Alexandre Brongniart and the Arts of the Earth: Coining "*La Céramique*"

During a forty-seven-year career at the Sèvres Manufactory, natural historian and ceramist Alexandre Brongniart (1770-1847) created a foundation for a coherent ceramic science.[1] The field of ceramics, or, as it was introduced in French, "*la céramique*" incorporated chemical and physical research, scientific and historical analysis, object making, industry, and artistic production within its domain. Critically, as I show here, with the shared efforts of a small group of close colleagues, Brongniart provided this science with a proper name, methodically launching the term "*la céramique*" into the French language over a period spanning more than forty years.[2] Brongniart's importance to the classification and nomenclature of pottery and porcelain-making is widely acknowledged. However, as I discuss, his efforts in establishing the name of the field have not been traced in their entirety and are not otherwise well known. My analysis shows the ways in which Brongniart developed and disseminated the terminology while clarifying its meaning. Additionally, I discuss the ways in which the next generation of authors responded to the novel terminology of "ceramics".

Since the mid-nineteenth century, the term "ceramics" has become commonplace and indispensable. Its relatively recent origin in France during the first half of the nineteenth century stands in contrast with a history of ceramic object making that spans at least 30,000 years.[3] Over the late eighteenth and early nineteenth centuries, scientific language was emerging rapidly to fulfil pressing needs. As eighteenth-century generalist approaches to

[1] Julia Carr-Trebelhorn, "Alexandre Brongniart (1770-1847): Kinship, Natural History, and the Invention of Ceramic Science," PhD thesis, (Oxford, 2023).
[2] I have discussed this topic at length. See Chapters Five and Eight, Carr-Trebelhorn, "Alexandre Brongniart".
[3] Carr-Trebelhorn, *Brongniart*, 207-10; American Ceramic Society, *Ceramic and Glass Materials' Role in Civilization* (2024). Online at: https://ceramics.org/about/what-are-ceramics/a-brief-history-of-ceramics-and-glass; Wu, et al., "Early Pottery at 20,000 Years Ago in Xianrendong Cave, China," *Science* (2024) (doi: 10.1126/science.1218643).

natural history gave way to the tighter disciplinary specializations of the nineteenth century, newly minted words provided increasingly precise language. Neologisms such as "biology", "entomology", and "palaeontology" were adopted to frame emergent disciplines.[4] Once identified, these disciplines quickly demonstrated the necessity and utility of their specialized nomenclatures. Although Brongniart and his associates had begun using the term "*la céramique*" in select scientific, industrial, and museum settings by 1802, as late as 1836, he continued to refer to the "plastic arts" or the "art of pottery" when addressing general audiences.[5] Before Brongniart's interventions, words that described the field were specific to the kinds of production, such as bricks, tiles, porcelain, and pottery, or to the styles, such as maïolica or faïence, rather than to the materials and methods used or to the broad category of clay- and mineral-based industries.

Introduction, Early Adoption, and International Reception

In 1844, Brongniart's complete classificatory schemes were outlined and made accessible through the *Traité des Arts céramiques* and the related 1845 publication of *Description méthodique du Musée céramique de Sèvres*.[6] It was largely within the text of these writings, and numerous encyclopedia entries that had appeared as preliminary drafts of these final works, that Brongniart gave solidity to the term "*la céramique*", which had been taken from the names of the Athenian cemetery Kerameikos and the mythical potter, Keramos.[7] In the wake of Brongniart's publications, "*la céramique*" was rapidly translated into English as both "ceramic" and "keramic", and into German as "*Keramik*", replacing any number of

[4] Carr-Trebelhorn, 230-1.
[5] See Carr-Trebelhorn, *Brongniart*, Chapter Eight.
[6] Alexandre Brongniart, *Traité des Arts céramiques*, 2 vols. (Paris, 1844); Alexandre Brongniart and Denis Désiré Riocreux, *Description méthodique du Musée Céramique de la Manufacture Royale de Porcelaine de Sèvres* (Paris, 1845).
[7] Carr-Trebelhorn, *Brongniart*, 19.

awkward, unwieldy, and inaccurate terms, such as the "arts of fire", the "arts of the Earth," or, even, the "arts of vitrification."[8]

Shortly after Brongniart's late-life publications appeared in the 1840s, other authors adopted his nomenclature and classificatory designations. In 1850, Brongniart's associate and protégé, Jules Ziegler, titled his collection of essays on aesthetics *Études céramiques*.[9] The word was used in translation in English, as well. In 1851, the *Official Catalogue of the Great Exhibition* in London named two French exhibitors, No. 1304, Lecoq & Rieder, and No. 1342, Mansard, who exhibited selections of "ceramic" wares.[10] More noticeably, the *Official Descriptive and Illustrated Catalogue* and the *Reports from the Juries* both described in detail the submissions to the official Exhibition category of "Ceramic Manufactures".[11] In the *Companion to the Official Catalogue*, Robert Hunt referred to the displays of pottery and porcelain as the "Ceramic series" and as "Ceramic Art".[12] On 2 June 1851, Léon Arnoux gave a lecture entitled "Ceramic Manufactures: Porcelain and Pottery."[13] Trained at Sèvres, Arnoux was employed as Art Director for the Minton factory. Several other authors had adopted the new term as well.[14] Thus, the word "ceramic" was clearly in use internationally and

[8] Carr-Trebelhorn, *Brongniart*, 207-10; Benjamin Silliman, "Alexandre Brongniart's New Work on the History of the Art of Pottery and of Vitrification", *American Journal of Science and Arts* 31, 1 (January 1837), 134.
[9] Jules Ziegler, *Études Céramiques* (Paris, 1850).
[10] G. W. Yapp, Robert Ellis, *Official Catalogue of the Great Exhibition of the Works of Industry of All Nations* (London, 1851): 255-6.
[11] Royal Commission, *Official Descriptive and Illustrated Catalogue: Great Exhibition of the Works of Industry of All Nations* (London, 1851): 89; *Reports by the Juries on the Subjects in the Thirty Classes into Which the Exhibition Was Divided* 3 (London, 1852).
[12] Robert Hunt, *Synopsis of the Contents of the Great Exhibition of 1851* (London, 1851): 14, 54.
[13] D. Bogue, *Lectures on the Results of the Great Exhibition of 1851* (London, 1853): 377; *Report of the Commissioners for the Exhibition of 1851* (London, 1852): 73.
[14] George Virtue, *Art Journal Illustrated Catalogue: The Industry of All Nations 1851* (London, 1851): 23, 84, 372, 294, II, XV; G. W. Yapp, *Art-Education at Home and Abroad: The British Museum, the National Gallery, and the Proposed Industrial University*, 2nd ed. (London, 1853): 7, 58, 64; *Records of the School of Mines and of Science Applied to the Arts* 1 (London, 1852): 6, 61.

commercially and was officially sanctioned by the mid-nineteenth century in England. While the number of individual exhibitors that described their wares as "ceramic" was still very small, the prominent use of the word throughout the official literature of the Great Exhibition ensured the term's legitimacy and helped to promote and circulate it widely.

