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## Casting Life, Recasting Experience: Bernard Palissy's Occupation between Maker and Nature

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this is an art  
Which does mend nature, change it rather, but  
The art itself is nature.

William Shakespeare<sup>1</sup>

I shall make him a model whereby he will be able to understand.

Bernard Palissy<sup>2</sup>

The sixteenth-century natural historian and ceramicist Bernard Palissy took life into his own hands, channeling nature into clay. Best known today for his rustic-style ceramic plates (*rustiques figulines*), he has been celebrated as a geological theorizer, author, and religious martyr. Above all else, however, Palissy (1510–1590) was a craftsman—a polymath potter of forms, words, and natural knowledge. His labors and his legacy as an artisan of novel ceramic basins—simulta-

1. William Shakespeare, *The Winter's Tale*, act 4, sc. 3, lines 95–97.

2. Bernard Palissy, "On the Art of the Earth," in *Discours admirables* (1580); except when otherwise noted, references to passages from *Discours admirables* (hereafter *DA*) refer to vol. 2 of the most recent edition of Palissy's complete works: Bernard Palissy, *Œuvres Complètes*, 2 vols., ed. Marie-Madeleine Fragonard, Keith Cameron, Jean Céard, Marie-Dominique Legrand, Frank Lestringant, and Gilbert Shrenck (Mont-de-Marsan, France: Éditions InterUniversitaires, 1996); the epigraph is taken from p. 18. Translations throughout are my own after consultation with the 1957 translation by Aurèle La Rocque: Bernard Palissy, *The Admirable Discourses of Bernard Palissy* [1580], ed. and trans. Aurèle La Rocque (Urbana: University of Illinois Press, 1957).



Figure 1. Life-size bronze statue of Bernard Palissy. Palissy, holding a rustic platter, has fossilized seashells, crystals, and a kiln at his feet, and wears a potter's apron over a gentleman's dress. From Phillippe Burty, *Les artistes célèbres: Bernard Palissy* (Paris: Librairie de l'Art, 1886), p. 13.

neously artworks, natural formations, and teaching tools—helped usher in a new material culture of knowledge production (Fig. 1).

Palissy's career reveals a Renaissance maker embodying intellectual curiosity, artisanal skill, and spiritual fervor.<sup>3</sup> From his first to his last experiments in life and clay, he seems to have worked with simultaneous passions of hand and mind. Over a life that spanned the sixteenth century, Palissy had a productive—and tumultuous—career as a ceramicist, geologist, and public lecturer, rising from humble origins to wealth and fame. Born around 1510 into an artisanal family in southwestern France, he first trained as a draughtsman and glass-painter, receiving a few years of vernacular education. In his teens and twenties, he worked as an itinerant painter, land-surveyor, and mapmaker, pursuing natural history and geology in the field. By about 1540, he settled down near Bordeaux, where he began to experiment with ceramic practice. Palissy's labors brought forth grottoes and fountains as well as his popular rustic basins, the sculpted ponds encrusted with animals and gilded by glazes that are the subject of this essay (Fig. 2).<sup>4</sup>

Over the centuries since Palissy's death at the Bastille in 1590, a substantial and diverse historiography has developed around his life and work. On the one hand, geologists and historians have examined his writings in the context of the history of paleontology and the agri-

3. Biographical information is drawn from a selection of the works devoted to Palissy that have appeared in France and England from the nineteenth century to the present. Notable among these sources are Pierre Gascar, *Les secrets de Maître Bernard: Bernard Palissy et son temps* (Paris: Gallimard, 1980); Leonard N. Amico, *Bernard Palissy: In Search of Earthly Paradise* (New York: Flammarion, 1996); Aurèle La Rocque, introduction to *Admirable Discourses* (above, n. 2), pp. 1–19. Earlier biographical and poetic works include Cecelia Brightwell, *Palissy the Potter: Huguenot, Artist and Martyr* (New York: Carlton and Porter, 1859); Henry Morley, *Palissy the Potter: In Two Volumes* (Boston: Ticknor, Reed and Fields, 1853); Désiré Leroux, *La vie de Bernard Palissy* (Paris: Champion, 1927); Ernest Dupuy, *Bernard Palissy: L'homme, l'artiste, le savant, l'écrivain* (Paris: Société Française d'Imprimerie et de Librairie, 1902); Philippe Burty, *Bernard Palissy* (Paris: Librairie de l'Art, 1888); Louis Audiat, *Bernard Palissy: Étude sur sa vie et ses travaux* (Paris: Didier, 1868); Alfred Dumesnil, *Bernard Palissy: Le potier de terre* (Paris: Librairie Nouvelle, 1851); Arsène Darmesteter and Adolphe Hatzfeld, *Le seizième siècle en France* (Paris: Delagrave, 1883).

4. On Palissy's two unfinished grottoes, see Louis Dimier, "Bernard Palissy rocailleur, fontainier et décorateur de Jardins," *Gazette des Beaux-Arts* 12 (1934): 8–29; Anatole Montaiglon, *Bernard Palissy, paiements de la grotte de terre émaillée des Tuileries* (Paris: Archives de l'Art Français, 1857); Audiat, *Bernard Palissy* (above, n. 3), pp. 115–135, 251–270. On sixteenth-century French grottoes in general, see Naomi Miller, "Domain of Illusion: The Grotto in France," in *Fons Sapientiae: Renaissance Garden Fountains*, ed. Elizabeth Macdougall (Washington, D.C.: Dumbarton Oaks Press, 1978), pp. 175–205.



Figure 2. Typical rustic basin by Bernard Palissy, from Phillippe Burty, *Les artistes célèbres: Bernard Palissy* (Paris: Librairie de l'Art, 1886), p. 49.

cultural sciences.<sup>5</sup> On the other hand, art historians and connoisseurs have studied his collectible ceramic plates, focusing largely on aesthetic, technical, and provenance issues.<sup>6</sup> These two, largely separate, clusters of scholarship have accomplished a great deal, providing a sense of Palissy's contributions to both the earth sciences and the dec-

5. Notably, despite Palissy's prescient understanding of the organic nature of fossils and antediluvian explanation for the presence of fossil fish in the French mountains, British and American geological historians have tended to discount his significance, generally on account of his practical and artisanal bias. In his classic history of fossils, Martin Rudwick skims over Palissy, dismissing his "anti-intellectual," self-consciously "practical" approach as merely a crude fortune-hunting materialism, rather than an alternate way of obtaining scientific knowledge. (Rudwick notes the "embarrassing clarity" with which Palissy himself reveals the "utilitarian foundation of his science" [Martin Rudwick, *The Meaning of Fossils* (New York: American Elsevier, 1972), p. 17].) Other prominent historians of geology, such as F. D. Adams, skip over Palissy's contributions almost entirely: see Frank Dawson Adams, *The Birth and Development of the Geological Sciences* (New York: Dover, 1938). By contrast, eighteenth-century geologists and geologically inclined natural historians, including Cuvier, Buffon, and Réaumur, were quick to credit Palissy for his contributions to the development of geological thought; see, for example, Georges Cuvier, *Essay on the Theory of the Earth*, ed. and trans. Robert Jameson (1817; reprint New York: Arno Press, 1978), pp. 19–23. Agricultural and chem-

orative arts as traditionally understood. My analysis builds on such valuable previous work. I place both these methodological approaches and their ceramic objects of inquiry in the context of the recent flowering of interest in the roles of material, artisanal, and craft cultures in the development of early modern science and natural philosophy.<sup>7</sup>

