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Building Nation, Building Stones

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Since 1977, a stone wall has stood on an empty field in Gaithersburg, Maryland, doing nothing but aging. The National Institute of Standards and Technology (NIST)—formerly the National Bureau of Standards—manages the Stone Exposure Test Wall as a long-term study of the effects of weathering on common stone building materials from across the United States. Comprised of 2,352 individual samples, the wall offers a taxonomy of stones that have been repeatedly measured, documented, and enumerated. An accompanying database maintained at the NIST laboratory includes drawings, photographs, and notes on the stones' provenance, as well as a set of preserved samples held in a closed archive.[1] While the wall has stood on its current site for almost half a century, continuous records of the structure extend back to 1948, and its stones have an even longer, itinerant history. From the Northeast, South, and Midwest United States, samples of stones were quarried as part of a larger census project, eventually coalescing as material samples exhibited at the 1876 Centennial Exposition in Philadelphia. Published in 1880, the United States Census of Building Stones recorded their geographical movement and described the exhibited stones, earning them a spot in the National Museum—later renamed the Smithsonian Institution.[2] Decades later, after being moved to and stored in archives administered by the Smithsonian Institution, the stones were given new life as an experiment. In 1948, they were assembled into the first iteration of the stone wall, in Washington, DC, before the entire structure was moved to its current location in Gaithersburg. While ostensibly built in the service of materials science, the wall and its stones also serve as a map for the far-flung entanglements of nation-building during the nineteenth and early twentieth centuries. Tracing this coordination over the last century reveals the paradoxical experiments that attempted to ascribe cultural and scientific value to natural objects through classification and measurement centralized on one site.

[1] You can search the database at the NIST Stone Wall's dedicated website by Jaime Raz and Paul Stutzman, NIST Stone Wall (November 15, 2019), National Institute of Standards and Technology, Materials Science and Engineering Division, link.

[2] George W. Hawes, "Report on the Building Stones of the United States and Statistics of the Quarry Industry for 1880," Tenth U.S. Census (Washington, DC: U.S. Government, 1884), 1.

The stone test wall at the NIST headquarters in Gaithersburg, MD. Reprinted with permission from the National Institute of Standards and Technology [2018, rights reserved]. Photograph by Jason Stoughton.

While stones were objects of commerce long before the development of formal building material catalogs and government-standardized metrics, the categorization of stone materials as a nation-building strategy in the United States was first concretized during the 1876 Centennial Exposition. Commemorating the signing of the Declaration of Independence, the *International Exhibition of Arts, Manufactures, and Products of the Soil and Mine* brought together prominent naturalists and their collections of minerals, botanical specimens, and taxidermized animals in an effort to celebrate the nation's vast array of commercial products.[3] Many exhibitors hoped their collections might be bought and displayed by museums, or—in the case of the administrators at the Smithsonian Institution—that the federal government would soon create a permanent national museum of natural history.[4] The exposition formalized patterns of scientific and commercial regulation; not only were displays ordered through the classification of materials, but the entire Philadelphia exhibition was arranged according to a notational system that turned the space into what historian Bruno Giberti called a "classified landscape of commodities."[5]

The Committee of Classification—headed by a politician, a professor of physics, and a geological engineer—determined four primary categories: raw materials, manufactured materials, the machines required for production, and finished, manufactured products.[6] The show exhibited the country's exploitable commercial commodities through what one organizer called an "object map" of the country's wealth, from stylized displays of taxidermized animals to arrangements of quarried minerals.[7] This classification also mapped onto the architecture of the exposition and the plan for the Centennial Grounds in Fairmount Park. As Giberti argues, the exhibition extended this order into the city itself: as the show presented classified spaces of commodity display, the city itself grew in an expanding order, indexed by addresses and city grids, through which private property could be valued and filed into self-similar systems.[8] In short, the 1876 exhibition offered a spatialized, physical armature for remapping the United States according to the commercial exploitation of its material wealth.

[3] Diane Smith, *Yellowstone and the Smithsonian: Centers of Wildlife Conservation* (Lawrence: University Press of Kansas, 2017), 41.