Some late-nineteenth-century authors responded to Brongniart's success by attempting to exert their own influence over changes in the language of ceramics. In addition to using the word "céramique" throughout his 1850 book, Ziegler put forth the neologism, *cylitechnie*, which was intended to describe the study of all vessel forms regardless of their material nature.[15] More than a decade later, in 1862, in *Style in the technical and tectonic arts, or, Practical aesthetics*, German architect Gottfried Semper sought to co-opt the new term "*céramique*", but with an added meaning – for his native German language specifically – that was similar to Ziegler's "*cylitechnie*", as I detail below.[16] While both Ziegler and Semper were ultimately unsuccessful in coining new terminology or expanding the meaning of "*la céramique*" (or any of its related forms) that Brongniart had established in France and elsewhere, they were among several mid-nineteenth-century authors to quickly recognize the utility of the term and to popularize its use.[17]

Les Céramiques and Greek Origins Reframed

In adopting the term "*la céramique*" to refer to the complex science surrounding pottery and porcelain making, Brongniart and his close associates drew upon the name for the ancient cemetery, Kerameikos (Gr: Κεραμεικὸς, Lat: Ceramicus), which was established in Athens by

[15] Ziegler, 33-6.
[16] Gottfried Semper and Harry Francis Mallgrave, *Style* (Los Angeles, 2004).
[17] Other French authors to use the term as a title included: J.-J. Ebelmen, M. E. Chevreul, and Louis Alphonse Salvétat, *Chimie, céramique, géologie, métallurgie* (Paris, 1861); Louis Alphonse Salvétat, *Leçons de céramique professées à l'École Centrale des Arts et Manufactures, ou Technologie céramique* (Paris, 1857); and Jean Benoît Désiré Cochet, *Archéologie céramique et sépulcrale* (Paris, 1860).

the Early Bronze Age.[18] The site had previously served as a location for brick and pottery making.[19] The workshop location was named for Keramos (Gr: Κέραμος, Fr: Céramus), the mythical son of Dionysus (Bacchus) and Ariadne, who was considered the inventor of pottery by the Greeks.[20] In 1760, La Céramique, as Kerameikos is known in French, had been familiarized in France as the setting for the novel *Les Céramiques ou les aventures de Nicias et d'Antiope* by Jean Louis Galtier de Saint Symphorien (1720-1782).[21] Later that year, a review of the novel in *L'année litteraire* gave the meaning of the general noun "*la céramique*" as either a location where tile is made (*les tuileries*) or, alternately, a building made with or covered in tile.[22] Élie Catherine Fréron (1718-76), drawing upon the narrative of the novel, described two Athenian sites that were known as La Céramique. The first was a beautiful neighborhood inside the city, surrounding an ancient cemetery. The second, situated on the outskirts of the city, was a poor quarter known for the prostitution of its women. Fréron's discussion demonstrates that eighteenth-century usage was limited to classical Greek themes, people, and places. Apart from the ancient association with tile making, he did not indicate any connection with the "arts of the Earth". Additionally, Fréron recognized that the two Céramiques would have been unfamiliar enough to his readers that he needed to define the meaning and to describe the differences between the two Athenian neighbourhoods.[23]

In 1844, Brongniart wrote that he believed that the name of the mythical potter Keramos had only been indirectly influential in the development of Greek pottery terminology. Instead,

[18] Aikaterini Laskaridi Foundation, "Κεραμεικὸς – Kerameis, ancient district of Athens located on both sides of the wall near the Dipylon gate", *Topos Text*. Online at: https://topostext.org/place/380237DKer
[19] Brongniart, *Arts céramiques*, 4.
[20] Brongniart, *Arts céramiques*, 3.
[21] Jean Louis Galtier de Saint Symphorien, *Les Céramiques ou les aventures de Nicias et d'Antiope* (Paris, 1760).
[22] Élie Catherine Fréron, "Review: *Les Céramiques ou les aventures de Nicias et d'Antiope*", *L'année litteraire*", 266.
[23] Fréron, "Les Céramiques", 266-7.

he suggested that the signification of "*keramos*" as a class of material objects, along with the importance of the Athenian neighborhood of Kerameikos and its role as a production centre for clay-based products were the key factors in Greek usage. Brongniart provided a general etymology of terms related to pottery in *Arts céramiques*.[24] He explained that *keramos* was the Greek name for pottery (*potérie*), based on its use as the term for drinking vessels in general, often those made of animal horn, known as *rhyton*. Likewise, in Latin, horn vessels were called *potum*, from which the word pottery was derived. Referring to François Joseph Michel Noël's *Nouveau Dictionnaire des origines,* Brongniart observed that Plato had considered "*la céramique*" one of the first arts to appear.[25] Brongniart's mention of "*la céramique*" in conjunction with Plato is misleading – in the ancient Greek language of Plato, "*κεραμος* (*keramos*)" was used to indicate the "art of pottery", not "*la céramique*".[26] Additionally, while Brongniart and his associates had been using the adopted term in limited circulation since 1802[27] and institutionally since the 1824 opening of the *Musée céramique et vitrique* at Sèvres, Noël's 1827 dictionary entry for "*potérie*" did not include "*la céramique*" in its terminology.[28] Nor did he reference Keramos, Kerameikos, or other related words. Further, Noël gave an alternative identification for the Greek inventor of pottery as the Athenian Chorebus (Coroebus), son of King Mygdon of Phrygia.[29]