In this article, I examine Palissy's rustic ceramics—vessels fused with multicolored glazed statuary cast from shells, plants, and live amphibian and marine specimens—in light of both their own production and that of the *Discours admirables*, Palissy's 1580 treatise on agriculture and geology. Fusing textual and material analysis, I consider Palissy's ceramic ware through the lens of his writings on geology and agriculture. Drawing from Palissy's own words and narratives, I read his plates as expressive embodiments—both heuristic and illustrative—of his innovative, and sometimes controversial, theories about natural history. I interpret their visual and material contours in relation to his ideas about three phenomena: generation, fossilization, and coloration in nature. Through this interpre-

ical historians, who tend to focus on vernacular knowledge acquired for the sake of economic gain, have acknowledged the potter's contributions—see, e.g., Grace M. Ziegler, "Agricultural Observations of Bernard Palissy, the Huguenot Potter," *Scientific Monthly* 26:1 (1928): 28–33; Robert Multhauf, "The Beginning of Mineralogical Chemistry," *Isis* 49 (1958): 50–53; H. R. Thompson, "The Geographical and Geological Observations of Bernard Palissy the Potter," *Annals of Science* 10 (1954): 149–165.

6. Connoisseurial and art-historical work on Palissy's ceramics includes Marshall Katz, *Portuguese Palissy Ware* (New York: Hudson Hills, 1999); Thierry Crépin-Leblond, *Une orfèvrerie de terre: Bernard Palissy et la céramique de Saint-Porchaire* (Paris: Réunion des Musées Nationaux, 1997); John Webster Keefe, *Grotesqueries: Form, Fantasy, and Function in Nineteenth-Century European Ceramics* (New Orleans: New Orleans Museum of Art, 1997); Marshall P. Lehr, *Palissy Ware: Nineteenth-Century French Ceramics from Avisseau to Renoleau* (London: Athlone Press, 1996); Frank Lestrignant, comp., *Colloque Bernard Palissy: 1510–1590* (Mont-de-Marsan, France: Éditions InterUniversitaires, 1990); Jean-Luc Massay, *Bernard Palissy: Mythe et Réalité* (Saintes, France: Musée d'Agen, 1990); Alan Gibbon, *Céramique de Bernard Palissy* (Paris: Librairie Séguier, 1986); Jerah Johnson, "Bernard Palissy: Prophet of Modern Ceramics," *Sixteenth Century Journal* 14 (1983): 399–410; A. Tainturier, *Les terres émaillées de Bernard Palissy* (Paris: Didron, 1863); Jules Salles, *Étude sur Bernard Palissy: Précédé de quelques recherches sur l'art céramique* (Paris: Grassart, 1856).

7. Some book-length examples of this recent attention to early modern artisanal and object-bound knowledge include Pamela H. Smith, *The Body of the Artisan: Art and Experience in the Scientific Revolution* (Chicago: University of Chicago Press, 2004); Michel Jeanneret, *Perpetual Motion: Transforming Shapes in the Renaissance, from Da Vinci to Montaigne*, trans. Nidra Poller (Baltimore: Johns Hopkins University Press, 2001); Lorraine Daston and Katharine Park, *Wonders and the Order of Nature: 1150–1750* (New York: Zone Books, 1998); Ann Blair, *The Theater of Nature: Jean Bodin and Renaissance Science* (Princeton: Princeton University Press, 1997). On "material culture" as an approach to art and cultural history, the classic introduction is Jules Prown, "Mind in Matter: An Introduction to Material Culture Theory and Method," *Winterthur Portfolio* 17:1 (1982): 1–19.

tive framework, clay thereby emerges as a vital new medium for inquiry into terrestrial and organic processes, and for the expression of philosophies of nature.

### Casting Ideas in Clay

Palissy fused his interests in natural craft into an embodied experience of “the art of the earth.” As he recounted in one of the autobiographical interludes in the *Discours admirables*, he became infatuated with ceramics after seeing a white, porcelain (or porcelain-like) cup enameled with a beauty that he apparently found “immediately perplexing.”<sup>8</sup> The year was probably 1540.<sup>9</sup> According to Palissy’s account, as soon as he saw this inspirational cup—most likely of Italian origin—he decided to devote himself to ceramic work. He immediately set up a pottery studio; he built a kiln, collected a wide range of clays, and—at least initially—struggled to imitate the white cup’s milky glaze and dainty-thin facing. As he recounted: “I started to look for enamels like a man who gropes in dark shadows.”<sup>10</sup>

During the ensuing sixteen years of trials, Palissy’s efforts would lead to great success in a rustic, rather than a refined, vein. His ceramic work soon attracted an array of wealthy, powerful, and noble patrons, despite the fact that Palissy was a practicing Protestant in an intolerant Catholic kingdom.<sup>11</sup> In 1563, Catherine de Médicis became the potter’s patron and protector, granting him the royal title “Worker of the Earth and Inventor of Rustic Ware” (*Ouvrier de Terre et Inventeur des Figulines Rustiques*), a title he would retain until his death at the end of the century.<sup>12</sup> Within a couple of years, he had

8. “J’entray en dispute avec ma propre pensée” (*DA*, p. 294).

9. Marie-Madeleine Fragonard, “Introduction,” in Palissy, *Œuvres Complètes* (above, n. 2), vol. 1, pp. xi–xlix, on p. xii.

10. “Je me mis à chercher les esmaux, comme un homme qui taste en tenebres” (*DA*, p. 294).

11. Palissy was periodically tried by the Catholic authorities—and saved by his noble patrons and patronesses—throughout the later decades of the sixteenth century. Catherine de Médicis and the Constable Anne de Montmorency, as patrons, both protected him against decades of religious persecution in exchange for basins and grotto designs: see Amico, *Earthly Paradise* (above, n. 3), pp. 65–71. On the relationship between Palissy’s artisanal works and his Calvinism, see Catharine Randall, “Structuring Protestant Scriptural Space in Sixteenth-Century Catholic France,” *Sixteenth Century Journal* 25:2 (1994): 341–352; idem, *Building Codes: The Aesthetics of Calvinism in Early Modern Europe* (Philadelphia: University of Pennsylvania Press, 1999), pp. 44–78.

12. Dimier, “Bernard Palissy” (above, n. 4), p. 17.

established an urban workshop wherein he employed members of his immediate family, casting nature into clay.<sup>13</sup>

From 1545 until 1590, Palissy's methods remained essentially unchanged. Again and again, he made plates by emulating the natural formation of rocks and figured stones. As the potter cast teeming pond scenes into clay, his procedure alluded to his conception of the earth's own generation of mineral, vegetable, and animal objects. Meanwhile, his products existed as sculptural renditions of the natural world.<sup>14</sup>

Palissy's first task in creating each rustic plate was the manufacture of artifactual rocks to serve as the foundation for the basin; this basin would, in turn, become the stage on which he would direct a cast of clay-rendered aquatic and amphibious creatures. To this end, Palissy fired a slab of various clays and soils that had been crafted into an appropriate shape.<sup>15</sup> His ceramic mound would come to evoke the rocky shores of a sluggish pond.