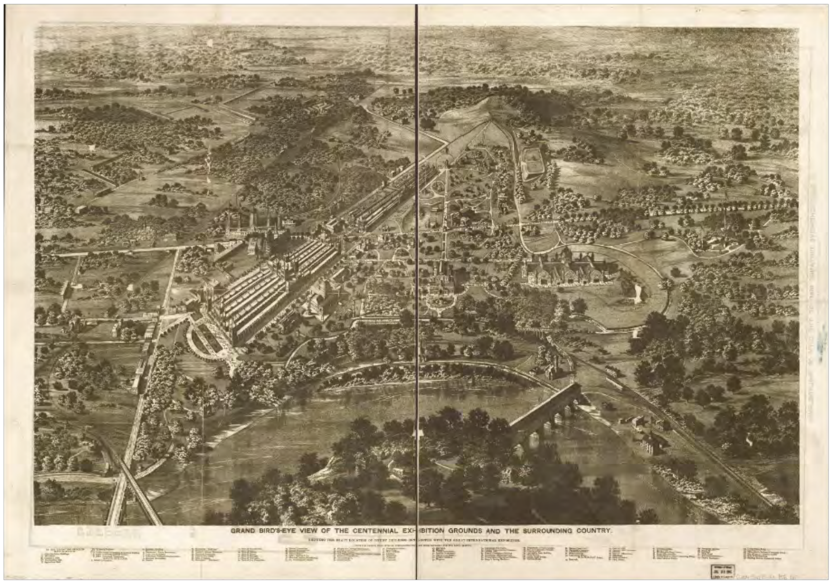
[4] Smith, *Yellowstone and the Smithsonian*, 41.

[5] Bruno Giberti, *Designing the Centennial: A History of the 1876 International Exhibition in Philadelphia, Material Worlds* (Lexington: University Press of Kentucky, 2002), ix.

[6] Giberti, *Designing the Centennial*, 19.

[7] Smith, *Yellowstone and the Smithsonian*, 44.

[8] Giberti, *Designing the Centennial*, 23.



Aerial rendered perspective of Fairmont Park's Centennial Grounds in Philadelphia, 1876. Courtesy of the Library of Congress, Geography and Map Division, https://www.loc.gov/item/79695385/. Originally drawn in crayon from official topographic surveys made expressly for the Daily Graphic and published in New York.

In his final 1880 report on the collection of building stones at the 1876 exhibition, Director George W. Hawes of the Geological Department of the National Museum in Washington, DC, explained that the display placed the nation's best stones in "direct comparison with those from foreign countries, and visitors were surprised to find that our country possessed materials for which we have been in the habit of looking to other lands."[9] These stones spoke to the potential immensity of resources available within the United States, providing a way to reduce foreign imports while also growing the domestic extraction industry. Hawes's report also called for the development of a standardized system of stone metrology to determine the longevity of their use value:

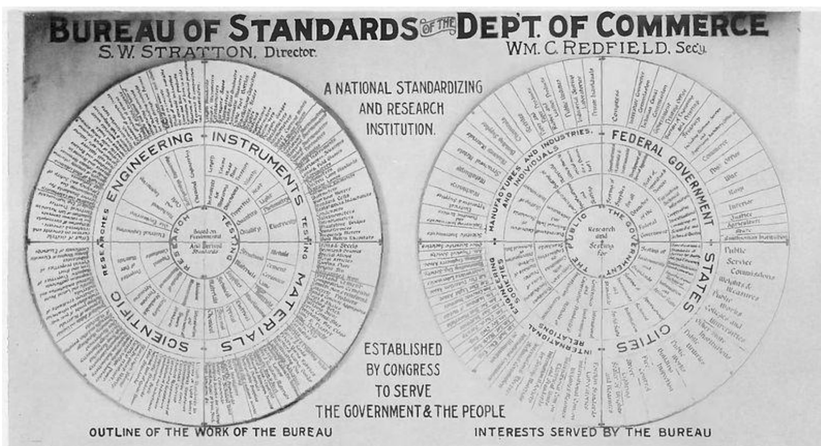
[9] Hawes, "Report on the Building Stones of the United States," 1.