Brongniart's phrasing demonstrated that "*la céramique*" was a shorthand way of referencing the expanded field of the "arts of the Earth" in his writing, while Noël's

[24] Brongniart, *Arts céramiques*, 3.
[25] Brongniart, *Arts céramiques*, 3; François Joseph Michel Noël, *Nouveau Dictionnaire des origines* t.2, (Paris, 1827): 456.
[26] Plato, *Timaeus et Critias* 7 (Zurich, 1841): 59.
[27] That "céramique" was not a term in use as a reference to pottery production prior to 1802 is confirmed by data taken from Google Ngram Viewer, see https://books.google.com/ngrams/graph?content=ceramique&year_start=1760&year_end=1800&corpus=fr&smoothing=3&case_insensitive=false.
[28] François-Joseph-Michel Noël, "Poterie", *Nouveau Dictionnaire des origines*, t.2 (Paris, 1827): 456.
[29] Noël, "Poterie", 456.

etymological definition clearly shows that common nineteenth-century French terminology did not yet link pottery making or the related arts with any language from Ancient Greece. Was it an outright deception on the part of Brongniart to suggest that Plato referred to pottery as "*la céramique*"? There is no indication that this was the case. Early drafts of *Arts céramiques* spanned more than twenty years before its final publication, while completed sections of the 1844 version appeared in publications such as the *Dictionnaire technologique* by the 1830s.[30] The writing and research for *Arts céramiques* was under constant revision, and this may account for some of the lack of clarity in Brongniart's 1844 etymological discussion. Regardless of the answer, with this truncated footnote reference, Brongniart elided the usage of "*la céramique*" with Plato and linked Noël's definition of "*potérie*" to the idea of "*la céramique*". However, the word "*la céramique*" was novel enough that a reader in mid-nineteenth century France would likely have recognized that the link between the two words was recently drawn.

Major changes in language needed collective agreement before they could be generally useful. Brongniart's writings, particularly *Arts céramiques*, provided no open claim for the development of the new terminology. Instead, ambiguously, Brongniart wrote "Keramos, from which we have made *cerame* and *céramique,* is the Greek name for pottery."[31] He never specified the actors behind the pronoun "we" in any way. As a result, a reader might have inferred that he meant either widespread public usage, or perhaps the collective efforts of a smaller group of industry participants. For those in Brongniart's personal and professional circles, the reference would have been understood as, to some extent, personal. Conversely, general readers may have taken a broader meaning for the plural pronoun "we", especially

[30] Alexandre Brongniart, "Argille," in Frédéric Georges Cuvier, *Dictionnaire des sciences naturelles*, t.3 (Strasbourg, 1816-45); "Porcelaine," in *Encylopédie Moderne*, t. 18 (Paris, 1830; "Poteries," in *Dictionnaire technologique*, t.17 (Paris, 1830).
[31] Brongniart, *Arts céramiques*, 3-4.

those in other countries and in later generations, for whom the variations on the word "ceramic" were more deeply integrated into language and the French nineteenth-century origins were more distanced.

Introducing a New Vocabulary for an Ancient Practice and a New Science

Brongniart was not alone in his search for new phrasing. Nantes faïencier Jacques Fourmy (1757-1832) was also looking for ways to promote his wares and to communicate ideas about pottery and porcelain making. In response to a public contest intended to bring high-quality wares to a broad public, Fourmy had developed a cost-effective, hygienic pottery that rivalled porcelain for its hardness and durability. By 1800, Fourmy had established a manufactory in Paris and began to produce his prize-winning stoneware. Shortly thereafter, Brongniart hired him for projects at Sèvres that included both research and public outreach.[32] Their relationship was mutually beneficial, and in 1844, Brongniart remembered Fourmy as "the most educated man I have known in the theory and practice of the ceramic arts."[33]

Fourmy wrote a series of small essays on the science and technology of pottery to highlight his innovations.[34] In 1802, Fourmy described how his associate (as well as Brongniart's mentor), the crystallographer René Just Haüy, had suggested the novel term *les hygiocérames* for his wares.[35] Three years later, in 1805, Fourmy continued to use this nomenclature for "*les hydrocérames*", which referred to a type of earthenware pottery, often called a water cooler, found in the Americas, Spain, Egypt, and elsewhere, that was known to

[32] Carr-Trebelhorn, *Brongniart*, 214-15.
[33] Brongniart, *Arts céramiques*, t.2, 112fn.
[34] Jacques Fourmy, *Mémoire qui a remporté le prix proposé par l'Institut National sur cette question: "Indiquer les substances terreuses, et les procédés propres à fabriquer une poterie résistante aux passages subits du chaud au froid, et qui soit à la portée de tous les citoyens"*, (Paris, 1800); *Mémoire sur les ouvrages de terres cuites* (Paris, 1802); *Essai sur les corps vitreux colorés par les métaux*, (Paris, 1804).
[35] Fourmy, *Mémoire sur les ouvrages de terres cuites*, 92; on Fourmy's biography, and his relationship with Haüy, see Fillon, *L'art de terre chez les Poitevins*, 171, 173.

lower the temperature of the liquid it contained.[36] In 1803, the anonymous author of a review in the *Paris Journal* found the neologism *hygiocérame* to be prettier than the common name, *le poterie de santé* (lit.: health pottery).[37]

In addition to the words "*hygiocérame*" and "*hydrocérame*," Fourmy used the phrase "*l'art céramique*" to describe the collective body of all types of pottery, which only two years prior, he had described inexactly as the "pyrotechnic arts."[38] By the end of 1804, Fourmy titled a compilation of his previously published memoirs *Recueil de mémoires relatifs à l'art céramique*.[39] However, Fourmy was self-published, and reached only a limited audience. Although specialists and general readers alike might have found Fourmy's publications informative, it is probable that the new adjective "*céramique*" and the accompanying term "*l'art céramique*" drew little notice outside of his relatively small audience. As I discuss below, without the long-term, diversified efforts of established savants such as Brongniart and Haüy, and the institutional authority they could provide, "*la céramique*" might not have endured in either common or scientific language.