Next came the life-casting process, the goal of which was the artificial petrification of aquatic and amphibian creatures—that is, their literal transformation into stone<sup>16</sup> (Fig. 3). Palissy was by no

13. Palissy remained secretive about his working methods throughout his life, admitting as much in "De l'art de terre." In his words (mouthed by "Practice" at the dialogue's outset): "My art and its secrets are not like others. . . . The word of God must not be kept a secret. The sciences that serve the whole state must not be kept a secret. But with my art of the earth, and many other arts, that is not so; for many charming inventions are contaminated and despised because they are too common. . . . Only if I thought you would keep tight the secret of my art as jealously as it deserves, would I not hesitate to teach it to you" (*DA*, pp. 286–290). On the tradition of secrecy in craft traditions through the early modern era, see Pamela O. Long, *Openness, Secrecy, Authorship: Technical Arts and the Culture of Knowledge, from Antiquity to the Renaissance* (Baltimore: Johns Hopkins University Press, 2001); William Eamon, *Science and the Secrets of Nature: Books of Secrets in Medieval and Early Modern Culture* (Princeton: Princeton University Press, 1994), pp. 234–267.

14. Ernst Kris, "Der Stil 'Rustique': Die Verwendung des Naturabgusses bei Wenzel Jamnitzer und Bernard Palissy," *Jahrbuch der kunsthistorisches Sammlungen in Wien* 22 (1926): 137–208; Alan Powers, *Nature in Design* (London: Conran Octopus, 2001), pp. 100–101.

15. Amico, *Earthly Paradise* (above, n. 3), p. 17.

16. I use the somewhat archaic word "petrification," instead of its modern synonym "petrification," in order to distinguish it more clearly from the orthographically similar term "putrefaction." (Petrification, like petrification, refers to any one of a number of processes of turning to stone, including but not limited to lapidification.) The concept of petrification, particularly in relation to cave formations, was a subject of interest to Palissy's contemporaries as well as to seventeenth- and eighteenth-century natural historians. Whole treatises devoted to the subject had appeared by the late seventeenth century, including those by Agostino Scilla (*La vana speculazione disingannata dal senso*, 1670) and Thomas Sherley (*A Philosophical Essay Declaring the Probable Causes Whence Stones are Produced*, 1672).



Figure 3. Lizard, crayfish, and seashells cast from live specimens by Palissy. (Photograph by Pierre Philibert, reproduced by courtesy of the Musée du Louvre.)

means the only Renaissance artist to employ life-casting techniques in his decorative work: as has been explored by several scholars, a number of sixteenth-century European metal workers used these same techniques.<sup>17</sup> Artisanal groups in Germany and Italy—as well as Palissy in France—produced elaborate decorative wares in metal and earth, within the developing schools of mannerism and natu-

17. Late fifteenth-century Paduan sculptor Andrea Riccio, who cast amphibious animals in bronze, has been credited as the first practitioner of life-casting: Leo Planiscig, “Der Paduanische Naturalismus” and “Im Kreise der Naturalisten,” in idem, *Andrea Riccio* (Vienna: Schroll, 1927), pp. 450–464. German metalworkers and silversmiths had encountered Riccio’s works by the mid-sixteenth century, by which point a small school of rustic silverware had developed around Wenzel Jamnitzer in Nuremberg: Klaus Pechstein, “Der Goldschmied Wenzel Jamnitzer,” in idem, *Wenzel Jamnitzer und die Nürnberger Goldschmiedekunst 1500–1700* (Nuremberg: GNM, 1985), pp. 57–58; Elisabeth Scheicher, “The Collection of Archduke Ferdinand II at Schloss Ambras,” in *The Origins of Museums: The Cabinet of Curiosities in Sixteenth- and Seventeenth-Century Europe*, ed. Oliver Impey and Arthur Macgregor (Oxford: Clarendon Press, 1985), p. 33. Pamela H. Smith has analyzed the connections among a range of early modern European artisans, especially Albrecht Dürer and Wenzel Jamnitzer—their naturalistic craft productions and specific natural philosophies: Smith, *Body of the Artisan* (above, n. 7), pp. 59–95. See also Martin Kemp, “Palissy’s Philosophical Pots: Ceramics, Grottoes and the *Matrice* of the Earth,” in *Le origini della modernità (II)*, ed. Walter Tega (Milan: Olschki, 1999), pp. 72–78; Daston and Park, *Wonders* (above, n. 7), p. 282.

ralism.<sup>18</sup> Many of these craftsmen may have expressed philosophical ideas in their decorative works; and yet, Palissy was unusual in the sophistication of his expressions—in both clay and text—of organic process and natural generation.

Throughout his lifetime, Palissy remained secretive about the specifics of his life-casting techniques.<sup>19</sup> In the textual account of his working process, in particular in his 1580 essay (included in the *Discours*) titled “The Art of the Earth,” he skims over the crucial moments of “animal impression.”<sup>20</sup> However, careful extrapolation from contemporary French accounts of life-casting provides a reasonably accurate account of Palissy’s process; in particular, an anonymous tract by a sixteenth-century French metalsmith (written and distributed between 1570 and 1594) describes techniques for making life casts of the same kind of plants and animals that Palissy selected for his own work.<sup>21</sup>

18. Erik Forssman confirms the thematic and aesthetic connections between Renaissance life-casting and mannerism in “Renaissance, Manierismus und Nürnberger Goldschmiedekunst,” in *Säule und Ornament: Studien zum Problem des Manierismus in den nordischen Säulenbüchern und Vorlageblättern des 16. und 17. Jahrhunderts* (Stockholm: Almqvist and Wiksell, 1956), p. 13. Others have considered Palissy’s ceramics in the context of Italian mannerism, including artist and illustrator Leonard Baskin: Leonard Baskin, *Nature’s Mould* (Rockport, Me.: Gehenna Press, 1997). On mannerism more generally, see John K. G. Shearman’s classic text *Mannerism* (London: Penguin, 1967); Franklin W. Robinson and Stephen G. Nichols Jr., eds., *The Meaning of Mannerism* (Hanover, N.H.: University Press of New England, 1972).

19. Palissy’s secrecy, detailed in many of the biographies referenced above, was by no means unusual for his era—and indeed was quite a commonplace for Renaissance artisans, such as himself, working outside the guild system. See Long, *Openness* (above, n. 13); Eamon, *Science* (above, n. 13), pp. 234–267. George Huppert discusses early modern French guild formation and its implications for trade secrecy in *The Style of Paris: Renaissance Origins of the French Enlightenment* (Bloomington: Indiana University Press, 1999).

20. *DA*, pp. 285–312.

21. “How to Cast Little Lizards,” “How to Cast a Shrimp,” “Vipers and Serpents,” “How to Cast Turtles,” “Molding a Turtle,” and “Frogs,” *Manuscrits Occidentaux de la Bibliothèque Nationale de France*, MS. Fr. 640/Microfilm 1965, fols. 122, 123, 124, 140, 141r,v. In such an extrapolation, I follow the example of previous scholars, including a Palissy collector and conservator from the early nineteenth century: André Pottier, “Un texte historique et descriptif,” in *Monuments inédits pour servir à l’histoire des arts depuis le VI<sup>e</sup> siècle jusqu’au commencement du XVII<sup>e</sup>* (Paris: Willemin, 1839), pp. 67–71. Pottier refers to the tract as a “curieux et rare volume” (p. 69). Also see Amico, *Earthly Paradise* (above, n. 3), pp. 86–96; Baskin, *Nature’s Mould* (above, n. 18); Dumesnil, *Bernard Palissy* (above, n. 3), pp. 29–38.

