After Brongniart: Defining the Word "Ceramic" and the Persistence of "Burnt Stuff"

In 1952, Frederick Harwood Norton's book, *Elements of Ceramics*, opened with an explanation:

> ceramics may be defined in a somewhat broader sense than the dictionary definition of "pottery" implies. It seems evident that the word *Keramos* meant "burnt stuff"; thus our modern term, ceramics, which includes whitewares, enamels, refractories, glass, cements, fired building materials, and abrasives, is not incompatible with the original usage.[1]

The opaque assertion "it seems evident that the word *Keramos* meant 'burnt stuff'" was clearly a response to an ongoing conversation, with which Norton's phrasing suggested the book's audience was already familiar. Unfortunately, Norton did not give any further insight into the matter, either within the text or in the notes. Other mid-century authors could only lightly trace the evolution of the word "ceramic" between the active language of the ancient Greeks and the succinct twentieth-century phrase "burnt stuff". Complicating the issue, many technical and historical ceramics books published after 1952 either traced the definition "burnt stuff" back to Norton or considered it a truism.[2] Meanwhile, successive editions of *Elements of Ceramics* assured the book's relevance in ceramics classrooms and art studios through the end of the twentieth century.[3]

By 1900, the United States had become a leading site of ceramic research, production, and industrial innovation.[4] During the early twentieth century in the United States and England, the range of the definition of "ceramics" was under discussion among professional and teaching

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[1] Frederick Harwood Norton, *Elements of Ceramics* (Cambridge, MA, 1952), 1.
[2] For recent examples, see Ashutosh Tiwari, Mohammad Rabia Alenezi, and Seong Chan *Advanced Composite Materials* (Salem, MA, June 2016), 150; Sanjeev Singh Yadav, Rajat Dhiman, and Rupender M. Anklekar, *Materials Science and Engineering* (Newcastle-upon-Tyne, 2024), 140; N. Suresh Kumar and K. Chandra Babu Naidu, eds., *Applications of Advanced Ceramics in Science, Technology, and Medicine* (Singapore, 2020), 135.
[3] Frederick Harwood Norton, *Elements of Ceramics*, 2nd printing (Reading, MA, 1957); *Elements of Ceramics*, 2nd ed. (Reading, MA, 1974).
[4] Historiography - note needed

organizations, with articles appearing across numerous publications. However, the arguments often focussed solely on the usage in English and the origins of the word in Antiquity. Reflecting the political manoeuvring of the period surrounding both World Wars, some of these inquiries deliberately excluded other languages, including both French and German sources.[5]

Critically, the attempts to ascertain the original meaning of "ceramics" and to clarify common twentieth-century usage in English had the potential either to expand or to limit the range of the field and the participants who were welcomed into institutional memberships.[6] The vaguely attributed origins of the word "ceramic" were a challenge to the clear resolution of these written debates, while, contrarily, the ambiguity may have fostered general acceptance of an invented term. Key authors used Greek etymologies to confirm their assumptions that the modern term possessed similar meanings in Antiquity, without investigating the possibility of a deliberate, modern source.[7] Several of these authors, writing from industrial and scientific perspectives, observed that there were two definitions in circulation for "ceramics". The first was that of the developing industry, which included a wide variety of technologies and materials. The second was that of general dictionaries and popular language, which mostly related to pottery making, porcelains, bricks, tiles, and other household wares made from earthen materials.[8]

As I have recently shown, the term ceramic was translated from the French term "*la céramique*" in the mid-nineteenth century after its coinage by Alexandre Brongniart and his

[5] E.W. Washburn, H. Ries, and A.L. Day, "Report of the Committee on the Definition of the Term "Ceramics"", *Journal of the American Ceramic Society* 3 (Chicago, 1920), 526-36; W. A. Oldfather, "Appendix B, Report of the Committee on Definition of the Term "Ceramics": A Note on the Etymology of the Word "Ceramic", *American Ceramic Society Journal* (Chicago, 1920), 537-9.
[6] Joseph William Mellor, "The Origin and Meaning of the Term 'Ceramic'", *Transactions and Journal of the British Ceramic Society* (Stoke-on-Trent), 69-70.
[7] Oldfather, "A Note on the Etymology of the Word 'Ceramic'", 537-9.
[8] Mellor, "The Origin and Meaning of the Term 'Ceramic'", 69-70.

associates in French natural history and porcelain manufacturing.[9] In Brongniart's definitive writings, including *Traité des Arts céramiques* and *Description méthodique du Musée céramique de Sèvres*, "*la céramique*" was consistently used for all types of clay- and mineral-based creations and technologies, from bricks, tiles, refractory materials, earthenware, porcelain, common pottery, building materials, and glass.[10] Additionally, Brongniart's collective publications included pioneering research toward the understanding and exploitation of the electrical and conducting properties of various inorganic minerals, a segment of ceramic engineering that expanded rapidly during the twentieth century.[11] In other words, Brongniart promoted a diverse, inclusive field of ceramic arts that spanned from small-scale artisanal pottery workshops to industry, scientific research, and discovery. After decades of debate, this over-arching scientific and industrial category has endured, even as professional organizations and teaching programs have become increasingly specialized. However, as I discuss, Brongniart's works were among several key texts that were ignored by the twentieth-century authors involved in the debates over the meaning and scope of "ceramics".