At face value, Fourmy's pamphlets offered a clear explanation of the coinage, which was incredibly useful to the promotion of his new Parisian factory. However, the timing of Fourmy's publications coincided with two key events that likely influenced the nomenclature found in his writing. The first of these was Alexandre Brongniart's early directorship at Sèvres, which had begun in 1800. From the start, Brongniart recognized that his work at Sèvres and among the industries of France was more complex than porcelain manufacturing alone. Although initially relying upon conventional constructions such as the "arts of the Earth", he looked for a way of talking about the broad field of pottery and porcelain making that would

[36] Joseph Marryat, *Collections towards a History of Pottery and Porcelain* (London,1850), 226-7; Jacques Fourmy, *Mémoire sur les hydrocérames* (Paris, 1804).
[37] *Journal de Paris* 6 (27 August 1803), 2102.
[38] Fourmy, *Mémoire sur les ouvrages de terres cuites*, 44, 62.
[39] Fourmy, *Recueil de mémoires relatifs à l'art céramique* (Paris, 1804).

be both comprehensive conceptually and simplified linguistically. Throughout his long career, Brongniart coined other scientific words, both successfully and unsuccessfully, beginning with biological nomenclature and other taxonomies by 1800.[40] As a youth, Brongniart had witnessed the process by which the *Nomenclature chimique* had introduced the ideas of chemical reform envisioned by Antoine Lavoisier (1743-94) and his colleagues, which included Brongniart's uncle, Antoine Louis Brongniart (1742-1804), and his cousin, Antoine François Fourcroy (1755-1809).[41] As Lavoisier and his associates understood, radical change in thinking often required new forms of language.[42] Theirs was a joint effort to change the practice of chemistry with a combination of new understanding and comprehensive language reform.

The second important event was related to the architectural career of Brongniart's father, Théodore Brongniart (1739-1813). In 1804, Théodore was commissioned to design the new municipal cemetery of Paris at Mont-Louis, known familiarly as Père Lachaise.[43] The idea for the development of four new cemeteries outside the city had emerged in the 1790s. These were a part of wider efforts under the post-Revolutionary government to make the city safer, cleaner, and healthier.[44] The Athenian site of Kerameikos was a rare example of a municipal cemetery outside the perimeter of the city it served that also acted as a beautiful site for walks and outings. Kerameikos was among several potential sources of influence for the Parisian planners of the world's first modern municipal cemeteries.

Although it was only in 1804 that Théodore was officially awarded the commission, he was closely associated with several of the politicians and city officials who promoted the project during the Consulate and Empire, including Fourcroy. At the time of the commission,

[40] Carr-Trebelhorn, *Brongniart*, 238-9.
[41] Guyton de Morveau, Louis-Bernard, et al. *Nomenclature Chimique*, (Paris, 1789).
[42] Carr-Trebelhorn, 85-6, 200.
[43] Musées de la ville de Paris, *Alexandre-Théodore Brongniart, 1739-1813: Architecture et décor Musée Carnavalet, 22 Avril-13 Juillet 1986* (Paris, 1986).
[44] Thomas Walter Laqueur, *The Work of the Dead: A Cultural History of Mortal Remains* (Princeton, 2015), 26.

Théodore was serving as Building Inspector for the city of Paris while continuing to re-establish his architectural career with both private commissions and civic projects.[45] Théodore's designs consistently drew inspiration from Classical works and the enthusiasm for Neoclassicism in the early nineteenth-century encouraged thoughtful reinterpretations of Greek themes. Public records of the preparatory work Théodore undertook for this long-range project are scarce. However, the speed with which he was granted the final commission suggests that his work on the project began well in advance of the official announcement in 1804.[46] At least some of Théodore's preparatory work probably drew upon the Athenian cemetery designs of Kerameikos.[47]

The turn of the century discussions related to cemetery planning in France aligned closely with the timing introduction of the term "*céramique*" in Fourmy's pamphlets. At the very least, the general circulation of ideas around the topics of cemeteries, pottery and porcelain, and natural history among the members of the Brongniart household, the related salons of Georges Cuvier, François Gérard, and others, as well as the Lycées and the Muséum d'Histoire naturelle made for an extraordinary environment from which to generate ideas rapidly.[48] Fourmy's credit to Haüy for the innovative terminology was not an unusual circumstance, as the mineralogist was also known as a scholar of classical language who had frequently contributed to scientific terminology. For example, when Louis Nicolas Vauquelin

[45] A. and W. Galignani, *Galignani's New Paris* (Paris, 1837), 273; Jacques Silvestre de Sacy, *Alexandre-Théodore Brongniart, 1739-1813*, 143-6. On Théodore Brongniart's architectural career and network, see Carr-Trebelhorn, Chapter Two and Musées de la ville de Paris, *Alexandre-Théodore Brongniart, 1739-1813: Architecture et décor*, Paris, 1986.
[46] Silvestre de Sacy, *Alexandre-Théodore Brongniart, 1739-1813*, 143-6.
[47] Laqueur, *Work of the Dead*, 261; Blanche M. G. Linden*: Landscapes of Memory and Boston's Mount Auburn Cemetery* (Columbus, OH, 1989), 92, 129-30, 192-3. Problematically, Laqueur cites Linden, who did not give a reference. However, the suggestion is probably accurate, as Kerameikos would have been one of a limited number of possible models and was well-known.
[48] Carr-Trebelhorn, *Brongniart*, 31-2, 146-9, 164-5, 186, 217, 220-7.

discovered a new element that could be found in varied, colourful forms, it was named "chrome" at the suggestion of both Haüy and Fourcroy.[49]

As a key mineralogist at the Muséum and as the director of the manufactory at Sèvres, Brongniart's prominent position could solidify the innovative terminology with institutional backing and intellectual authority. This was a persistent and thoughtful effort on his part. He shared the word "*la céramique*" widely but methodically, in ways that both demonstrated and solidified its meaning. At times his effort was direct, as in the naming of the *Musée céramique de Sèvres*, but at others, it was done diffusively or without direct claim, through encyclopaedia entries on the subject of pottery or within industry research reports on clay mineralogy.[50] Brongniart understood the sensitive nature of introducing a new name for a field that had been practiced throughout human culture and he knew that it could not be a singular effort. Rather, it required the widespread acceptance of the communities that might benefit from its introduction and use. Even if the introduction of the word was, at first, a conscious effort of a small nucleus of related thinkers, by pursuing this subtle but authoritative approach, "*la céramique*" soon proved its wider linguistic efficacy and became a general idea.