Insects, frogs, snakes, crayfish, turtles, and small plants attracted Palissy's aesthetic and scientific eye in his rustic plates. In making the life casts, he first collected live animal (as well as vegetable and mineral) specimens from various areas around his home. Throughout his life in France—early on in the country's southwest, and later around Paris—he studied closely and imitated exactly those habitats and species that surrounded him. In addition to the ponds to be discussed at length in this paper, caves around Touraine held an especial fascination for him, and indeed, probably served as the models for his basins, grotto designs, and, eventually his rock-shaped kiln.

An experienced naturalist, Palissy always gravitated toward caves, ponds, and small lakes for natural inspiration because he believed them to be sites of generation, through the putrefaction of organic bodies followed by the congelation of various salts, waters, and minerals.<sup>22</sup> Such evocative generative environments inspired his theories of the earth, as well as providing animal, plant, and mineral models for incorporation into his constructions. Frogs especially, Palissy felt certain, clustered in locations where salts turned so-called congelative water to mud, to amphibious life, and back again through the processes of generation and putrefaction<sup>23</sup> (Fig. 4).

Palissy employed a variety of techniques to avoid leaving violent traces on animal bodies. As he was well aware, the creation of lifelike appearance in the cast product required that animal subjects be neither maimed nor killed in the field; a lost lizard leg or punctured

22. Congelation and putrefaction are both recurring themes in Palissy's writing. "Putrefaction" referred then, as now, to the decomposition of animal and vegetable substances, generally accompanied by a putrid smell and appearance; it has consistently tended to evoke danger and corruption. In the sixteenth century, "congelation" referred to the solidification of liquified substance through a variety of processes, the application of heat usually among them; see Schnapper, *Le géant* (above, n. 16), p. 18. According to Palissy, congelation was the seat of generation among the lower, and especially aquatic, animals. As he himself described life's relation to congelation: "le commencement et l'origine de toutes choses naturelles est eau" (Bernard Palissy, *Les Œuvres de Maître Bernard Palissy*, ed. Benjamin Fillon, 2 vols. [Niort, France: Clouzot, 1888], vol. 2, p. 49). And by way of explanation: "Congeler, se dit de toutes choses qui s'endurcissent apres la fonte: comme les eaux s'endurcissent au froit" (DA, p. 393).

23. Palissy distinguishes between "common" and "congelative" waters, drawing from medieval ideas inherited by Paracelsus among others. He refers to common water as "exhalative" or "evaporative." By contrast, "l'eau congélative" (also called "salsitive," "germinative," and "essencive") solidifies—and generally pools up in warmed marshes (Fragonard, "Introduction" [above, n. 9], p. xxxi). On the Paracelsian tradition, see Michael Giordano, "Reverse Transmutations: Bérrolde de Verville's Parody of Paracelsus in *Le Moyen de Parvenir*: An Alchemical Language of Skepticism in the French Baroque," *Renaissance Quarterly* 56 (2003): 88–137; William R. Newman, *Promethean Ambitions: Alchemy and the Quest to Perfect Nature* (Chicago: University of Chicago Press, 2004).

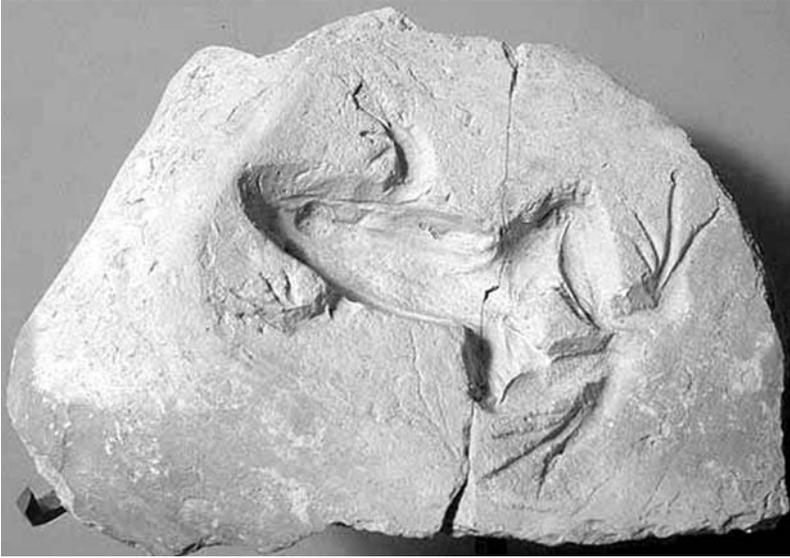


Figure 4. Imprint of a live frog into clay, by Palissy's workshop, for use as a mold in casting rustic basins. Note the resemblance to a "natural" fossil—that is, one found in nature. (Photograph by Pierre Philibert, reproduced by courtesy of the Musée du Louvre.)

snake head would render the specimen useless. Collection, therefore, like all stages of the ceramic process, required great skill and agility. Snakes were caught by gently grabbing the animal with hands wrapped in thick rags and protective netting. Lizards and frogs were snared with knotted strings, whereas sea creatures were netted, before being transported to the workshop.<sup>24</sup>

Both specimen-collection and life-casting incorporated the physical exertion of the caster as well as the casted—risking the body of the artisan, as well as that of the animal.<sup>25</sup> Collection often entailed great risk; notably, many of Palissy's preferred animal subjects—certain frogs and vipers in particular—were poisonous. The anonymous

24. Amico, *Earthly Paradise* (above, n. 3), p. 49.

25. Despite Palissy's claim to reject all of alchemist-physician Paracelsus's teachings, the Paracelsian idea of bodily fusion is evident throughout Palissy's descriptions of his own working process. See J. R. R. Christiem, "The Paracelsian Body," in *Paracelsus: The Man and His Reputation, His Ideas and Their Transformation*, ed. Öle Peter Grell (Leiden: Brill, 1998); Allen G. Debus, *The French Paracelsians: The Chemical Challenge to Medical and Scientific Tradition in Early Modern France* (Cambridge: Cambridge University Press, 1991), pp. 30–38. On Palissy's connections to alchemy, see Wallace Kirsop, "The Legend of Bernard Palissy," *Ambix* 9 (1961): 136–154; Newman, *Promethean Ambitions* (above, n. 23), pp. 145–163.

Renaissance metalsmith mentioned above considered the lethal viper “the most beautiful that could possibly be molded.”<sup>26</sup> Ultimately, then, threats to bodily integrity confronted both sides—the hunter and the hunted, the molder and the molded.

After all his hard work in the field, Palissy struggled to make his animal look alive once cast into clay. Renaissance life-casters generally stored their life models in bottles and casks containing various combinations of bran, peat, and damp earth. In these workshop menageries, as in nature, one animal’s life might be sacrificed at any point for the sake of another’s survival. The metalsmith notes that, in the workshop, frogs provided their bodies as nourishment to hungry snakes at the bequest of the life-caster.<sup>27</sup>

A perfectly orchestrated wresting of life from the captive animals ensured clay immortality in the mold. Ideally, after all, the life casts would be used for production and reproduction across decades.<sup>28</sup> The life-caster brought his specimen near to death by immersing it briefly in a jar of urine or vinegar just before casting it; he then coated the dying specimen with a greasy substance, before embedding it in flattened plaster and posing it so as to make it seem alert; as the goldsmith advised: “Imitate in so doing the manner in which it [the soft-bodied animal] usually twists itself.”<sup>29</sup> Once posed, the animal was covered with more plaster.