Among the varied participants of the earthenware, stoneware, and porcelain trades, or those involved in local and regional pottery, tile, and brick workshops, there were obvious differences in education, wealth, market, purpose, and impact. Many twentieth-century professional organizations sought to limit the boundaries of their membership, for example, by separating the technical from the artistic and the handcraft from the science. However, others took a broad-minded approach that attempted to bridge these diverse populations and to create

[9] Carr-Trebelhorn, *Alexandre Brongniart*, 50, 207-12, 323-4.
[10] 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).
[11] Alexandre Brongniart, *Premier mémoire sur les kaolins ou argiles à porcelaine sur la nature, le gisement, l'origine et l'emploi de cette sorte d'argile*, Paris, 1839; *Second mémoire sur les kaolins ou argiles à porcelaine, sur la nature et l'origine de cette sorte d'argile* (Paris, 1841).

teaching or service organizations that could improve communication, education, and opportunities for all stakeholders in the field.[12] Importantly, as the discussion that follows demonstrates, Brongniart's responsibility for the development of ceramic nomenclature was absent from nearly all the etymological studies of "ceramics" undertaken by twentieth-century English-speaking authors. This gap in the published discourse resulted in varying degrees of confusion and irresolution.

Throughout this essay, there are several forms of Greek and translated words; I have retained the original spelling of the cited authors as an important aspect of the original discourse. Foreign words appear in italics, while geographic names and proper nouns with related or identical spellings do not. My analysis is benefitted immeasurably by technology such as the Google Ngram Viewer and other book scanning technologies, as well as digital resources such as Gallica, the Internet Archive, Google Books, and the HathiTrust. These tools enable correlations between a wide range of sources – formerly rare or difficult to find – to be drawn relatively rapidly, and to track the occurrences of words over time.[13]

Twentieth Century Confusion and Debate within Occidental Ceramics

On 10 February 1915, at the initial convening of *Keramos*, an American fraternal organization of ceramic engineering students at the University of Illinois, there was not yet an open controversy over the nomenclature of ceramics. However, the moment marked the beginning of decades of discussions concerning the boundaries of the field and the identities of its participants.[14] In the meeting minutes, George Lowe recorded that "Keramos, the Greek

[12] J.W. Mellor, "The Origin and Meaning of the Term 'Ceramic'" *Transactions of the Ceramic Society* VII, (Stoke-On-Trent, 1816), 69-70.
[13] For example, see the NGram for "Ceramic" between 1800-65, https://books.google.com/ngrams/graph?content=ceramic&year_start=1800&year_end=1865&corpus=en&smoothing=3&case_insensitive=false.
[14] William Wurth Kriegel, *Keramos, a Biographical History*, Keramos, 1982. *Keramos Blue Book* 2 (Columbus, OH, 1982), 6.

term for clay, was chosen as the name of the Fraternity." Lowe explained further that Ray T. Stull, ceramics professor at the University of Illinois and an engineer at the United States Bureau of Standards, chose the name "for its Sanskrit origin and its significance to ceramic engineers."[15] Stull's original source is unclear, but as I discuss below, the classicist William Oldfather (1880-1945) linked the term *keramos* to Sanskrit in "A Note on the Etymology of the Word 'Ceramic'" in 1920.[16] As Oldfather taught classics at the University of Illinois from 1908 to his death in 1945, he was probably to some degree responsible for the etymology followed by Stull in 1815.[17]

When the University of Illinois dedicated their new Ceramic Engineering Building in December 1916, the program began, "the term "ceramics" (Grk. *Κεραμος*, *keramos*, related to a Sanskrit word meaning "to burn") was formerly employed to designate that portion of the plastic arts which embraces the production and decoration of all objects formed by the moulding, modelling, and baking of clay. In this sense it is, therefore, practically synonymous with the word 'clay-working.'"[18] The dedication continued:

> in connection with modern industry, however, the term "ceramics" has gradually acquired a much wider significance than this and is now generally applied to the technology of practically all of the earthy or non-metallic minerals; that is, to the technology of nearly all mineral products except ores, and minerals of organic origin. The ceramic industries thus embrace the manufacture of all kinds of clay products, such as stoneware, china and porcelain ware, brick, tile, sewer pipe and terra cotta; Portland cement, dental cements, lime, plaster, stucco and a variety of gypsum products, and special cements; all of the many varieties of glass and glassware, fused silica and magnesia ware; enamelled metals and sanitary ware; a variety of electrical and thermal insulating materials; talc, chalk and slate products; abrasive materials, such as finely divided silica and carborundum and alundum products; rare earth products, such as mantels and tips for gas burners; bricks, crucibles and other refractory articles

[15] Kriegel, *Keramos, a Biographical History*, 8.
[16] William Oldfather, "A Note on the Etymology of the Word 'Ceramic'", (Chicago, 1920).
[17] C. A. F. "William Abbott Oldfather: 1880-1945." *The Classical Journal* 41, 1 (1945), 9–11.
[18] University of Illinois, *Illinois Ceramic Engineering Building: Description of the Building and Program of Dedication* (Urbana, IL, 1916), 9.

> manufactured from bauxite, magnesite, chromite, carbon, graphite, asbestos, talc, lime, porcelain, clay, quartz, alundum, sand and many other materials.[19]

This was a comprehensive and even daunting list for an industry that was rapidly developing in areas that were outside the customary interests of traditional pottery and porcelain makers. The program declared broad intentions for teaching and research in ceramics at the University of Illinois, which would be supported by a wide variety of laboratory spaces, pottery workshops, and other facilities.[20]

The stated mission of the Ceramic Engineering program at the University of Illinois and that of the related Keramos fraternity were not seen as representative of the industry and field by all of its participants. This was particularly true of some British potters working within the field of traditional pottery and porcelain making.[21] Over the course of the next several decades, efforts were made to reconcile traditional artisanal, industrial, and scientific practices with the needs of a diverse and evolving field. The complex hierarchies of the ceramic industries of the period included all types of production, from cottage industries to major manufacturing concerns, while porcelain trade and production had been an active global competition since the Portuguese began the importation of Chinese blue and white porcelain in the sixteenth century.[22] Porcelain and pottery makers of all types had, until the early twentieth century, been the primary participants at the centre of discourse in ceramics, but the Illinois definition showed that the industry and culture were changing to reflect new ways of working and thinking in the field, even if the Illinois definition was still, according to Mellor, "to be regarded as a purely local one, although it might be convenient to adopt it later on".[23]