Developing Taxonomy in Parallel: *Inoceramus Cuvieri* and *Brongniarti*

At the meeting of the Linnaean society in London on 1 November 1814, the naturalist and illustrator James (I) Sowerby (1757-1822) read a paper introducing a new genus, *Inoceramus*. Although summarized in the *Annals of Philosophy* shortly thereafter, Sowerby's complete paper was not published until 1822, by which time the genus name *Inoceramus* was

[49] Carr-Trebelhorn, *Brongniart*, 202.
[50] Alexandre Brongniart, "Poteries," in *Dictionnaire technologique*, t.17 (Paris, 1830); *Premier mémoire sur les kaolins* (Paris, 1839); *Second mémoire sur les kaolins* (Paris, 1841).

established and new fossil species had begun to be identified widely.[51] In his 1814 paper, Sowerby cited the publication of Cuvier and Brongniart's *Essai sur la géographie minéralogique* as directly influential in his recognition that specimens he had collected or seen in England were part of a new genus of fossil mollusc.[52] Through correspondence and communication with other naturalists, as well as with the loan of key specimens, Sowerby was able to clarify the issues Brongniart and Cuvier had originally addressed in 1807, which had challenged the identification of certain specimens in their possession in Paris.[53] Sowerby named the first shells that he identified in this new species as *Inoceramus cuvieri*, "in honour of the extensive abilities of the discerning Cuvier."[54] While Sowerby received sole credit for the nomenclature, the proximity of his discussion to the research of Cuvier and Brongniart, and the subsequent use of their surnames to describe *Inoceramus* species seems providentially coincidental in terms of the use of the root word "ceram-".[55] It is possible, or even likely, that Sowerby received a suggestion for the name *Inoceramus* from Brongniart himself or from common contacts within their shared natural history networks.[56]

Although no explanation for the development of the species name was included in the 1814 meeting summary, a footnote to the full article explained the etymology as "Ab *ις fibra* et *κεραμος testa*".[57] Providing Greek terms with brief Latin translations, but omitting English ones, the note failed to clarify the reasoning behind Sowerby's nomenclature. By 1823, general

[51] James (I) Sowerby, "XX. On a fossil shell of a fibrous structure, the fragments of which occur abundantly in the chalk strata and in the flints accompanying it," *Transactions of the Linnean Society of London* 13 (London: 1822), 453-8.
[52] Sowerby, "On a fossil shell of a fibrous structure", 453-4.
[53] There is a possibility that Brongniart and Cuvier were a part of this correspondence and also shared specimens with Sowerby, but the exact nature of their correspondence is unclear in the secondary literature. Sowerby biography, p.? Further primary research is needed.
[54] Sowerby, "On a fossil shell of a fibrous structure", 457.
[55] Sowerby, James (I) and James (II), *Mineral Conchology*, 5 (London, 1825), 60.
[56] Sowerby Papers, Natural History Library Archives.
[57] Sowerby, "On a fossil shell", 455; Claude Lancelot, *The Primitives of the Greek Tongue: With Rules for Derivation* (Boston, 1812), 59.

questions had been raised concerning the appropriateness of the genus name *Inoceramus*, which were addressed by Sowerby's son, also named James (II). He wrote that his late father's intention was to draw attention to the fibrous texture of the *Inoceramus* shells. However, this clarification of the nomenclature has since dropped from view and the meaning has more recently been cited as "strong pot".[58] Additionally, he noted that the Greek root "ino" combined with the Latin root "ceramus" to make *inoceramus* was seen as an improper formation by some early-nineteenth-century natural historians.[59] One difficulty for Sowerby's audience was that the root word "*ceram*-" was relatively novel and unknown at the time of his 1822 paper.[60] As we have seen, "*ceram*-" had only recently made its debut as a root word in the publications of Fourmy in his pamphlets related to "*hygiocérames*", "*hydrocérames*", and "*l'art céramique*", where it was applied in reference to pottery, not shells and fossils.

The linkage that went from "shells" and *testacea* to "ceram-" was not obvious. Lexicons of the period showed that in Latin "*testa*" could signify pot, shard, or other similar terms, and could alternately indicate "shell", [61] while *fibra* could indicate both "fibre" and "strength".[62] *Testacea* was used as a term for categorizing shells in 1722 by Karl Nikolaus Lang and was well-known.[63] The category *testacea* was subsequently adopted as an order by Linnaeus in 1735.[64] By the late eighteenth century the links between "*testa*", "*κεραμος* (keramos)", "clay", and "shell" had appeared in numerous publications, but were not yet commonplace

[58] Sowerby, *Mineral Conchology* 5 (London, 1825), 58; for example: Steve Parker, *The Complete Guide to Fossils & Fossil-Collecting* (London, 2007): 152. Lars W. Johnson and Stephen M. Voynick, *Rockhounding for Beginners* (Stoughton, MA, 2021), 146.
[59] Sowerby (II), *Mineral Conchology*, 54.
[60] For modern audiences, the root word "cerame" is arguably more notable for its pottery references.
[61] Lancelot, *Primitives*, 96; Benjamin Hederich, *Graecum Lexicon Manuale* (London, 1788), 491.
[62] Lancelot, *Primitives*, 54.
[63] Karl Nikolaus Lang, *Methodus Nova & Facilis Testacea Marina Pleraque* (Luzerne, 1722).
[64] Carl von Linné, *Systema Naturae*, 1735.

associations. For example, *κεραμος* (keramos) was defined alternately as a vase or as a shell (*testa*) in Benjamin Hederich's *Graecum Lexicon Manuale* in 1788[65] and was similarly described in Johann Christian Biel's *Novus Thesaurus Philologicus* in 1779.[66] Additionally, Aubin Louis Millin's 1790 publication, *Minéralogie homérique*, was a valuable resource available for nineteenth-century naturalists in search of appropriately Antique terms to adopt for new nomenclatures.[67] Under "*Argille* (clay)", Millin described "*κεραμος* (keramos)" and related words in terms of their connections to clay, vases, and walls, but he did not include shells in his discussion.[68] Brongniart knew Millin's publications well, as the two were actively engaged with the proceedings of the Société Philomathique by at least 1793.[69] Importantly, neither Millin, nor any of the eighteenth-century lexicographers, discussed the mythical potter Keramos or the cemetery Kerameikos in the same context as *testa*, testacea, shells, or clay.