After the plaster set, the life-caster would make a clay impression from the plaster, thereby rendering the animal body as a mimetic three-dimensional representation. Thus was the natural life of the specimen channeled into the artifactual life of the mold. The finished casts were henceforth, in the most literal sense, earthen impressions—artifactual fossils—of animal and plant bodies.<sup>30</sup> As molds, they re-

26. Amico, *Earthly Paradise*, p. 87

27. *Ibid.*, p. 86.

28. Kris, “Der Stil ‘Rustique’” (above, n. 14), p. 151.

29. “How to Cast Little Lizards” (above, n. 21).

30. In the sixteenth century, “fossils” (*fossiles*) referred to any object dug out of the ground (coming from the Latin *fodere*, meaning “to dig up”). In this period, “figured stones” referred to the specific subset of fossils that resembled organic (animal and plant) bodies. Figured stones often beguiled insofar as they seemed to cross between ostensibly different realms of nature; thus they played a key role in the culture of resemblances and correspondences explored by Michel Foucault in *The Order of Things* (New York: Pantheon, 1971). (See also Claudia Lazzaro, “Animals as Cultural Signs: A Medici Menagerie in the Grotto at Castello,” in *Reframing the Renaissance: Visual Culture in Europe and Latin America, 1450–1650*, ed. Claire Farago [New Haven: Yale University Press, 1995], pp. 197–216.) In the remainder of this article, I use “fossil” in the modern sense—that is, to refer to mineral forms shaped by organic plant and animal bodies.



Figure 5. "L'eau." Glazed ceramic relief attributed to the workshop of Bernard Palissy or his immediate followers, portrayed on a carte-de-visite by Albert Morancé, *Bernard Palissy et les fabriques du XVIIe siècle* (Paris: Morancé, 1923), card 34.

mained uncolored (without glazing), thereby looking highly reminiscent of fossils collected in the field. Craft and nature fused willy-nilly in the man-made fossil.<sup>31</sup> Once fired in Palissy's kiln, these objects served as both record and mold. First impressions cast in clay facilitated the formation of naturalistic displays of ceramic habitats (Fig. 5).

### Pond Generations

With animal and plant molds in hand, Palissy composed his plate scenes. Sculpting the finished piece involved choosing and positioning the animal actors. Model frogs, snakes, and other animals were placed onto a rough-hewn basin, cast from the rock mold. Palissy employed needles, palette knives, and other tools to integrate the ceramic interstices of earth and animal, water and vegetable.<sup>32</sup> But what kind of synthesis was occurring here? What did Palissy's ceramic microcosm represent, the articulation of which motivated his labors decade after decade?

31. Paula Findlen, "Jokes of Nature and Jokes of Knowledge: The Playfulness of Scientific Discourse in Early Modern Europe," *Renaissance Quarterly* 43 (1990): 293–331.

32. Amico, *Earthly Paradise* (above, n. 3), p. 93.

Close examination of a representative artifact provides the beginning of an answer (see Fig. 2). This basin exemplifies Palissy's ceramic style, depicting a pond of some depth, in the middle of which is a simulated island. The whole vessel is approximately eighteen inches long, twelve inches wide, and five inches deep. As is standard in the naturalistic Palissy ware, a spotted, slate-gray viper writhes back and forth along the oval island protrusion. In this three-dimensional composition, the viper takes center stage; it is both the center of Palissy's work, and the main locus of danger within the pond habitat represented therein. An array of plants and animals surrounds the serpentine centerpiece. Cast frogs, fish, and crayfish scatter both in the pond water and on its rocky shores. A frog is oriented away from the viper's mouth, as if struggling to defy a possible death sentence. Meanwhile, two fish circulate around the pond's perimeter; swimming near the border between pond and shore, they seem to occupy a transitional zone between water and earth. The pond itself is figured as a donut or wheel; here, the fishes' unidirectional motion implies the cyclicity of the life of both organisms and habitats. The shores, figured around the lips of the basin, display an array of cast shells and barnacles. These animal remains represent mollusks' discarded calcified packaging;<sup>33</sup> like fossils, they are traces of life impressed in earth.

Here, as throughout Palissy's ceramic ware, the basin captures an organic scene in which violence and aggression provide the focus for a theater of life, death, and transformation. Over the course of decades, Palissy would stage this ceramic theater again and again. Indeed, perusal of his rustic oeuvre presents a startling consistency of subject matter. A coiled or writhing snake attacks a water hole, scaring away a cluster of animals and causing the fish to thrash about in circles.<sup>34</sup> Reptiles, amphibians, and fish gather in simulated bodies of water—all forever petrified in clay. Art historians have tended to explain away, or at least gloss over, the uncanny similarities among the plates: some assert that Palissy reproduced these pond ecosystems ad nauseam simply because the life-casting technique easily lent itself to this particular subject matter; others castigate the craftsman, thereby seeming to blame his ceramic iterations on a deficit of creative energy.<sup>35</sup>

33. Gaston Bachelard, "Shells," in idem, *The Poetics of Space* [1958], trans. Maria Jolas (Boston: Beacon Press, 1994), pp. 105–136.

34. Amico, *Earthly Paradise* (above, n. 3), p. 81.

35. Powers, *Nature in Design* (above, n. 14), p. 99. Historian of ceramic arts Arthur Lane dismisses Palissy's work as "uncouth" in *French Faience*, 2nd ed. (New York: Praeger, 1970), p. 4.

But such explanations paint only a partial picture of Palissy's craft of nature. He chose his subject matter neither for convenience's sake, nor for lack of intellectual acuity. Instead, his plate production may be best understood as a means for his exploration of the natural environments they represented: he chose to produce pond scenes because these environments exemplified his own theories of natural generation, which were, in turn, recapitulated in the plates themselves.

Practice made perfect when it comes to Palissy's production of natural knowledge. As he himself noted: "It is impossible to imitate anything in Nature whatsoever without first studying, and making, their effects by taking the natural object as both pattern and example."<sup>36</sup> Palissy might come to understand ponds through their recreation in clay. Terrestrial processes would be laid out as variations on an environmental theme.

In his ceramic work, Palissy chose to render in vivid detail exactly the natural objects and environments most central to his linked theories of generation and fossilization in nature. At several points in *Discours admirables*, he describes fossils as related to the generation of life. In one such discussion, he depicts the particular natures of stagnant ponds. In Palissy's account, putrefaction, generation, congelation, and petrification—the processes by which life is born, dies, and fuses its traces into rock—are the staples of pond activity. The danger of pond environments lies exactly in these transformative capabilities:

There are a great many kinds of ponds [*mares*]<sup>37</sup> both natural and artificial, several call them *claunes* [shallow pools covered with a clay or claylike residue]. In some places they are simply shallow crevices, dug in a slope, so that the rain water flows easily into crevice, rendering it either a trench or a pool. . . . These are all warmed by the air and the sun and by this means generate and produce many kinds of animals. And a great quantity of frogs, serpents, asps [*aspics*],<sup>38</sup> and vipers always gather around these claunes in order to feed on the frogs. There are often also leeches in them, so that if oxen and cows remain

36. "Il est impossible d'imiter nature en quelque chose que ce soit, que premierement l'on ne contemple les effects d'icelle, la prenant pour patron et exemplaire" (*DA*, p. 53).