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[19] University of Illinois, *Ceramic Engineering Building*, 9.
[20] University of Illinois, *Ceramic Engineering Building*, 11-20.
[21] Mellor, "The Origin and Meaning of the Term 'Ceramic'", 69-70.
[22] Carr-Trebelhorn, *Brongniart*, 188-200. On the origins of the global porcelain trade, see Anna Jackson and Amin Jaffer, *Encounters: The Meeting of Asia and Europe, 1500-1800* (London, 2004).
[23] Mellor, "The Origin and Meaning of the Term 'Ceramic'", 70.

The British Ceramic Society: Pottery, Bricks, and Refractory Materials

The initial problem in defining the scope of the term "ceramics" during the twentieth century appeared in an article by Joseph William Mellor (1869-1938) in the 1917 *Transactions* of the British Ceramic Society.[24] Mellor's group included researchers in refractory materials, a classification which he defended. Mellor wrote "I was recently told that the Ceramic Society should deal with pottery, and that it has no concern with bricks and refractory materials." He continued, "this narrow statement may be contrasted with another extreme recently furnished by the dedicatory bulletin of the Ceramic Engineering Building of the University of Illinois."[25] As we have seen, the Illinois definition considered that the "ceramic industries" included all forms of clay-based production, as well as other products based on fusion, including bricks, glass, refractories, cements, and so on.[26] Mellor understood the idealism behind the Illinois statement, and saw that it reflected the expanded reach of the American ceramics industries.

As a relative newcomer to ceramic manufacturing, the United States had only taken a prominent position in the field at the end of the nineteenth century.[27] In England and other European countries, the pottery and porcelain trades had been a key economic and social force since the sixteenth century importation of Asian porcelains had begun.[28] In the twentieth century, the ceramic industries in Europe, and especially the United Kingdom, included active craft and traditional pottery communities, a developing studio ceramics movement headed by artists such as Bernard Leach, long-established stoneware and porcelain manufacturers such as Wedgwood, Minton's, and Royal Doulton, and industrial manufacturing enterprises.[29] The

[24] Mellor, "The Origin and Meaning of the Term 'Ceramic'", 69-70.
[25] Mellor, "The Origin and Meaning of the Term 'Ceramic'", 69-70.
[26] University of Illinois, *Ceramic Engineering Building*, 9-10.
[27] Alice Cooney Frelinghuysen and Metropolitan Museum of Art, *American Porcelain: 1770* (New York, 1989), 4-5.
[28] Ceramics Asian history
[29] Reference 20th c ceramics landscape

American porcelain manufacturing industry began in the eighteenth century and gained momentum by the late nineteenth century. American ceramics had developed later, and to some extent, with a wider focus on ceramic industrial production, mining, brick making, building materials, and experimental technologies.[30]

Mellor's influential article had the potential of illuminating Brongniart's role in the origin of the word "ceramics" but fell short of elucidating the very recent French origins of the term. Mellor wrote: "As I understand it, the most common derivation of the term is to refer it back to *keramos*, the Greek word for potter's earth, or for articles made from burnt clay; others refer the word back, through the Greek *keramos*, to a Sanscrit word meaning to burn…the word ceramic embraces the plastic or fictile arts in which objects are first shaped or moulded, and subsequently baked."[31] Mellor followed this summary ambiguously and without further explanation, "I am indebted to the late Mr. M. L. Solon for the hint that the term was probably derived quite differently."[32] Marc Louis Solon was a well-known ceramist as well as a book collector. At the end of his life, he published an annotated bibliography entitled *Ceramic Literature* that was based upon his own library.[33] Was it possible that Solon had determined that the origin was with Brongniart and his colleagues and Mellor had understood something particular from Solon as a result? Rather, Mellor proceeded to list the familiar relationships between the words Kerameikos, Keramos, and so on. Mellor traced the history of the word following its relationship to "Keramecius" (Kerameikos), which is part of the origin story referred to by Brongniart, but he did not cite *Arts céramiques* – by then more than seventy years old – in his definitions.[34]

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[31] Mellor, "The Origin and Meaning of the Term 'Ceramic'", 69.
[32] Mellor, "The Origin and Meaning of the Term 'Ceramic'", 69.
[33] M. L. Solon, *Ceramic Literature* (London, 1910).
[34] Brongniart, *Arts céramiques*, 3-4; Mellor, "Origin and Meaning of the Term Ceramic", 69-70.