> BUT IN BUILDING STONES THERE IS ALWAYS THE QUESTION OF ENDURANCE UNDER THE ACTION OF THE WEATHER, WHICH CANNOT BE DETERMINED IN ANY EASY WAY. THE EXTERNAL ASPECT OF THE STONE MAY FAIL TO GIVE ANY CLUE TO IT; NOR CAN ALL THE TESTS WE YET KNOW DETERMINE TO A CERTAINTY IN THE LABORATORY JUST HOW A GIVEN ROCK WILL WITHSTAND THE TESTS OF ABSORPTION OF OUR OWN VARIABLE CLIMATE AND THE GASES OF OUR CITIES.[10]

[10] Hawes, "Report on the Building Stones of the United States," 2.

In other words, the stone census and exhibition contributed to nation-building in two ways. On the one hand, the project of measuring, collecting, and exhibiting stones demonstrated the potential to build an "American" built environment in durable domestic materials. On the other hand, the need to test, delineate, and determine stone weathering reflected a scientific desire to codify the life span of construction materials across the varied environmental contexts and climates of the country's expanding national frontier.

Two decades later, in 1901, following a period of intensive industrialization, Congress founded the National Bureau of Standards (NBS) to regulate things produced by this burgeoning economy. As a kind of institutional extension of the nineteenth-century exposition, the bureau's 1915 organizational chart was drawn as a circle: an infinitely divisible set of responsibilities to industries that required standardization and measurement.[11] Half a century later, in the 1950s, the bureau listed the thirteen disparate fields over which it presided: "electricity, optics and metrology, heat and power, atomic and radiation physics, chemistry, mechanics, organic and fibrous materials, metallurgy, mineral product, building technology, applied mathematics, and radio propagation."[12] Throughout the bureau's early years, the testing and calibration of materials—though not originally part of its congressionally determined mission—became an opportunity to establish standards across building industries.[13] To that end, the bureau's mission to establish a laboratory promoting "economy," "effectiveness," and "innovation" in material performance produced a national code-writing organization whose decisions would affect manufacturers, builders, designers, and users to this day.[14]



The organizational chart of the National Bureau of Standards, 1915. Image from *Measures for Progress: A History of the National Bureau of Standards*, National Bureau of Standards Miscellaneous Publication 275 [Washington, DC: National Bureau of Standards, U.S. Department of Commerce, 1966], 150.

Building stones did not develop value naturally in their trade and use across the continent. Rather, their commercial properties were stabilized by the state through these acts of weighing, testing, and measuring. The stones in the wall came from existing quarries, and their inclusion in this exhibit effectively qualified them as resources for the future nation's building trades. This encouraged specific quarries to expand and proliferate, thus determining the spatial edges of a speculative commodity empire.[15] Beyond its commercial and regulatory purposes, the development of quantifiable metrics for extractive industries served to alienate natural resources from their spatial origins, refiguring them as objects amenable to capitalist accumulation.[16] Using the strict bureaucratic standards and measurements of the bureau, stones were transformed—seemingly naturally—into commodities. A "dimension stone" was not only quarried but made to size at its site of extraction, arriving at its future built location as a fully formed product.[17] Increasingly, the nation's frontier came to be seen not as a political boundary but a material one, the edge of capitalization from which mineral resources—among others—were transformed into abstract commercial objects.

[11] A helpful example of diagrammatic representations of bureaucratic processes being translated into architectural space is Michael Osman, *Modernism's Visible Hand: Architecture and Regulation in America* (Minneapolis: University of Minnesota Press, 2018), particularly the chapter "Regulation through Paperwork in Architectural Practice."

[12] R. S. Kirby, J. C. Harman, F. M. Capps, and R. N. Jones, "Effective Ground-Conductivity Measurements in the United States," Circular 546 (Washington, DC: U.S. Department of Commerce, February 1954).

[13] Even today, the NBS's successor organization, NIST, remains the purveyor of the US Building Code as an echo of these nineteenth-century desires to account for the properties of all industrial products.

[14] Paul R. Achenbach, "Building Research at the National Bureau of Standards" (Washington, DC: U.S. Department of Commerce, National Bureau of Standards, October 1970), 2, link.