37. The term *mare*, relatively common in the sixteenth century, refers to a freshwater pool or a pond, either natural or man-made. According to Olivier de Serres, "La mare est une large fosse, cavée en douce pente de tous costés, afin que le bestial puisse descendre aisément; elle est enfoncé au milieu, toutefois modérément, ou l'eau des sources s'assemble avec celle de la pluie" (Olivier de Serres, *Le théâtre d'agriculture et mesnage des champs* [Paris: Imprimeur Ordinaire du Roy, 1600], p. 784).

38. "Aspic" is a sixteenth-century term for a venomous viper (Littré, *Dictionnaire*).

some time within these pools they cannot avoid being bitten by the leeches. I have often seen serpents lying curled up at the bottom of these ponds.<sup>39</sup>

Palissy's description brings to mind the composition of his rustic plates: he evokes the very same curled vipers waiting to pounce on an array of small, medium, and large-sized frogs. Palissy's explanation for the production of life in these ponds is mimicked in the process through which he figuratively and literally brings his ceramics "to life."

Thus, it is no accident that Palissy's plates all look similar. Nor is it any accident that he depicts so many reptiles and amphibians. He was drawn to particular natural environments.<sup>40</sup> His attraction to these pond environments was by no means exceptional for his era: he worked within a context of Renaissance fascination with the aqueous and mineral worlds, and with frogs, salamanders, and snakes specifically.<sup>41</sup> Indeed, even prior to the spontaneous-generation debates that broke out in full force in the seventeenth century, sixteenth-century naturalists considered murky wetlands with fascination and disgust, sharing concerns about generation and putrefaction in such sites.<sup>42</sup> Two French authors, Pierre Belon (1517–1574) and Guillaume Rondelet (1507–1566)—indeed two of the very few authors whom Palissy is thought to have read over the course of his lifetime—considered pond reptiles at length. Both wrote on the generative origins of pond dwellers (see Fig. 6), including three of Palissy's favorite subjects for capture and casting: frogs, fish, and snakes.

In the illustrated volume *La nature et diversité des poissons*, first published in the vernacular in 1555, Pierre Belon discusses amphibian generation at length. (Notably, for Belon, amphibians included almost all animals that lived underwater, including fish.) One section of his text focuses on the mechanisms through which frogs both spawn and degenerate. According to Belon, frogs are usually generated through two related processes: putrefaction and egg-deposit. Annual generation and degeneration work alongside a regular spawning

39. *DA*, pp. 29–30.

40. Throughout the *Discours*, Palissy venerates "l'élément humide." This is commented upon in the introduction to his complete works: Fragonard, "Introduction" (above, n. 9), p. xl.

41. Schnapper, *Le géant* (above, n. 16), pp. 69–71.

42. "Spontaneous generation" here refers to the development of living organisms without the agency of preexisting living matter. In the sixteenth and seventeenth centuries, debates about spontaneous generation often centered around frogs, sea-snakes, and other water-dwellers: Henry Harris, *Things Come to Life* (Oxford: Oxford University Press, 2002). Robert Hooke associates pond creatures with spontaneous generation, referring to the "generation of Serpents, which is Spontaneous sometimes" (Robert Hooke, *Micrographia* [1665; reprint New York: Hafner, 1961], p. 141).

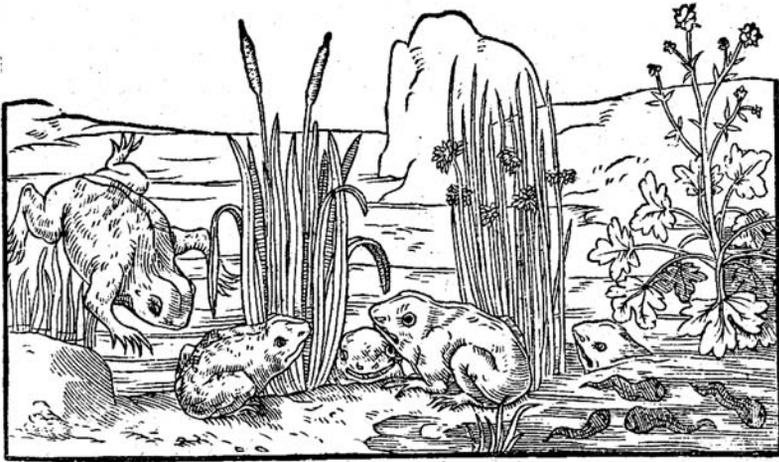


Figure 6. Rondelet's depiction of the environment and generative cycle of the pond frog, or *Rana fluviatilis*. From Guillaume Rondelet, "Des animaux palustres," in *L'histoire entière des poissons* (Lyons, 1558), p. 161. (Reproduced by permission of the Houghton Library, Harvard University.)

process; all the while, "their habitat and food source is all the many vermin that are engendered from excrement and from the corruptions of the dirty waters in which they dwell."<sup>43</sup> Frogs and their food sources merge and converge. In Belon's section titled "Grenouille," he writes: "At the end of six months, the frog fuses back into the silt [se resoudre en limon]. But when the spring comes, they fuse together, resolving again to form frogs . . . these frogs, nonetheless, also breed among each other; they spawn by laying eggs, thereby making little ones that begin as only a set of big eyes and a tiny head."<sup>44</sup>

Frogs were indeed a frequent topic.<sup>45</sup> Guillaume Rondelet's *L'histoire entière des poissons* appeared in French in 1558.<sup>46</sup> This massive

43. Pierre Belon, *La nature et diversité des poissons* (Paris: Estienne, 1555), p. 48.

44. *Ibid.*, p. 49.

45. Such creatures are discussed in recent work on medieval and Renaissance concepts of monstrosity. See, for example, Jean Céard, *La nature et les prodiges: L'insolite au XVI<sup>e</sup> siècle en France* (Geneva: Droz, 1977); Jurgis Baltrusaitis, *Réveils et prodiges: Le gothique fantastique* (Paris: Armand Colin, 1960).