Mellor summed up his etymological discussion with an extrapolation that leapt erroneously from Ancient Greece to modern nineteenth- and twentieth-century usage. He explained "the potters who lived in Kerameicus and worshipped Keramus were called Kerameis. Hence potters generally are called ceramists;[35] and the potter's art, the ceramic art. By an easy transition the term was extended to clayworkers generally."[36] However, this was conjecture. The word "ceramist" was not directly taken from the Greek "Kerameis". Instead, it had only emerged in English in the mid-nineteenth century, in the wake of the appearance of "*la céramique*" in French. It was subsequently translated into English as "ceramic". The appearance of the word ceramic followed a similar pattern to the creation of terms such as "biologist" and "entomologist", which were adapted from the newly-created names of the scientific disciplines of biology and entomology, respectively.[37]

At the time of his writing, Mellor was potentially very close to locating sources that would have resolved the question of whether the original definition of ceramics had involved refractory materials and other technologies based on a wide range of inorganic materials, but it is evident that Mellor did not realize how much Brongniart had contributed to modern usage. Unfortunately, as Solon had died in 1913, he could not contribute directly to the questions put forth by Mellor's article. The "hint from Solon" that Mellor described in the passage above, probably came from a close reading of Solon's publications, rather than through a direct, personal conversation. Solon's bibliography contained substantial commentary and retained the character of his sometimes-strong opinions.[38]

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[35] The word ceramist was in use by the mid-nineteenth century, but the path is much different than Mellor believed it to be. "Ceramist" did not appear until well after William Whewell coined the term "scientist" in 1833. Carr-Trebelhorn, *Brongniart*, 50, 323-4.
[36] Mellor, "Origin and Meaning of the Term Ceramic", 70.
[37] Carr-Trebelhorn, *Brongniart*, 50, 323-4.
[38] Solon, *Ceramic Literature.*

By his late career, Solon had developed a singular expertise with known writing on ceramics. If Solon had realized that Brongniart and his close associates had coined the term, he left no explicit published evidence. However, Solon knew the work of Joseph Marryat, author of *Collections towards a History of Pottery and Porcelain*, published in 1850, and *A History of Pottery and Porcelain, Mediaeval and Modern*, published in 1857.[39] During his research and writing, Marryat had been in direct contact with the museum conservator Denis-Désiré Riocreux at Sèvres, co-author of the *Déscripion méthodique du Musée céramique*.[40] In 1850, under the Glossary entry for "keramic", Marryat observed that Brongniart had created the terminology.[41] Seven years later, in the text of *A History of Pottery and Porcelain*, Marryat altered the English spelling of the term to "ceramic".[42] Again, in the Glossary under "ceramic", Marryat clarified unambiguously that Brongniart had established the term "*la céramique*", as he wrote:

> The late M. Brongniart, the talented author of the *Traité des Arts Céramiques*,' to whom both science and literature, in everything connected with the plastic art, are much indebted, has furnished us with this term, which has the advantage of comprehending the product of, as well as the material used in, this very ancient handicraft.[43]

Another author in Solon's library also recognized that Brongniart was responsible for the nomenclature of ceramics. Albert Jacquemart wrote in *Histoire de la Céramique* in 1873 that the language of ceramics "was created with undeniable talent and true authority by Alexandre Brongniart in his beautiful book published for the first time in 1844."[44]

The fact that Solon could no longer contribute to the etymological discussion was regrettable, as he perhaps could have determined the connection between Brongniart and "*la*

[39] Joseph Marryat, *Collections towards a History of Pottery and Porcelain*, (London, 1850); *History of Pottery and Porcelain* (London, 1857).
[40] *Déscripion méthodique du Musée céramique*
[41] Marryat, *Collections towards a History*, 259-60.
[42] Marryat, *History of Pottery and Porcelain*,1857.
[43] Marryat, *History of Pottery and Porcelain*, 360.
[44] Jacquemart, *Histoire de la Céramique*, 4.

céramique". His library contained nearly every reference that would have been necessary to discover that the word was developed by Brongniart and his networks.[45] Solon's holdings included the early publications of Fourmy on *hygiocérames* and *hydrocérames* (although he did not list the compilation titled *Recueil de mémoires relatifs a l'art céramique* of 1804 in his bibliography), Brongniart's 1830 encyclopaedia entry "Potéries" and *Arts céramiques*, and key histories of ceramics by both Jacquemart and Marryat.[46]

Intriguingly, Solon wrote that he found the American author George Ward Nichols' *Pottery: How It Is Made* so erroneous as to be laughable. Intriguingly, the first mistake Solon found was that Nicolas claimed that "ceramic comes from the Greek word "Keramos," which signifies potter's clay."[47] The statement by Nicolas was not out of line with other definitions of "ceramic" that were in circulation.[48] However, Solon, who was not formally interested in investigations into the etymology at the time of his 1810 publication, probably favoured the definitions found in Brongniart's discussion. In *Arts céramiques*, Brongniart had written that "*κεραμος* (keramos)" was not related to either material or use, but to the name for the horns of animals.[49] Brongniart's passage was authoritative enough to be readily accepted and ambiguous enough to obscure Brongniart's personal interventions into the language of ceramics. It is possible that Solon did not realise that the term began with Brongniart simply because he had relied upon Brongniart's expertise. Solon considered Brongniart to be a critical author on ceramics, and he often had strong criticism for those he considered to be outsiders from the field, including both Brongniart's associate Jules Ziegler and Nichols. Solon was

[45] Excerpts from Solon's *Ceramic Literature* first appeared in series in *The Connoisseur* in which he described the creation of his personal library on ceramics. Solon, *The Connoisseur: An Illustrated Magazine for Collectors*, VI, 23, I, London, 1910): 144-150.
[46] Solon, *Ceramic Literature*, 55-7, 151-2, 275-6, 460, 477-8, 499-500.
[47] Solon, *Ceramic Literature*, 308.
[48] Jules Ziegler, *Études céramiques*, 33-6.
[49] Brongniart, *Arts céramiques*, 3-4.

particularly harsh on Nichols, who was not a ceramist, but a journalist.[50] As such, Solon was probably looking for statements made by Nichols that could be contradicted by careful readings of those he considered to be stronger authorities, especially Brongniart.