[15] Classification, a hallmark of natural science in the nineteenth century, was an extended project of colonialism, from natural history museums to industrial products, botanical sciences, and beyond. There are many studies of the ways in which the classification of the natural world was often wielded as a tool of colonial violence that go beyond the scope of this essay. See, for example, Deborah Coen, "Climate and Empire," in Coen, *Climate in Motion: Science, Empire, and the Problem of Scale* (Chicago: University of Chicago Press, 2018), Geoffrey C. Bowker and Susan Leigh Star, *Sorting Things Out: Classification and Its Consequences* (Cambridge, MA: MIT Press, 2000), William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill and Wang, 1983), and James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven, CT: Yale University Press, 1998).

[16] See William Boyd, W. Scott Prudham, and Rachel A. Schurman, "Industrial Dynamics and the Problem of Nature," *Society & Natural Resources* 14, no. 7 (2001): 555–570, link. For a more contemporary examination of the abstraction of nature in the form of "natural capital" or "ecosystem services," see Alyssa Battistoni, "Bringing in the Work of Nature: From Natural Capital to Hybrid Labor," *Political Theory* 45, no. 1 (2017): 5–31.

[17] National Minerals Information Center, "Dimension Stone Statistics and Information," U.S. Geological Service, link.

Even as commodities, however, stones held unique, intractable qualities. As opposed to other natural commodities like the seasonal cultivation of crops or decades of growth in timber forests, stones are formed on geological timescales.[18] Mineral resources are heavy and obdurate, appearing only in specific geological regions.[19] They are extremely difficult to transport across large distances, with great amounts of energy and labor invested in this task.[20] As abstracted commodities, they become the tools to construct cities, especially major institutional buildings. In this sense, stones are associated with an archetypal form of architectural monumentality that suggests they hold the power to outlive time.[21] The NBS attempted to arrest this obduracy, seizing a stone's fundamental durability and persistence through a list of usable yet isolated dimensional figures that were naturalized by bureaucratic metrics.

In 1942, the NBS and the American Society of Testing and Materials (ASTM) conceived of the Stone Wall in order to "make use" of the dormant samples occupying too much space in the National Museum's archive.[22] The stones were now transformed from a collection and an object map of the United States' extractive power into a supposedly useful scientific object. As a wall rather than an exhibition, the stones became discrete examples: data points that demonstrated their performative qualities as building material and not just as publicly accessible cultural objects.[23] Assembled in 1948 on the Washington, DC, campus of the NBS, the Stone Exposure Test Wall was devised by material scientists Daniel W. Kessler and R. E. Anderson to measure "the nature and relative severity of the various agents that cause deterioration and how they affect different stones."[24] Using a set of measurements including warpage, size changes, and coloration, the wall was intended to provide a centralized study of long-term weathering. Kessler and Anderson's report on the structure was publicized in a 1951 issue of *Progressive Architecture*, a popular journal intended for architects and builders, in an effort to signal its potential value to the building industry.[25]

The wall both perpetuated and elaborated the system of classification initially devised in the 1876 Centennial and National Museum. Laid by a single mason named Vincent Di Benedeto, it was carefully arranged into tables of stone types and qualities according to geographic regions.[26] In direct spatial juxtaposition, granite from Maine was placed only a few centimeters away from sandstone from Texas, flattening the entire nation into a seemingly universal and rational logic, rapidly accessible for a comparative analysis.[27] Labels were eliminated to avoid asymmetrical weathering; instead, scientists and other observers could reference a drawing of the wall that mapped each sample. To map change over time, each sample was cross-referenced to a secondary set of archival stones, which served as a control case that could be compared against the examples that were left outside to weather. The wall itself was not meant to be touched; human intervention other than the mason's hands was thought a risk to the experiment's integrity.

These rules, Kessler and Anderson explained, were meant to allow the experiment to keep running, asserting that the wall's "ultimate value will depend upon how future generations follow through in analyzing the results."[28] In this way, the experiment relied on the consistent and attentive labor of scientists over the long period it takes for stones to weather. These stones had been on a long journey. Beyond their inconceivably long geological

[18] For an account of how timber became dimensional for architectural building materials, see Erik Carver, "From Pine Parthenons to Pocketbooks: Frank Kidder, MIT, and the Reinvention of American Timber ca. 1862–84," *Architectural Theory Review* 25, no. 1–2 (May 4, 2021): 42–63; see also Boyd, Prudham, and Schurman, "Industrial Dynamics and the Problem of Nature," for a further exploration of natural commodities in industrial operations.