46. Guillaume Rondelet, *L'histoire entière des poissons, composé premièrement en latin par maistre Guillaume Rondelet . . . Maintenant traduites en françois sans avoir rien omis estant nécessaire à l'intelligence d'icelle* (Lyons: Bonhomme, 1558). This volume was a translation of Rondelet's original Latin treatise on aquatic organisms, *Libri de piscibus marinis in quibus verae piscium effigies expressae sunt* (Lyons: Bonhomme, 1554–1555).

compendium covered many more underwater species than had ever yet been described; Palissy had almost certainly read the translated volume by the mid-1560s.<sup>47</sup> Rondelet devotes an entire volume of his work specifically to “Les animaux palustres,” defined as those organisms that live in stagnant marshes. Much like Belon, Rondelet too is nervous about how to classify frogs and warns against the ingestion of most amphibious animals.<sup>48</sup> He also expresses concerns about frog mating and cannibalism practices. Another author, the great Italian polymath Girolamo Cardano, drawing on his interpretations of Pliny and Vitruvius, considered frogs to be at the center of processes of spontaneous generation. In an essay on the subject, he wrote: “Frogs spring forth formed out of impure water and sometimes the rain; they are among a certain number of imperfect animals that are born, without seed, from corruption and putrefaction.”<sup>49</sup>

The surgeon Ambroise Paré, Palissy’s exact contemporary (they shared the dates 1510–1590), concentrates a long chapter of his classic *On Monsters and Marvels* on aquatic creatures: chapter 35 is called “On Marine Monsters.” Paré displays great interest in the peculiarities of water and semiamphibious creatures, drawing extensively on the writing of Rondelet as well as Pliny.<sup>50</sup> Marine oddities were also the subject of natural history curiosities in the bordering nations, and appear again and again in the works of Conrad Gessner.<sup>51</sup>

The presence of heat deepens the analogy between ceramic studio and freshwater pond. In both the field and the studio, intense heat activates forms of life. According to Palissy, in the pond environ-

47. Kemp, “Palissy’s Philosophical Pots” (above, n. 17), p. 76.

48. Rondelet, *L’histoire entière*, pp. 160–164. Rondelet distinguishes between aquatic and terrestrial snakes and frogs. Water-dwelling creatures also tend to be much more colorful than the land-dwelling varieties: “the water snake is different from land snakes because it becomes very long and is of very diverse colors—marked at various points by green, yellow, and white” (*ibid.*, p. 168).

49. “Les grenouilles naissent des eaux impures et parfois de la pluie: on crois toujours qu’un certain nombre d’animaux imparfaits naissent, sans semence, de la corruption” (Girolamo Cardano, “Des bestes nées de la putrefaction,” section 9 of the French translation of *De subtilitate*, included in *Les livres de Hierome Cardanv intitulés De la subtilité, & subtiles inuentions, ensemble les causes occultes, & raisons d’icelles, traduis de latin en françois, par Richard le Blanc* [Paris: Le Noir, 1556], p. 196). Palissy almost certainly read Cardano in French translation: see Fragonard, “Introduction” (above, n. 9), p. xxxiv.

50. Paré, like his contemporaries, was anxious about marshy creatures, referring to Rondelet’s claim that many fish are “by nature half way between plants and animals” (Ambroise Paré, *On Monsters and Marvels* [1575], trans. Janis L. Pallister [Chicago: University of Chicago Press, 1982], p. 108).

51. Baltrusaitis, *Réveils et prodiges* (above, n. 45), pp. 323–327.

ment, the sun produces animals: it breathes life into water and earth by activating the various congelative salts lodged within both. He notes that a cool pond will not “generate” until heated; when “it is cooler it can produce no animal, since there is never produced any generation, either animal or vegetable, without heated humor.”<sup>52</sup> In the absence of heat, there will be no life. By contrast, when aerated and heated, the pond springs to life. Aeration and heat are similarly responsible for animation in Palissy’s workshop: therein, the kiln literally “fires” the form into action; heat activates the glazes and solidifies the bodies. The basin lives as naturalistic pond only once it is fired into a solid, multicolored plate.

Palissy himself somewhat humorously materialized this analogy between kiln and organic process. During the establishment of his final workshop “Montpalissy” at Sedan, he specially commissioned the construction of a ceramic oven in the shape of an enormous craggy rock.<sup>53</sup> This stony oven alluded to the generative potential that Palissy perceived in the mineral world itself—especially around ponds, caves, and grottoes.<sup>54</sup>

Danger—risk to humans as well as animal health—marks the life cycle of both the natural and the ceramic pond. Palissy warns his readers that, due to intense processes of putrefaction, warm ponds (like fiery ovens) are hazardous: “In truth, such waters cannot be good, neither for men nor for beasts”<sup>55</sup>—for, he continues: “these waters, thus aerated and heated, cannot be good; and very often oxen, cows and others die from drinking in places so infected.”<sup>56</sup> Danger inhered not only in the water itself, but also in the animals it harbored. Indeed, in the sixteenth century, frogs and serpents in particular—two

52. “Mais d’autant qu’elle est plus froide, elle ne peut produire aucun animal, d’autant qu’il ne se fait jamais de generation, tant de choses animees, que des vegetatives, sans qu’il y ait une humeur eschauffee” (DA, p. 30).

53. An archival court document records Palissy’s purchase of a stove in the shape of a boulder: Document 25, dated July 9, 1575: “Bernard Palissy in Sedan: Contract for a Stove in the Shape of a Massive Rock.” Reproduced in Amico, *Earthy Paradise* (above, n. 3), pp. 234–235.

54. On the significance of grottoes and artificial caves for the expression of Renaissance natural philosophies, see Phillippe Morel, “La théatralisation de l’alchimie de la nature: Les grottes artificielles et la culture scientifique à Florence à la fin du XVIe siècle,” *Symboles de la Renaissance* 30 (1990): 155–181. I thank Pamela H. Smith for this reference.

55. “A la verité telles eaux ne peuvent estre bonnes ny pour les hommes ny pour les bestes” (DA, p. 29–30).

56. “Parquoy je dis que lesdites eaux ainsi aërees et eschauffees ne peuvent estre bonnes; et bien souvent il meurt des beufs, vaches et autre bestail, qui peuvent avoir prins leurs maladies és abreuvoirs ainsi infectez” (DA, p. 30).

fixtures of Palissy's compositions—were associated with mysterious illnesses.<sup>57</sup> According to Rondelet, water frogs, snakes, and salamanders tend to be very venomous, as well as eating their own kind.<sup>58</sup>

But in both nature and the workshop, danger went along with vast generative potential. In Palissy's account of his artisanal practices, it becomes apparent that the more the craftsman threw himself into dangerous physical, financial, and emotional straits, the more likely he was to generate great works. Only after such trials and tribulations, will metamorphosis—from formed clay to colorful petrified animal habitats—occur within the kiln. Indeed, in the *Discours*, Palissy presents the kiln as a treacherous habitat that is, at the same time, ripe with generative potential. In nature, heated stagnant water—"pernicious" to humans—facilitates generation.<sup>59</sup> Similarly, pottery kilns run their human masters ragged. In "On the Art of the Earth," Palissy describes weeks of full-body sweat as he slaved in his workshop's ovens. He recalls starving for weeks on end and burning the clothes off his own back, all to feed the hungry fire. Kilns full of pottery are also sites of unexpected risks. He describes an oven in which pieces of pottery are "bursting and setting up a volley between them, like a great many musket and canon shots."<sup>60</sup> Water, heat, danger, and natural forms fuse (and at times shatter) in Palissy's real and metaphorical kiln.

### Nature's Coloring Book

Like the generation of heat and commotion, the creation of color—in both the field and the workshop—was integral to Palissy's sense of knowing and making nature. This attention to color formation was not unusual among Renaissance artists, but it has rarely been examined in relation to ideas about scientific or natural knowledge.<sup>61</sup> In

57. Morley, *Palissy the Potter* (above, n. 3), p. 61.

58. Rondelet, *L'histoire entière* (above, n. 46), pp. 160–163.

59. *DA*, p. 30.

60. "Peter et faire une batterie entr'eux comme un grand nombre d'harquebusades et coups de canon" (*DA*, p. 279).