Shaping the Future by Defining the Past – The American Ceramic Society

In 1920, the American Ceramic Society assigned a committee of ceramic engineers to address the issue.[51] They sought to ascertain how widely the category defined by "ceramics" was intended to reach and what groups could be included within its domain. Problematically, they found that most dictionary definitions indicated "the Greek word (signified) *merely* the potter's clay or the potter's art." Here, they saw that the lexicographers were at variance with both usage by the Greeks and by the twentieth century ceramists of the American Ceramic Society. They explained "no barbarism or violation of original usage will be committed" if the term "ceramics" included all related ceramics industries, not just those making traditional clay-based products.[52]

In view of the strong nationalist sentiments of the early twentieth century and the period immediately following the first World War, the authors deliberately restricted their efforts to the English language of the United States and Great Britain. However, their efforts had the potential to affect the languages of other countries, as they observed:

> it should be pointed out that substantially the same term is used in the French (céramique), in the Spanish and Italian (ceramica), in the Scandinavian, Dutch and to a less degree in the German (Keramik) languages also, and that our fellow workers in some of these countries may be interested in considering the same question with reference to the usage of the term in their languages. This may, however, not be true in the case of Germany, owing to the very extensive and successful propaganda in that country directed toward the abandonment of words of foreign origin. It is, therefore, suggested that copies of the report be sent also to any ceramic societies which may exist in the above-named countries, with the exception of Germany.[53]

[50] However, his research in the field was purposeful and his wife Maria Longworth founded Rookwood Pottery in Cincinnati in 1879. Bob Batchelor, *Rookwood*, (Beverly, MA, 2020): 4-6.
[51] E.W. Washburn, H. Ries, and A.L. Day, "Report of the Committee on the Definition of the Term "Ceramics"", *Journal of the American Ceramic Society* 3 (Chicago, 1920): 526-536.
[52] Washburn, et al., "Definition of the Word 'Ceramic'", 529.
[53] Washburn et al., "Report of the Committee on the Definition of the Word 'Ceramic'", 535.

The committee's public exclusion of Germany was both an observation and a provocation, as I discuss in detail below. Recent allied actions against Germany, as well as the longstanding international competition of the porcelain trade and the ceramic industries were a barrier to agreement over both the language and the boundaries of the field of ceramics.[54] However, for many countries, English had become the dominant language of science by the turn of the twentieth century and so were implicitly included within the scope of the question.[55]

The report from the committee was followed by two appendices. The first of these was a compilation drawn from eleven English dictionaries published between 1858 and 1918. A total of fifteen dictionary entries related to definitions of both "ceramic" and "ceramics" were included.[56] The earliest of those listed, Richardson's *New English Dictionary*, published in 1858, did not have a relevant entry. Interestingly, the excerpted definition from *Murray's English Dictionary* of 1893 contained a citation for Marryat's 1850 *Pottery and Porcelain*, but in a truncated form that gave no acknowledgement to either Brongniart or *Arts céramiques*.[57] Unfortunately, there is no evidence that Marryat's original work was consulted by the members of the report committee. This was another moment that could have altered the outcome of the study, or at least the private understanding of those concerned. The report authors ultimately agreed that the term had been adopted into English from the French language by the mid-nineteenth century. Nonetheless, they held to their decision not to involve other languages in their search and did not publish anything that indicated they had considered French-language sources as a part of their research.[58]

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[54] historiographical reference tbd
[55] Michael D. Gordin, *Scientific Babel* (Chicago, 2015): ??.
[56] Washburn et al., "Appendix A: Report of the Committee on the Definition of the Word 'Ceramic'", 535-6.
[57] Washburn et al., "Appendix A: Report of the Committee on the Definition of the Word 'Ceramic'", 535-6.
[58] Washburn et al., "Appendix A: Report of the Committee on the Definition of the Word 'Ceramic'", 527, 534-5.

The first appendix demonstrated the limitations of the commonly cited etymologies found in standard English dictionaries and made the case for further inquiry, which was undertaken by the classicist Oldfather. In the second appendix, "A Note on the Etymology of the Word 'Ceramic'", Oldfather concentrated on the ancient Greek usage of "ceramic", and on its potential derivations from older languages.[59] He cited several instances in Greek literature where the root words related to *keramos* appeared and studied their translations to gain a general sense of Greek meanings. He concluded "since *Keramos* meant properly 'burnt stuff,' and the Greeks did not restrict it and related words to clay products, it might, therefore, not inappropriately be applied to related products in whose manufacture a change of physical and chemical properties under the influence of high temperatures is required."[60] Finding little trace of the word between Antiquity and the nineteenth century, Oldfather wrote that the lack of information was "due to the very fragmentary nature of our literary sources (practically all the technological literature has been lost), and to the circumstances that in these sources we find no instance in which the Greeks had occasion to use a comprehensive term to include both the original and the derived industries, as we do frequently under modern industrial conditions."[61] Where Oldfather could find nothing in original Greek sources, he was unperturbed. He did not reframe the question in any way that would lead his research to an origin with Brongniart and mid-nineteenth-century France.

Satisfied that the situation was as clear as it could or needed to be made, Oldfather continued, "Had they desired such a term, I see no very good reason why (the Greeks) might not have used keramos, or some derivative, to denote the complex of allied and derived industries, because of the meaning of the stem and the primacy of the potter's art, both

[59] Oldfather, "Appendix B: The Meaning of the Word 'Ceramic'", *Journal of the American Ceramic Society* 3 (Chicago, 1920), 537-42.
[60] Oldfather, "The Meaning of the Word 'Ceramic', 539-40.
[61] Oldfather, "The Meaning of the Word 'Ceramic', 542.

generically and in relative importance. Certainly, in view of the numerous instances of extension and contraction of original meaning which modern languages show in the case of words derived from Greek and Latin, it would appear almost pedantic to object to the extension of the word "ceramic" to cover a group of industries derived from or essentially allied to the manufacture of clay products, particularly if the technical world has already begun to employ the term extensively in this way.[62] For his purpose, Oldfather resolved that his analysis justified the wide usage relied upon by most members of the American Ceramic Society. Still, the article could not be made conclusive, leaving room for further global discussion.