[19] Oliver Bowles, *The Stone Industries; Dimension Stone, Crushed Stone, Geology, Technology, Distribution Utilization* (New York: McGraw-Hill, 1934).

[20] See Jane Hutton, *Reciprocal Landscapes: Stories of Material Movements* (Abingdon, UK: Routledge, 2020), esp. chapter 2, "Range of Motions: Granite from Vinalhaven, Maine, to Broadway, 1892."

[21] See Edward John Gillin, "Stones of Science: Charles Harriot Smith and the Importance of Geology in Architecture, 1834–64," *Architectural History* 59 (October 2016): 281–310, link.

[22] D. W. Kessler and R. E. Anderson, "Stone Exposure Test Wall," Building Materials and Structures Report 125 (National Bureau of Standards, 1951), 1.

[23] See Boris Jardine, Emma Kowal, and Jenny Bangham, "How Collections End: Objects, Meaning and Loss in Laboratories and Museums," *BJHS Themes* 4 (October 2019): 1–27, for an exploration of how collections are repurposed to "reveal new possibilities" from their contexts.

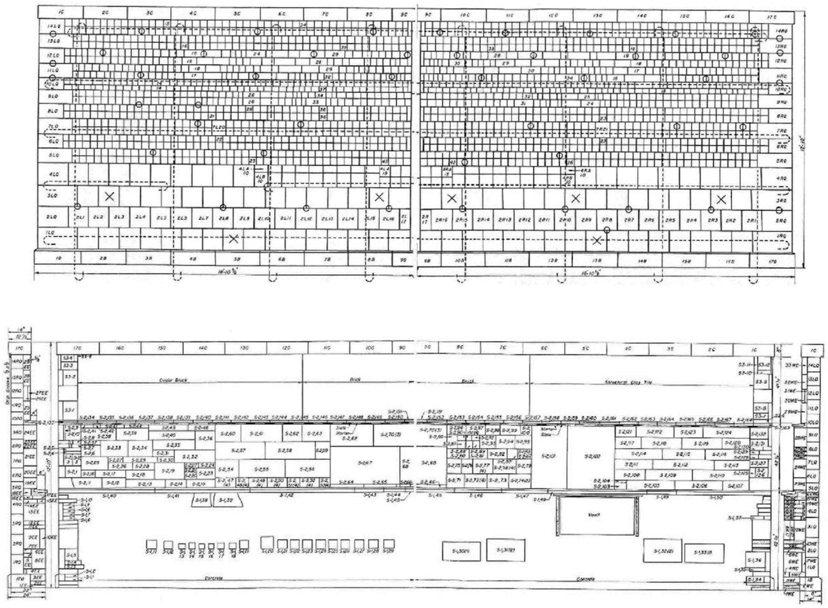
[24] Kessler and Anderson, "Stone Exposure Test Wall," 1.

[25] "Books Reviewed," *Progressive Architecture*, June 1952, 145.

[26] Raz and Stutzman, "NIST Stone Wall."

[27] Raz and Stutzman, "NIST Stone Wall."

[28] Kessler and Anderson, "Stone Exposure Test Wall," 1.



