the official categorization of a new segment of materials as “bioplastics” is relatively new. The future of Galalith descent formulas will be defined by how bioplastics enter into the dynamic of bilateral relationships between designers, makers and users. These three are the essential participants in the creation of any kind of design.

As with all new materials, regulations are confusing, labeling can be misleading, and producers continue to exploit these ambiguities. Biobased plastic can be partly or entirely biobased. However, partial organic content does not always represent biodegradable plastic. Sometimes, the degradation expectations are unrealistic, as they would require environments or temperatures that do not happen naturally. A fully biodegradable plastic deteriorates as it is broken down by biological agents such as bacteria, fungi and algae. A degradable plastic disintegrates into smaller and smaller pieces to become microplastic.

According to The Plastics industry Trade Association (formerly Society of the Plastics Industry), bioplastics are defined as a plastic that is biodegradable, has biobased content, or both. Biobased content refers to renewable resources instead of fossil fuels. Examples of renewable carbon resources include corn, potatoes, rice, soy, sugarcane, wheat, and vegetable oil.

The advance of the bioplastics category faces specific resistance because it needs development to compete with other established plastics in physical properties and ideology. In the consumers’ case, they have associations of specific properties attached to the plastics they already know. Products of similar appearance but different properties are disconcerting. However, some might spend a little bit out of guilt whenever something is inaccurately labelled “biodegradable,” but the consumer feels relieved of his “guilt of killing the planet.”

In the industry sector, they react to sustainability usually more from social pressure than their own initiative, but in the end, the industry is guided by economic interest and will adapt to whatever assures the profit. In the case of designers, they find discouraging the complications of an experimental material as it is an inconvenience to change the techniques they already know. Moreover, if materials are too expensive for all three sectors, they get out of the equation, but the production needs to evolve and grow in scale for the price to get lower. This model is if we look at it as the only possible resulting commodity as something that needs to be produced on a large scale with a competitive price, a product that obeys elastic supply.

For bioplastics formulas to develop, designers need to experiment with applications so that bioplastics can become profitable. As observed with Galalith’s original formula, the success of these new materials obeys both objective functionality and subjective perception. The new generations of bioplastics need to find both a common practical application and a hero product. The hero product establishes the subjective perception by showcasing an extraordinary object in such a “mise en valour” that the piece behaves as an unattainable commodity of inelastic supply.
The Mediated Matter Group at the Massachusetts Institute of Technology has several groundbreaking innovations, but one, in particular, qualifies as “hero” in the bioplastics category. This division of the M.I.T. team was founded in 2010 by the notable researcher, architect, scientist, engineer and inventor Neri Oxman. She pioneered material ecology; the practice pushes the boundaries of organic materials with new technologies. The Aguahoja collection is a set of biopolymers that offer a material alternative to plastic. These formulas have an organic base of chitin, cellulose, and pectin. These bio components can be found in trees, crustaceans and insect wings. The team observed how the same chemical components in different proportions and iterations in the physical process of manufacturing could lead to an extensive array of functional materials.

“Standing five meters tall, Aguahoja I is an architectural pavilion composed of the most abundant biopolymers on our planet. Its layered structure, known as a bio-composite, is designed as a hierarchical network of patterns optimized for structural stability, flexibility and visual connectivity. Combining shell-like and skin-like elements, the pavilion’s overall stiffness and strength are designed to withstand changing environmental conditions such as heat and humidity while retaining its flexibility. Sourced from organic matter, printed by robots, and self-assembled by water.”
- Neri Oxman

The exhibition of Aguahoja also showcases the sets of variations achieved by a robotic platform for 3D printing biomaterials. Sourced from organic matter, printed by robots. Decay as a design feature enables a planned obsolescence that has a natural decomposition nourishing environment.

The hero product establishes the subjective perception by showcasing this one of a kind architectural creation, a “mise en valor” the piece is perceived as opulent. It is a commodity of inelastic supply; maybe a can buy it museum but, most people cannot buy it, nor are there are many available. The success of the Aguahoja is not just in the physical result of a new manufacturing process; it is also ideological. Aguahoja pavilion helps to establish the subjective perception that the development of bioplastics is desirable. In time, if some “aguahoja” derived more accessible commodity reaches the mass market, people would buy it out of desire, not environmental guilt.
EPILOGUE
Galalith is the first bioplastic but, at the time of its invention this category did not exist. At the beginning of the 20th century, all of these objects were created with no ecological concerns. It today 2020 we are one hundred years away from the Bauhaus and yet the influence of the school still feels so relevant today. The unintended consequences of new products and new technologies harnessed by designers and manufacturers can be even more far-reaching. Over 300 million tons of plastic are produced globally each year.

There is a bidirectional relationship in between makers, designers and users. Designers can both react to trends or initiate them. Design practice is not limited to objects or buildings but extends to environments, systems and networks. Plastic jewelry continues to be a constant in Fashion, why not replace the formulas. The process used in Aguahojia also uses an animal protein. Experimental plastics tend to be expensive because they need to finance their development and standardize to lower costs. For new materials to transcend to the massive market, it is of utmost importance that designers find uses for them.

Aesthetically Galalith proved to be the ultimate chameleonic material, from its origin as an imitator to becoming proudly artificial. The point on comparing it with its competitors is to highlight how replaceable they actually can be. An how people can be biased towards certain materials. Like Galalith, that although indistinguishable from its competitors; its value having closer ties to the Art Deco movement at the heart of paris... makes it more expensive. Finding use for dead stock of materials is a good contribution as the resources for producing them have already been spent.

Galalith derived materials offer an interesting possibility that needs to be explored. The formula for Galalith, could have gone into oblivion like other materials did, as its own inventors couldn’t find a use for it. Designers are problem solvers, the understanding of the industrial process enables technologies to be upgraded with possibilities that were not available before. In the past Galalith was shaped with subtractive manufacturing. Now a days we can use computational design to create precise shapes in an instant, we can cut those shapes with laser cutting, and 3d printing presents different possibilities of additive manufacturing. Designers need to find alternatives to the current materials.

New technologies and materials are developing all the time but designers they must test them for them to become part of the cycle of production. The category of “bioplastics” has developed as a response to the plastic waste crisis, and the formula for Galalith seems promising again.

“My team and I stand in the crossroads, challenging some of the processes that designers face at the intersection of biology and technology, nature and culture,” - Neri Oxman
1.1 Modernization and the milk market
1.2 History of Galalith manufacturing during the interwar period.
1.3 Galalith in detail and disambiguation with other plastics


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