As described above, "la céramique" and the root "ceram-" were derived explicitly from "Kerameikos". Despite the potential for "*keramos*" to be translated in relation to both pottery and shells, the commonly circulated definitions did not include the key connection with Kerameikos. Meanwhile, several relatively similar definitions of the French noun "*Céramique*", all generally related to Athenian themes and locations, but not clay or shells, were in circulation by the end of the eighteenth century. There were also several spelling variants across multiple languages that could include Greek, Latin, and French. Later resources included alternate spellings in English and German. This complicated topography meant not all resources reached all authors, and it also demonstrated that there was not yet a universal understanding for either spelling or knowledge related to "*la céramique*".

[65] Hederich, *Graecum Lexicon*, 491.
[66] Johann Christian Biel, *Novus Thesaurus Philologicus* (The Hague, 1779).
[67] Aubin Louis Millin, *Minérologie homérique* (Paris, 1790).
[68] Millin, *Minérologie homérique*, 3-5.
[69] Carr-Trebelhorn, *Brongniart*, 173.

The linkage of "ceram-" to both pottery and shells required purposeful research and a thoughtful combination of sources. As a student, Brongniart frequently read from his personal editions of the *Encyclopédie* and was perhaps most familiar with the information collated by Diderot.[70] According to the 1751 entry for the masculine noun "*Céramique*", in the second volume of the *Encyclopédie*, the term indicated two Athenian sites. The first was an inner-city location that was of one of the nicest walks. The second, outside the city walls, was the site of Plato's Academy, a cemetery, and a tile and brickmaking workshop district. Additionally, this outer area was frequented by courtesans. The entry drew upon the account of Jacob Meursius, whose *Ceramicus gemius, sive de Ceramici Atheniensium utriusque* appeared in 1663.[71] In 1765, the ninth volume of the *Encyclopedie* provided a pair of alternate spellings, "*Le Keramée*" and "*Keramaia*", both introduced by Jacob Spon in his *Voyage* of 1675-6.[72] However, under "*Keramée*", the site which the courtesans frequented was identified alternately as the location within the city walls.[73] This difference between the entries and editions shows that some confusion surrounded the identification of these two sites and that references on the subject were limited. Notably, the French noun "Le Céramique" was gendered masculine in the seventeenth century travelogue of Spon, as well as in the *Encyclopédie,* but other sources considered the geographic names to be feminine.[74] When Brongniart wrote the *Traité des Arts céramiques*, he utilized the feminine article, but it was not a change in specificity or meaning

[70] Carr-Trebelhorn, *Brongniart*, 153-4; Denis Diderot, *Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers* 2 (Paris, 1751), 832.
[71] Joannes Meursius and Samuel von Pufendorf, *Ceramicus Gemius, Sive de Ceramici Atheniensium Utriusque Antiquitatibus, Liber Singularis* (1663). http://books.google.com/books?vid=KBNL:UBA000016563.
[72] Jacob Spon, *Voyage d'Italie, de Dalmatie, de Grèce et du Levant* (Lyon, 1678).
[73] Denis Diderot, "Keramée", *Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers* 19 (Paris, 1779): 119.
[74] Pierre Bayle, *Dictionnaire Historique et Critique* (Paris, 1740), 103; Jacques André Naigeon, *Philosophie Ancienne et Moderne* (Paris, 1791), 583.

– for example, using "*La Céramique*" to signify the field of ceramics, and "*Le Céramique*" meaning the Athenian districts – but rather a correction in usage for the geographic name.[75]

By a combined reading of *Minéralogie homérique* alongside the *Encyclopédie* and other resources, Brongniart and his colleagues could have easily linked the different terms Keramos, Kerameikos, *testa*, and shell, whereas standalone resources that connected all of these words in a single reference were difficult to locate or non-existent. As a natural historian working in England, Sowerby might have come up with the name *Inoceramus* independently through the consultation of a Greek to Latin lexicon, as *testa* was a well-known Latin translation for "shell". However, without the use of the Latin "Ceramus", or the intervening French translation of "Κεραμος" as "Ceramos" with a soft initial consonant, Sowerby might potentially have pronounced the word "Keramos" with a hard "k" sound, much as several mid-nineteenth century authors translated "*la céramique*" as "keramic" in England.[76] Whether the innovation was Sowerby's, or the suggestion originated with Brongniart, the nomenclature appeared during the period where Brongniart was increasingly utilizing his power as a prominent natural historian and administrator to shape the nomenclature of ceramics. Just two years after Sowerby's essay was published, Brongniart opened the *Musée céramique et vitrique de Sèvres* to the general public for the first time after a period of collecting and planning which began officially in 1804.[77] Importantly, Brongniart had good reason to want to see the circulation of the root word "ceram-" draw interest in fields outside of the porcelain industry, as it had the potential to continue to diffuse related terminologies into common language and to familiarize the sound of words similar to "*la céramique*".

[75] Brongniart, *Arts céramiques*, 3-4
[76] Marryat, *Collections towards a History*, 259-60.
[77] Brongniart and Riocreux, *Description méthodique du Musée Céramique*, 1845, II-IV, VIII.

The Potential of *Cylitechnie*

In 1850, three years after Brongniart's death, Jules Claude Ziegler (1804-56) titled his aesthetic and historical investigations into the art of pottery and porcelain *Études céramiques*.[78] Ziegler had a close relationship with Brongniart and was featured as an artist and manufacturer in the 1845 *Déscription méthodique du Sèvres*.[79] In *Arts céramiques*, Brongniart included discussion of Ziegler's stoneware pottery, which incorporated organic, gothic, and classical decorative elements.[80] Brongniart was eager to show the current work of potteries and manufacturers across France in his publications and sought works that demonstrated technological abilities and stylistic trends. Ziegler's *Études céramiques* were, in turn, a response to the work of Brongniart, and an attempt to use similar methodologies drawn from natural history to understand and to classify formal elements of design. As such, both Ziegler's text and its reviews provide substantial insight into the ways that *Arts céramiques* shaped both thought and language in the mid-nineteenth century.