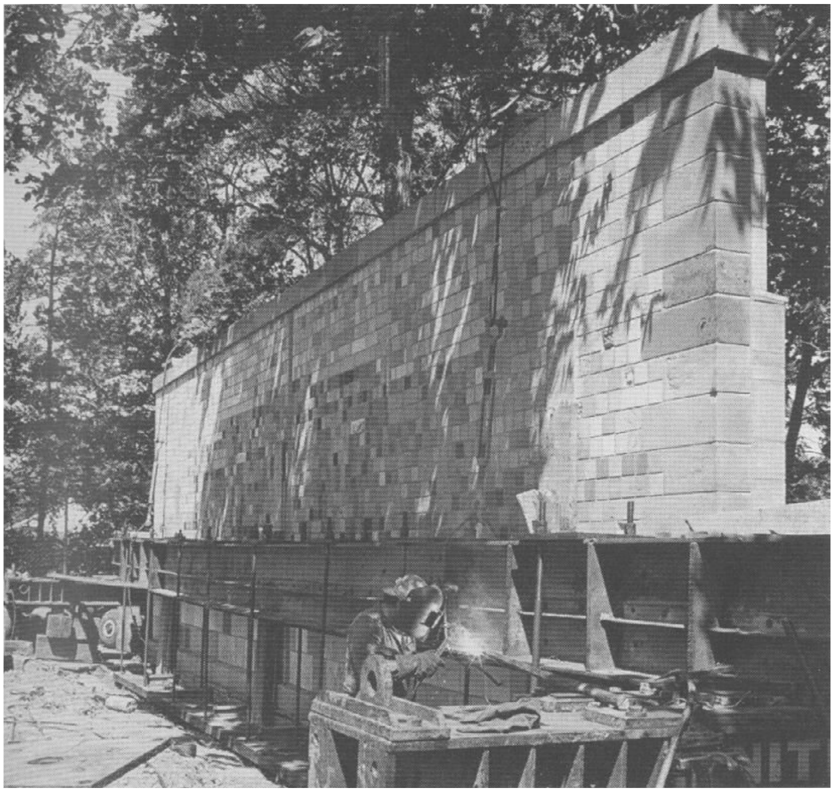
Elevational diagrams showing the front and back of the wall and their classification systems. Images from the original 1951 report by Kessler and Anderson, "Stone Exposure Test Wall," 4–5, 38–9, published by the NBS.

formation, they had been roughly quarried, exhibited as part of an exhibition, and then secreted away in an archive. Now, the stones became objects of delicate observation, subject to measurements that aimed to precisely model the natural weathering of buildings.

A few decades later, however—and despite the scientists' overriding concern for stability and longevity—the wall was moved again. In the 1960s, amid rising Cold War tensions, officials pursued the rapid geographic decentralization of government institutions out of Washington, DC, as a protective measure against the possibility of total nuclear annihilation. The NBS laboratories became implicated in what Peter Galison has called a "war against the center," as its headquarters were moved to Gaithersburg, Maryland, with further outposts built in Colorado and beyond.[29] The growing portfolio of government standardization was paralleled in a growing set of NBS laboratory campuses, corresponding with areas of technical innovation throughout the twentieth century. As part of this reorganization, the Stone Exposure Test Wall was transported to the new Maryland campus in 1977. Welded together in a structural steel exoskeleton, the entire wall was moved on a truck to the empty field in Gaithersburg, arriving with minimal damage to the naturally durable, artificially organized stones.[30] Geological and human timescales repeatedly clashed. Intended to track the weathering of stones over a long period of time, the wall was in fact moved and transformed again and again.

[29] See Peter Galison, "War against the Center," Grey Room 4, no. 4 (2001): 5–33, for a general account of institutions decentralizing in response to nuclear threats; for a specific look at NIST's movements, see Elio Passaglia with Karma Beal, *A Unique Institution: The National Bureau of Standards*, 1950–1969 (Washington, DC: US Government Printing Office, 1999), 271, and Wilbert E. Snyder and Charles L. Bragaw, *Achievement in Radio: Seventy Years of Radio Science, Technology, Standards, and Measurement at the National Bureau of Standards* (Washington, DC: U.S. Department of Commerce, 1986) for a history of the institution at Boulder, Colorado.

[30] Passaglia and Beal, *A Unique Institution*, 491.



A welder making the encasement for the wall ahead of its transport. Image sourced from Passaglia and Beal, *A Unique Institution: The National Bureau of Standards, 1950–1969*, 491.

Like the Centennial Exposition in Philadelphia decades earlier, the NBS—renamed the National Institute of Standards and Technology (NIST) in 1988—campus offered another classified landscape of commodities. Even its buildings followed a numbering system that, like its original organizational chart from 1915, allowed it to grow and flex into new industrial research arms. In institutional accounts of the new campus in Gaithersburg, landscape and trees were indexed too: "1800 large deciduous trees of 38 varieties, 926 small and flowering trees of 32 varieties, 1548 coniferous trees of 9 varieties, and hundreds of shrubs."[31] The Stone Exposure Test Wall, in this sense, serves as one of many material remnants of the institution's origins, an ongoing record of how materials come to be alienated from their natural sources and transformed into commodities that become dissolved within a technoscientific landscape. As an object made up of natural materials that point to the historic edges of a now-consolidated nation, the wall itself represents the re-composition of natural materials from across the country into an abstracted system of use value mediated by material science.