The German Response – *Keramische Rundschau* and "*Keramik*"

Of course, Germany did have an interest in the etymology of the word "*Keramik*" and the ways in which other countries interpreted its meaning. "*Keramik*" had come into German at least in part through the direct influence of Brongniart's French texts, sections of which were published in a translation by C. S. Schmidt in 1846 as *Das Coloriren und Decoriren des ächten Porcellans*.[63] Then, in 1862, as I have discussed previously,[64] the architect Gottfried Semper sought to adopt the category "*Keramik*" for his own discussion of stylistic characteristics and design elements in *Style in the technical and tectonic arts, or, Practical aesthetics*.[65] From the eighteenth to the twentieth century, Germany was a key player in the highly competitive porcelain trade.[66] For much of this period, manufacturing technology and related mining

[62] Oldfather, "The Meaning of the Word 'Ceramic'", 542.
[63] Alexandre Brongniart and C. S. Schmidt, *Das Coloriren und Decoriren des ächten Porcellans* (Weimar, 1846).
[64] Carr-Trebelhorn, *From Geology to Art History* (Lexington, KY, 2014).
[65] Gottfried Semper, *Style in the technical and tectonic arts*, 1862; Semper, Gottfried, Harry Francis Mallgrave, Michael Robinson, and Getty Research Institute, *Style in the Technical and Tectonic Arts, or, Practical Aesthetics* (Los Angeles, 2004).
[66] R. J. C. Hildyard, *European Ceramics* (Philadelphia, 1999), 34-37; on the culture of German porcelain in the eighteenth century, see: Janet Gleeson, *The Arcanum* (New York, 2009).

knowledge had been maintained as state secrets. In the twentieth century, during the interwar period, Germany became a centre for modernist design, of which one of the leading influences was the Bauhaus School, whose ceramics workshops opened in 1919 in Weimar. The Bauhaus brought increased attention to ceramics and to craft viewed as aesthetic expression, which influenced art and design not just in Germany, but throughout Europe, the United States, and Asia.[67] Despite the recent political conflict, German design and manufacturing interests were deeply involved in global intellectual and stylistic discourse. Nonetheless, the German porcelain industry was rooted in secrecy and distrust, as well as a conservatism that was bolstered by the insular nature of the German manufactories and industries.[68]

On the heels of Oldfather's analysis, in 1923, a two-part article "Was versteht man unter Keramik?" appeared in the *Keramische Rundschau*, a ceramics industry periodical that was published in Berlin from 1893-1943.[69] Its author, Hermann Hecht (1860-1933), chemist and porcelainier, traced the term "*Keramik*" to Semper's *Style*, stating "he probably took it from Brongniart's work, (*Arts céramiques*), and he expressly apologizes for this."[70] Hermann continued, citing Semper, "'*Keramik*' has the aftertaste of a foreign word. Even worse, an unnaturalized and affected foreign word."[71] Hecht observed that Semper attempted to expand the meaning of the term to include all types of vessels regardless of material. But Semper had also offered a contradictory secondary meaning, in which the category included not just pottery, but other items made from clay including bricks and roofing tiles.

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[67] D. J. Huppatz, *Modern Asian Design* (London, 2018): 88; Matthias Ostermann, *The Ceramic Surface* (London, 2002), 9-12.
[68] Marcel Mauss, "Nation, Nationality, Internationalism, 1920-1", in: Stuart Joseph Woolf, ed., *Nationalism in Europe, 1815 to the Present* (London, 1996), 92.
[69] Hermann Hecht, "Was versteht man unter Keramik?, I", *Keramische Rundschau* 1 (Berlin, 4 January 1923), 1-2; "Was versteht man unter Keramik?, II", *Keramische Rundschau* 2 (Berlin, 11 Jan 1923), 11-12; "Was versteht man unter Keramik?, III", *Keramische Rundschau* 3 (Berlin, 18 Jan 1923), 21-2.
[70] Hecht, "Was versteht man unter Keramik?, I", 1.
[71] Hecht, "Was versteht man unter Keramik?, I", 1.

As I have recently discussed, in *Etudes céramiques*, Jules Ziegler had attempted to coin the term "*cylitechnie*" as a way of referring to all types of vessels. However, Ziegler also recognized that the attempt would likely either be ridiculed or rejected, and so retained the term "ceramic" – with its explicit material connotations – in his discussion, even when he realized that the stylistic elements of vase making were to some extent similar no matter what materials were used to construct them.[72] In 1862, Semper adopted Ziegler's methodology and categorization, but he hoped to repurpose the word "Keramic" to cover all materials. Conversely, Semper also hoped to retain the original materials-based meaning established by Brongniart. On Semper's proposed definition of "*Keramik*", Hecht opined:

> while the extension to vessels made of metal, wood, ivory, glass and stone has not been successful, its meaning in the German language has expanded to the extent that the word has also been extended to include those pottery products that are less likely to be treated artistically, such as bricks and fireproof stones, a proof that language use does not follow the one-sided efforts of the language artists, but is subject to natural development. Keramos was the name of the ancient Greeks for clay and the products made from it, and this idea has also prevailed with us, since we understand ceramics to mean all products made of clay, from the ordinary brick to the finest porcelain.[73]