The short essays of Ziegler's *Études céramiques* covered topics such as line, form, and proportion, in which he explored the aesthetic ties between architecture and ceramic art based on Greek models. Ziegler, whose birth had roughly coincided with Fourmy's first use of the term, took "*la céramique*" to be well-established terminology.[81] By the time *Études céramiques* appeared, the term "*la céramique*" had been in limited circulation for nearly fifty years, and it had been increasingly popularized through Brongniart's writing by the mid-nineteenth century. Ziegler did not mention Brongniart when he described the origins of "*la céramique*". Instead, he combined several of the etymologies and histories that were in circulation, writing:

> *la céramique* is so named after a district of Athens where Coroebus invented and instituted the art of working clay. Keramos is a Greek word meaning clay; La

[78] Ziegler, *Études céramiques*,
[79] Brongniart, "Stoneware from the Manufactory of Jules Ziegler", *Description méthodique*, Plate XLVIII.
[80] Brongniart, *Arts céramiques*, t.2, 195, 200, 205, 241.
[81] Ziegler, *Études céramiques*, 33-4.

> Céramique was very extensive and famous for the gardens of the Academy and for the large number of tombs that had been erected there to the glory of citizens who had rendered services to the country. According to Pausanias, a street in Athens was named Céramique, named after Keramos, son of Bacchus and Ariadne. Athenaeus cites (a passage from) the poet Critias, which confirms the rights of the city of Athens to the invention of ceramic art.[82]

Not only was the site of the ancient cemetery responsible for the nomenclature of pottery making and the related arts, but Ziegler also considered La Céramique to have been the "first school of taste, the primitive sanctuary where the abstract form, constantly elaborated, studied under the eyes of a curious and free people, had revealed itself to the first architects."[83] Thus, Ziegler's explanations further united Brongniart's nineteenth-century terminology with the suggestion of a Classical past that had endured, as opposed to Classical terms that had been recently borrowed for a modern purpose. Simultaneously, Ziegler distanced La Céramique from its function as a site of both manual labour in tile and pottery workshops and, perhaps more importantly, prostitution. Instead, he embellished the site as a haven for the creative intellect.

Ziegler pointed to what he saw as a problematic aspect of the categorization of "*la céramique*", which referred, in large part, to the art of pottery making, but also to the other kinds of products that were made from clays and earthen materials. As he justly observed, "the art of vases is only a part of ceramic art, and reciprocally ceramic art is only a section, a division of the art of vases." Ziegler sought to include "vases of gold, silver, agate, ivory, bronze, enamel, glass" and so on, in a category determined by form, not material.[84] Under *Nomenclature and Classification*, Ziegler explained that if his coinage "*cylitechnie*" were widely adopted, the word would indicate "the general and abstract idea of the art of vases". Ziegler intimated that word creation was both necessary and a form a bravery, declaring:

[82] Ziegler, *Études céramiques*, 11.
[83] Ziegler, *Études céramiques*, 11.
[84] Ziegler, *Études céramiques*, 33.

> As soon as through study we penetrate an unexplored vein of science, we soon recognize the insufficiency of the resources of language; beyond a certain limit, words are lacking for new ideas and the need is felt to create new terms. In this regard, scholars grant each other a sum of indulgence, but when at the starting point the generic expression does not exist, when the base is missing, this freedom to create the unknown word no longer depends on a single class of initiates, but on the nation itself. Then the difficulty becomes great in the face of categories of judges, some of whom do not understand, others, for sentence, have mockery, and for penalty, inflict ridicule.[85]

Even as he proposed the idea of a new word, Ziegler did not promote it insistently. "*Cylitechnie*" appeared on only one page, repeated just three times, offered more as a potential idea, than as a concrete effort at replacing existing language. He wrote of "*cylitechnie*" in the conditional and suggested that its adoption would have to be done by the public, as a solitary voice promoting a new word invited derision from readers.

Ziegler explained his decision to continue to use the term "*céramique*". He wrote, "I preferred to give extension to an incomplete but accepted expression, which rendered the greater part of my thought, than to create a new generic word, which would nevertheless have rendered it entirely."[86] Ziegler contrasted the illegitimate creation of language done by a solitary author with the legitimate, which either grew from the conscious efforts of a related group of professionals, or from the spontaneous acceptance of the public. He did not directly indicate that "*la céramique*" was an invented term. Thus, Ziegler's "*cylitechnie*"– perhaps suggested by Brongniart, and certainly proposed with his knowledge – acted as a counterpoint that attracted attention to itself, while allowing "*la céramique*" to take its place as a well-established term. Prior to its publication, Ziegler had shown the article on *Classification and Nomenclature* to Brongniart, "who took the greatest interest in this essay, either for the art itself, or through the effect of an old and reciprocal friendship."[87]

[85] Ziegler, *Études céramiques*, 33-4.
[86] Ziegler, *Études céramiques*, 35.
[87] Ziegler, *Études céramiques*, 54.

Two authors picked up on the term "*cylitechnie*" in their reviews of Ziegler's work, but Ziegler's invention appears not to have made general impact thereafter. In 1850, Augustin-Joseph du Pays wrote for a review in *L'Illustration* that Ziegler's work was not about clay, stoneware, or kaolin, but "an ingenious system in which Mr. Ziegler seeks the laws of analogy between ceramics (*la céramique*) and architecture."[88] As a classification and analysis of style, Ziegler's work was innovative and strove to create a new classification under "*cylitechnie*". Du Pays, paraphrasing Ziegler, wrote, "this word: *céramique*, he keeps it only out of respect for the habits of language."[89] He continued, saying that Ziegler's work was, with the title *Études céramiques*, "a complement to the excellent treatise by M. Brongniart."[90] A second review, by Hyacinthe Husson, appeared in 1851 in the *Revue générale de l'architecture et des travaux publics*.[91] Husson was enthusiastic about the proposed word "*cylitechnie*", writing "for our part, we adopt it voluntarily, because it fills a void, because it remedies a real insufficiency in the language."[92] However useful the word may have been, the two reviewers and Ziegler himself seem to have been among a limited field of proponents, and "*cylitechnie*" did not become part of the French language.[93] Conversely, in both reviews, the authors relied upon the