[31] Passaglia and Beal, *A Unique Institution*, 490.

The Stone Exposure Test Wall continues to stand, weathering, roughly 20 miles from where it was originally constructed. Periodically, it is photographed and measured by the Inorganic Building Materials Group from NIST's Engineering Laboratory, along with other microscopic evaluations of the stones whenever an interested group decides it is worthwhile; this last occurred in 1997.[32] And yet, what is perhaps most interesting about the wall—with its history of apparently reasonable tests on material longevity and the effects of weathering—is that it is not particularly useful as a scientific object. In bringing together its building materials to weather in a single place, the wall only provides a picture for how small samples of stones, bonded together in a

[32] Raz and Stutzman, "NIST Stone Wall."

giant patchwork of the country's various regions, age together in one specific climate—those conditions adjacent to the nation's capital. Material scientists have pointed to the project's limitations and its inability to simulate reality or derive meaningful data. There is a general lack of consensus on the appropriate way to standardize durability testing using existing materials or in centralized experiments.[33] Erhard M. Winkler of the University of Notre Dame, to take one example, argues that the limited surface of each stone in the wall limits exposure to the elements and the ability to study weathering. In other words, one stone does not make a wall, and one wall of many stones does not equate to the many walls made of a single kind of stone across space and time. Because of these constraints, and because a uniform mortar holding all these stones together differentially affects their life spans, Winkler concludes that the wall is "of only very limited value in the study of weathering rates." He instead advocates for studying stone cladding in situ, particularly for regionally specific examples near sites of extraction.[34] In short, place matters.

If the Stone Exposure Test Wall was built to formulate a new scientific value for the collection, this place-based criticism reveals some of the structure's ironies and contradictions that emerged over time. If the stones first represented the contours and outlines of an extractive settler nation to the nineteenth-century American public, their value had to be adjusted to suit twentieth-century imperatives of centralized bureaucratic information. Yet the materiality and landscape of stones cannot be wholly isolated or classified. Ecological and environmental context is impossible to ignore, of course, but even more so the wall does not fit ontologically into the boxes of "architecture" or "science." From the perspective of the stones and their geological and geographical origins, then, the wall presents a strange paradox. If we consider the many places collected within it—the stones' many quarries, the site(s) of the experiment, and their end use in buildings across the country—it becomes clear that it is impossible to create a control case for an object that has accumulated so many material, spatial, and temporal complications. While the project aimed to provide a significant use case, its standardization had the opposite effect. Instead, the experiment became a new form of exhibition, an object map of national power within a highly ordered and governed landscape—albeit one that has been left outdoors to gradually crumble.

Beyond this history of obsessive categorization, the NBS—now the NIST—is also highly self-conscious of its own institutional history, and by extension, of the wall as one of its experiments. The organization has produced several in-house tomes: institutional autobiographies with detailed explorations of its directorships and experiments, as well as a large number of publicly available reports and documents.[35] Since the 2000s, the Stone Exposure Test Wall has been indexically photographed and made digitally searchable, the contributions of scientists and bureaucrats alike made clear and accessible.[36] Even with these efforts to openly record and maintain the wall, however, answers to questions about the original labor and sites of extraction are lost to history. The origin of the stones' extraction is implied but not explored. Who were the people seeking out the samples in the first place? Who undertook the labor of extraction, and how did they figure into the imperial operations of the United States in this period? For instance, the wall includes 320 samples from other countries, several of which are marble from the Isle of Pines in

[33] S. A. Bortz and B. Wonneberger, "Review of Durability Testing in the United States and Europe," in *Dimension Stone Cladding: Design, Construction, Evaluation, and Repair* (Conshohocken, PA: ASTM International, 2000), 94–106, link. See also Paul E. Stutzman and James R. Clifton, "Stone Exposure Test Wall at NIST," vol. 72 (New York: American Society of Civil Engineers, 1997), 20–32, for new computational methods approached by NIST engineers to address the difficulties in assessing the stones as intended.