Semper clearly had gone too far in trying to alter the understood meaning of an existing and widely-accepted word. Meanwhile, Hecht did not see the irony in his phrasing regarding "language artists". Like many others, he did not appear to have perceived that the word "ceramics" had been put into use in its modern context by a small, close-knit group of French natural historians in the mid-nineteenth century. Hecht's criticism exemplified what Ziegler had observed – that language was far less likely to change through the outspoken efforts of a single author but instead, new language required collective agreement or inherent value.[74]

Hecht found that Oldfather's overall etymology was troubled. As Hecht explained, "he does not deny that Keramos means clay, but it is said to have originally only referred to the

[72] Carr-Trebelhorn, *Brongniart and the Arts of the Earth*, pp?
[73] Hecht, "Was versteht man unter Keramik?, I", 2.
[74] Ziegler, *Études céramiques*, 3-4.

product and only later to the raw material of pottery. So we go around in circles!"[75] Unlike Oldfather, Hecht subscribed to the idea that Keramos was originally defined as "clay". This position thus justified Hecht's lexigraphical limitations upon the term. From his German-language perspective, "*Keramik*" was most often used for the arts of pottery and porcelain, and other materials specifically formed from a plastic clay. Hecht concluded that Oldfather could not justify a meaning which departed from the specifically clay-centered original meaning of Keramos to one that included wider industries, especially glassmaking, the glass industry, and products such as cement, quicklime, and plaster.[76] This was a conservative position that favored a focus on traditional pottery and porcelain industries rather than a diversified ceramics industry. Hecht's view is perhaps not surprising considering the deeply traditional and insular culture of the German porcelain manufactories throughout their long histories.[77]

Understandably, Hecht took offense at the exclusion of Germany from the discussion. His response bore strong traces of both nationalism and residual resentment from the recent World War. He opined:

> Germany should be excluded on the grounds that Germany fights very hard and successfully against the use of foreign words! Oh well! Germany, which is still feared because of its intellectual weapons, must be excluded under all circumstances . . . But the 14 Wilson points do not prohibit us from expressing our opinions in our specialist press? The poor Japanese have also been left off the subscription list. Even if their native language does not contain the word ceramics, their business language is set to English, the same as that of their dear neighbors in the western United States, with whom they are in lively trade and competition in the entire area of interest of the island kingdoms of the Great Ocean. If one wants to change the meaning of the word ceramics and in future also understand it to include cement, lime, plaster, enamel work and many other things, then it is not just a matter of occasional theorizing, but rather of tackling the matter from a practical perspective, which, not to be forgotten, has its effect in the explanation of the customs declaration. However, the definitions of customs declarations, which are rooted in a technologically based system, show considerable differences in the classification of individual goods and types of goods with regard to ceramic goods and those made of mortar materials or the mortar itself. And if one wants to change the meaning of the term ceramics, it comes down to changing the structure

[75] Hecht, "Was versteht man unter Keramik?, III", 21.
[76] Hecht, "Was versteht man unter Keramik?, III", 22.
[77] Hildyard, *European Ceramics*, 34-37; Gleeson, *Arcanum*.

> of the technology and the customs declaration based on it, and all peoples who engage in world trade should be allowed to have a say in this.[78]

Hecht was the first author to raise the issue of international trade as factor. While his arguments about trade seem to have had little impact on the continued discussion, it was true that the definition of "ceramics", originally advanced as a scientific category, also had social and economic effects. If the domain of ceramics was as expansive as the Illinois definition indicated, traditional pottery and porcelain makers would be pressured to share professional organizations and resources with other industries, and they could be affected through trade agreements, as well. With such open classifications, Hecht warned that metals such as iron could be misconstrued as ceramic, making existing trade agreements ineffectual or problematic.[79] Regardless of the intentionally inclusive meaning that Brongniart had imparted to the word ceramics, which was already the standard usage in many locations, Hecht argued for the restriction of the term ceramics to traditional pottery and clay-based materials. He concluded, "I do not believe that the American proposal should be followed, any more than Semper's proposal has become common usage, but that ceramic products should be understood only as those which are formed from clay or clay-containing masses and, after being formed, are fired either with or without glaze."[80]

Under direct attack, in 1924, Oldfather responded with an article entitled "The Meaning of Keramos once more".[81] Oldfather countered Hecht's proposed restrictions on the category of ceramics that would exclude most of the range covered by the Illinois definition, including glass products. Oldfather argued that the classification of glass as ceramic was already in practice throughout the United States and Europe, even in Germany.[82] This was a practical

[78] Hecht, "Was versteht man unter Keramik?, III", 22.
[79] Hecht, "Was versteht man unter Keramik?, III", 21-2.
[80] Hecht, "Was versteht man unter Keramik?, III", 22.
[81] William Oldfather, "The Meaning of Keramos Once More", *Bulletin of the American Ceramic Society* 3, 4 (April 1924), 6-8.
[82] Oldfather, "The Meaning of Keramos Once More", 6.

classification based both on the material similarities between pottery and traditional glassware and on the similar requirement of treatment by high heat. Oldfather returned to the question of the language of the Greeks armed with new research completed in 1920-21 by his student Adolph Frederick Pauli.[83] Pauli's dissertation, "Studies in the Vocabulary of Ancient Greek Ceramics: Keramos and its Derivatives",[84] Oldfather wrote, "will be published soon, hoped, and there the proof will be presented in detail for the contention that keramos never means ''clay,"' but only "the baked material of earthenware," "'earthenware'' itself, some special variety of ''earthenware," or some other material in the shape of an article that was ordinarily made of "earthenware."[85] Pauli's thesis remained unpublished, but Oldfather now insisted that "keramos" was not, and never had been, limited to the material clay itself, but related to the objects, especially those treated with heat, or alternately, as he wrote, "precisely what its etymology requires, 'the burnt stuff'''.[86]