[88] Du Pays, Review, 125.
[89] Du Pays, Review, 125
[90] Augustin-Joseph du Pays, "Review: *Études céramiques* par Jules Ziegler", *Illustration: Journal Universel* XV (Paris, January-June 1850): 125-6. On the writing of du Pays for *Illustration* in 1850, see Rachel Esner, "Visiting Delaroche and Diaz with L'Illustration," *Nineteenth Century Art Worldwide* 11, 2 (Summer 2012).
[91] Hyacinthe Husson, César Daly, ed., "Review: *Études céramiques*", *Revue générale de l'architecture et des travaux public* 9 (Paris, 1850): 236-46. It is unclear, but certainly possible, that Hyacinthe Husson was a member of the same Husson family of faïenciers with workshops in the faubourg Saint Antoine, or possibly a relative of Jules François Felix Fleury-Husson, called Champfleury, who became Chief of Collections at Sèvres in 1872. On the Husson family interests in faïence, see Régine de Plinval de Guillebon, "Une manufacture de faïence à Paris: De François Genest à Louis François Ollivier (1734 - 1808)", In: *Sèvres. Revue de la Société des Amis du musée national de Céramique* 27 (2018), 44-63.
[92] Hyacinthe Husson et al., "Review: *Études céramiques*", 236.
[93] Internet searches have produced only the three sources featured in this discussion and the Boogle Books NGram viewer for "cylitechnie" provides similar results. https://books.google.com/ngrams/graph?content=cylitechnie&year_start=1850&year_end=1900&case_insensitive=true&corpus=fr&smoothing=0

term "*la céramique*", using it consistently and without the self-consciousness with which they approached the idea of "*cylitechnie*". Less than a decade after Brongniart's *Arts céramiques* had brought the term to a wide public, "*la céramique*" had clearly become an established and indispensable word, at least in the French language.

Gottfried Semper and *Style*

Following his participation in the short-lived revolution of 1848 in Dresden, German architect Gottfried Semper (1803-79) fled to the home of Jules Diéterle (1811-1889), an administrator and artist at Sèvres.[94] During a six-month stay at Sèvres, Semper received additional support from Denis Désiré Riocreux (1791-1872), the conservator of the Musée céramique de Sèvres.[95] In Dresden, Semper had been responsible for several important municipal building commissions and was a versatile designer. Throughout his career, Semper had been actively interested in historical and Classical architecture, studying intensively in Italy and Greece. His proximity to Meissen during his years at Dresden had given him insight into the porcelain industry and its aesthetics.[96] Later, in exile at Sèvres, Semper was a frequent visitor to the historical and global ceramic collections that Brongniart had assembled. He also studied Brongniart's publications and the collections of the Muséum d'Histoire naturelle.[97]

Leaving France, Semper travelled to England in 1850 in search of stable employment. Through association with Henry Cole, Semper earned some smaller commissions, including work on the Universal Exhibition of 1851.[98] That year, Cole became director the National School of Design, and Semper hoped to teach topics in ceramics there. However, following an

[94] Estelle Thibault, "La science du style face au marché du monde: Les leçons de l'Exposition universelle de 1851", *Science, Industrie et Art* (Paris, 2012), 7-51.
[95] Mallgrave, Semper biography
[96] Semper biography fn
[97] Mallgrave, Semper biography
[98] Semper bio fn needed

exploratory working visit to Stoke-on-Trent, the English potters found his qualifications lacking in necessary practical skills and knowledge. Instead, Semper was offered a post at the school teaching aspects of metalworking.[99] With few architectural commissions in England, Semper moved on to Switzerland in 1855, where he continued to teach, to design, and to draft a study on aesthetics and the arts.

After more than a decade of political exile and travel, during which he developed and rearranged his manuscripts, Semper published *Style in the Technical and Tectonic Arts* in 1862.[100] The book was an ambitious effort to categorize the formal characteristics of artistic elements, particularly as related to the crafts of metalworking, textiles, carpentry, and ceramics. In the chapter on ceramics, Semper sought to redefine the adopted term "*Keramik*" in German to refer to the vessel form, rather than the material composition.[101] In this he adopted Ziegler's thinking regarding *cylitechnie,* but Semper co-opted Brongniart's terminology rather than create a new word or to use Ziegler's earlier innovation. However, he also adopted a contradictory secondary meaning for "*Keramik*" that was, in fact, identical to the meaning Brongniart had already established for the term in France. Semper wanted to be known for bringing the term "*Keramik*" into the German language. He implied that "*la céramique*" was a little-known and obscure French technical term and that his revision was a ground-breaking innovation for both the German language and the study of the technical arts (i.e., crafts).[102] Importantly, Semper either deliberately ignored Brongniart's contribution to the nomenclature of the scientific discipline of "*la céramique*" or he remained incognizant of Brongniart's ultimate responsibility for the terminology.[103] Despite his efforts, Semper's restructuring of the

[99] Semper bio
[100] Gottfried Semper and Harry Francis Mallgrave, *Style*, Los Angeles: 2004.
[101] Semper style, fn p?
[102] Gottfried Semper and Harry Francis Mallgrave, *Style*, Los Angeles: 2004, p??
[103] Semper Style fn p?

classificatory systems of ceramics developed by Brongniart was unsuccessful and his new definition, like that of Ziegler, gained little notice or enthusiasm.

Conclusion

As I have shown, Brongniart and his associates promoted a new language for "*la céramique*" that incorporated the technology and practices related to clays, minerals, pottery, and porcelain, as well as materials and objects that were transformed by heat processes. This was done through a systematic but subtle introduction that allowed the efficacy of the term to predominate, rather than the vocalized arguments of a small group of specialists. Through encyclopaedia entries, trade pamphlets, and other publications, as well as the prominent naming of the museum at Sèvres as the *Musée céramique*, the word had already begun to disseminate into language before it became the title of Brongniart's *Traité des Arts céramiques*. Brongniart made no personal claim regarding his efforts to develop the terminology, but he became known as the most important author in the field of ceramics immediately after his encyclopaedic publications appeared. His collective writings not only set the foundation for the study of ceramics, but they also defined the name of the field and demonstrated its scientific domain. Late-nineteenth-century authors in ceramics recognized Brongniart's transformative effect on the field of ceramics. As Louis Marc Solon wrote, Brongniart was "a consummate scientist" who "gave the learned world a treatise which was to raise the potter's art to the level of a science."[104]

[104] Louis Marc Solon, *Ceramic Literature* (Stoke-on-Trent, 1910), 56.