[34] Erhard Winkler, "Weathering and Weathering Rates of Natural Stone," *Environmental Geology and Water Sciences* 9, no. 2 (1987): 85–92.

[35] See Rexmond C. Cochrane, *Measures for Progress: A History of the National Bureau of Standards*, National Bureau of Standards Miscellaneous Publication 275 (Washington, DC: National Bureau of Standards, 1966), Passaglia and Beal's *A Unique Institution*, and Snyder's *Achievement in Radio.*

[36] Raz and Stutzman, "NIST Stone Wall."

Cuba, likely collected during the Spanish-American War.[37] Drawing from other histories of collection that center the labor of the extractors could serve as a useful model to unpeel these layers.[38] The wall's use value as a tool of metrics and standardization, in other words, is embedded within a much larger history of extractive industries and the development of formal and informal American empires in the nineteenth century. In this way, it offers an accidental representation of the political ecology of its own formation, while also exposing its constitutive blind spots—the durable alienations of this history of science, empire, and extraction.

As spatial practitioners move toward material histories and a new understanding of how labor and resource extraction intersect with colonial projects globally, it is worth considering how these standards have been reinforced through code. In viewing the country as a census of stones placed in a rather inconsequential scientific experiment, parts of the material history of the United States and, by extension, the architectural value of stones, merit critical attention. The array of materials at the fingertips of every designer has had enormous social and ecological effects: when reaching for catalogs to specify which materials to use for the walls of a building, designers are often deracinated from the provenance and specific qualities of stones. Materials are selected largely for their cost and appearance rather than their suitability for a particular ecological context.[39] What would it mean to develop methods for recognizing land, local knowledge, and non-extractive or hybridized environmental labor rather than the real-time databases of building stones?[40] Connecting material and labor to place, Sarah Lopez's ongoing work on the relationship between migrant workers and imported Cantera stone from Mexico offers one way of making material histories evident in final designs.[41] Landscape architecture firms like Terremoto in Los Angeles aim to involve landscape workers in the process of design, adjusting material strategies according to the knowledge of builders.[42] In these forms of history and practice, the connection between people, place, and material origins becomes central to a different ethos of construction. Against inherited assumptions of economic utility and standardization, new values might emerge through embedded material relationships that are centered on understanding and engagement, rather than top-down initiatives that aim to flatten.

Through its peripatetic history from sites of extraction to the 1876 Centennial Exhibition in Philadelphia, to the National Museum and the Smithsonian, and finally to its life as a wall in Washington and Maryland, the stones that make up the Stone Exposure Test Wall in Gaithersburg have undergone many transformations of what it means to be useful. They reveal that ordering and modeling continue to express the long life of the built environment, but also that cultural values shift much more quickly. From roughly extracted rock, to delicately handled exhibit, to scientific experiment paraded around various sites, this odd wall of stones—of materials that have no natural reason to be collected in one place, together—became nothing short of absurd. That we can now glimpse this absurdity—the folly of assigning metrics to objects that exist beyond our human time—suggests that coming conceptual changes to time and value might offer something new. The stone wall remains, aging, patiently awaiting its next transformation.

[37] Now known as Isla de la Juventud.

[38] See James Delbourgo, "Divers Things: Collecting the World under Water," *History of Science* 49 (2011): 149–185, for a detailed study of divers for eighteenth-century collections of aquatic specimens in the Caribbean, or Lydia Barnett, "Showing and Hiding: The Flickering Visibility of Earth Workers in the Archives of Earth Science," *History of Science* 58, no. 3 (2020): 245–274.

[39] Hutton, *Reciprocal Landscapes*, 190.

[40] Hybridized labor in the sense that Alyssa Battistoni describes in "Bringing in the Work of Nature: From Natural Capital to Hybrid Labor," *Political Theory* 45, no. 1 (February 1, 2017): 5–31.

[41] Sarah Lopez, "Ties That Bind: Migrant Placemaking at the U.S.-Mexico Boundary and Beyond," *Platform*, July 8, 2019, link.

[42] Michelle Arevalos Franco, "Invisible Labor: Precarity, Ethnic Division, and Transformative Representation in Landscape Architecture Work," *Landscape Journal* 41, no. 1 (2022): 95–111, link.