Post-war Science and an End to the Controversy in Ceramic Nomenclature

In 1948, Ralston Russell, Jr. and Arthur S. Watts presented a talk at the American Ceramic Society's annual meeting in Chicago, IL. Their paper suggested a minor adjustment to the existing lexicon to include the singular noun form of the word "ceramics".[87] Their proposition provided a subtle opportunity to revisit the nomenclature controversies of the interwar period almost thirty years prior. Russell and Watts focussed predominantly on the existing working definition as accepted by industry, which aligned with the University of

[83] Oldfather, "The Meaning of Keramos Once More", 115-6; Pauli, Adolph Frederick. "Studies in the Vocabulary of Ancient Greek Ceramics: Keramos and Its Derivatives". Dissertation. Urbana-Champaign: University of Illinois, 1921.
[84] Pauli, "Vocabulary of Ancient Greek Ceramics", 1921.
[85] Oldfather, "The Meaning of Keramos Once More", 116.
[86] Oldfather, "The Meaning of Keramos Once More", 116.
[87] R. Russell Jr. and A.S. Watts, "The Word "Ceramic"", *Journal of the American Ceramic Society* 32 (1949), 72.

Illinois definition of 1917. Importantly, the authors did not delve back into the complicated Greek etymologies of the past and they accepted that the word "ceramics" had achieved a general consensus as to its wide-ranging definition within the industry.[88] The authors indicated that the nomenclature of ceramics was under review by the American Ceramic Society at the time of their presentation.[89] The results of the inquiries described by Russel and Watts appeared in 1951 as "Scope and Size of the Ceramic Industry" in the United States in the August edition of the *Ceramic Bulletin* .[90] The unnamed members of the Research Committee of the Society omitted the phrase "burnt stuff" but otherwise restated the working definition of "ceramics" published initially in 1920 by Washburn, Ries, and Day. The committee considered the 1920 definition to be consistent with American industrial usage. They further indicated that British ceramists were now in agreement that "ceramics" included a wide-ranging and diverse community of scientists, artists, and researchers.[91]

The Longevity of "Burnt Stuff"

When Norton adopted the phrase "burnt stuff" in 1952, it was a coda to the fitful years of debate and inquiry of the first half of the twentieth century. The succinct two-word definition was a refreshing or even exasperated distillation from the lengthy discussions of the conflict-ridden period of the first half of the twentieth century. Handily concise, the phrase reverberated in the literature and ongoing dialogues of the field thereafter. Although the controversy was essentially settled, the commonly repeated references to "burnt stuff" nonetheless overlooked

[88] Russell and Watts, "The Word "Ceramic"", 72-73.
[89] Russell and Watts, "The Word "Ceramic"", R. Russell Jr. and A.S. Watts, "The Word "Ceramic"", *Journal of the American Ceramic Society* 32 (1949): pp?
[90] Research Committee, "Scope and Size of the Ceramic Industry", *Ceramic Bulletin* 30, 8 (American Ceramic Society, August 1951), 28.
[91] Research Committee, *Ceramic Bulletin* 30, 8 American Ceramic Society (August 1951), 28.

any input from Brongniart or other nineteenth century thinkers and minimized the fundamental science that Brongniart had imparted to the practice and classification of ceramics.

The language of engineering and science had, for the most part, transferred from French to English by the end of the nineteenth century.[92] Norton – a metallurgist and a critical figure in materials science, as well as a craft potter – had omitted French and German works from his bibliographies on the basis that most of his American students were unable to read a second language.[93] Although Norton used the images from Brongniart's *Atlas* to the *Arts céramiques*, he did not use *Arts céramiques* as a textual resource. Because Norton overlooked Brongniart's foundational introduction to *Arts céramiques*, Norton's brief etymology of the word "ceramics" and the word "*Keramos*" differs substantially from Brongniart's seminal discussion.[94] The omission of the key body of texts by Brongniart freed Norton to ascribe a vague origin for the modern (though inherently Brongniartian) usage he described. The omission made space for Norton and his student and successor W. D. Kingery to claim primacy in the creation of a science of ceramics a century after Brongniart's work had set the foundation for the field.

Despite its removal from Norton's 1970 second edition of *Elements of Ceramics*, the phrase "burnt stuff" has been repeated frequently throughout the twentieth and twenty-first centuries in art schools, engineering laboratories, and scientific publications alike. In a recent example, P. J. Hazell wrote in a 2020 article for the *Encyclopedia of Continuum Mechanics*, "the term "ceramic" comes from the Greek word *Keramikos* which literally means 'burnt things.' This tells us something of the way that the early Greeks manufactured ceramic pots and cisterns."[95] Hazell – clearly echoing Norton, Oldfather, and other twentieth century writers

[92] Gordin, *Scientific Babel*, p.?
[93] Norton 1952, 1970
[94] Need footnote here
[95] P.J. Hazell, "Impact on Ceramic Materials," In: Altenbach, H., Öchsner, A. (eds) Encyclopedia of Continuum Mechanics. Springer, Berlin, (2020). https://doi.org/10.1007/978-3-662-55771-6_201

– problematically attributes the presence of a Greek term to an original ancient Greek usage, and consequently infers meanings for ancient Greek pottery production.

Although the present essay offers a small correction to a longstanding and well-accepted set of industrial and dictionary definitions, it presents a fuller picture of the evolution of the term “ceramics” from its origins in the social and scientific networks of Alexandre Brongniart at the turn of the nineteenth century. It also illuminates the ways in which wide-ranging and often competitive participants in the field have attempted to define themselves. It further traces the ways in which its varied participants have viewed their local and global communities, welcoming some participants while vocally excluding others.