61. See Paul Hills, "Interpreting Renaissance Color," in *The Italian Renaissance in the Twentieth Century*, ed. Allen J. Greco, Michael Rocke, and Fiorella Gioffredi Superbi (Florence: Olschki, 1999), pp. 337–350. Hills explores the complex association between coloration and notions of nature, focusing on Italian Renaissance painters; patterns of coloration are seen as expressions of both temporal and spatial experience. See also John Gage, *Color and Meaning: Art, Science, and Symbolism* (New York: Thames and Hudson, 1999).

Palissy's case, ceramic coloration through the production and application of glazes and enamels may be understood in relation to—and as extrapolations from—his theories of natural color formation.

In *Discours admirables*, Palissy links color and life in his descriptions of both nature and the workshop. In nature, according to Palissy, the ability of an organism to generate its own colors bespeaks its dynamism. In particular, color transformations provide evidence of organismic growth and development. In one section of the *Discours*, "Practice" alerts his interlocutor, named "Theory," that in nature

You can see that none of these things [animals or plants] retains its original color: but rather in their growth they change color; and in one thing there come to be many colors.<sup>62</sup>

"Growth changes color" is a key concept that emerges repeatedly in Palissy's writings. In flowering plants, he asserts, "fruits change colors in their growth and maturity" (*DA*, p. 138). In the same text, he comments on the marvel of organic coloration:

Observe the seeds when they are thrown into the ground: they have but a single color: coming into growth and maturity they then take on various colors . . . even in a single flower. Similarly you will find snakes, caterpillars, butterflies, and other things which will be of many beautiful colors. . . . All of these things draw nourishment from the earth just as their color also comes from the earth.<sup>63</sup>

Later in the same essay he describes reptiles in nature gilded with "marvelous colors that no painter or embroiderer could imitate in their fine works."<sup>64</sup> If neither painter nor embroiderer, perhaps a glazier? In his pottery work, Palissy chose the latter occupation, struggling to endow clay with living color. In glazing the cast pond

62. "Et tout ainsi que tu vois que nulle de ces choses ne demeure en sa premiere couleur: Mais en la croissance d'iceux ils changent de couleur, et en une mesme chose y a plusieurs couleurs" (*DA*, p. 139).

63. "Regarde les semences quand l'on les jette en terre, elles n'ont qu'une seule couleur, et venant à leur croissance et maturité elles se forment plusieurs couleurs, les fleurs, les branches, les feuilles et les boutons, ce seront toutes couleurs diverses, et mesme en une seule fleur il y aura diverses couleurs. Semblablement tu trouveras des serpens, des chenilles, et papillons, qui seront de plusieurs belles couleurs. . . . toutes ces choses prennent nourriture en la terre, que leur couleur procede aussi de la terre" (*DA*, p. 137).

64. "Merveilleuses couleurs, voire par un labeur tel que nul peintre ny brodeur ne scauroit imiter leurs beaux ouvrages" (*DA*, p. 151).



Figure 7. Glazed cast of a frog, by Palissy's workshop. (Photograph by Pierre Philibert, reproduced by courtesy of the Musée du Louvre.)

plants and animals, he struggles to impart exactly these “marvelous colors” and lively (i.e., lifelike) adornment (Fig. 7).

Near the end of the *Discours*, Palissy notes similarities between color change in plants and rocks: “Just as fruits of all kinds change color as they ripen . . . similarly rocks and clays change color during their decoction.”<sup>65</sup> He hopes to imitate such transformations by harnessing the earth’s own techniques. To this end, he tries to decipher the causes of color transformation in nature. According to Palissy, color in both craft and nature comes from the earth. And yet in both cases, humans and other organisms can channel coloration for their own devices. Palissy expostulates on the ability of fishes and sea creatures to “craft” their own shell-houses: “I have often admired the colors of these shells and have yet to understand their cause.”<sup>66</sup> He exalts mollusks as natural craftsmen who channel water and earth deposits in order to paint rainbows on their calcified shells. As he

65. “Comme les fruits de toutes especes changent de couleur en leur maturité, semblablement les pierres, metaux et autres mineraux, mesme les terres argileuses changent de couleur en leur decoction” (*DA*, p. 381).

66. “J’ay plusieurs fois admiré les couleurs qui sont esdittes coquilles, et n’ay peu comprendre la cause d’icelles” (*DA*, p. 127).

notes in *Recepte véritable*, snails—like Palissy in the studio—fuse their bodily labors with their productions.<sup>67</sup>

Observation and physical experience are essential here. To know glazes, one must know nature, and vice versa. Hands-on experience with nature is crucial to the discovery of the secrets of glazes. As an example of this process, Palissy notes:

There are a great many materials that cause the colors of stones, and many of them are unknown to man; still, experience, which is the mistress of the arts, has shown me that iron, lead, silver, and antimony can yield no color except yellow.<sup>68</sup>

The glazier will be able to understand the color of stones when he has imitated them. Palissy relates color and form in nature to the specific colors and animals represented in his rustic ware. When a pot, painted with glazes, is kilned, single tones may be transformed into a whole rainbow of naturalistic hues, each with its own properties of generation and degeneration. As he recalls in “On the Art of the Earth”:

Some of my enamels turned out fine and well melted, others were poorly melted, others were burned; because they were made of various metals, they were fusible to various degrees: the green of the lizards was burned before the colors of the serpents had melted, and also the color of the serpents, crayfish, turtles, and crabs had melted before the white had attained any beauty.<sup>69</sup>

The oven’s heat generates color-shifts—for better or worse. Indeed, for Palissy, the heated plate thereby becomes a microcosm presenting animate color as well as terrestrial structures—in either perfected or degraded form.

Palissy used a variety of tools to heighten the illusionistic effects of color on clay. Through coloration, he returned his cast animals,

67. Notably, in *Recepte véritable* (1563) Palissy actually proposes that humans should try to build human domiciles based on the natural architecture of snail shells. See Kemp, “Palissy’s Philosophical Pots” (above, n. 17), p. 75.

68. “Il y a grand nombre de matieres qui causent les couleurs des pierres, et plusieurs d’icelles sont inconnues aux hommes: Toutesfois l’experience, qui de tout temps est maistresse des ars, m’a fait connoistre que le fer, le plomb, l’argent et l’antimoine, ne peuvent faire autres couleurs que jaune” (*DA*, p. 253).

69. “Mes esmaux se trouvoient les uns beaux et bien fonduz, autres mal fonduz, autres estoient brulez, à cause qu’ils estoient composez de diverses matieres qui estoient fusibles à divers degrez, le verd des lezards estoit bruslé premier que la couleur des serpens fut fondue, aussi la couleur des serpens, escrevices, tortues et cancrs, estoit fondu au paravant que le blanc eut reçu aucune beauté” (*DA*, p. 305).

plants, and rocks to a more naturalistic (or “true to life”) appearance. Through patterning with a palette knife and diverse glazing techniques, he created what one historian of ceramics has called “the illusion of being a shell-encrusted rock vivified by ocean waves . . . by the intermixing of differently colored glazes.”<sup>70</sup>

### Fossil Recordings

But, for Palissy, ponds were sites not only for the generation of technicolored life, but also for the memorialization (through putrefaction and petrification) of death.<sup>71</sup> According to the craftsman, just as pond water eventually turns into earth, pond animals will turn into fossilized remains. In *Discours admirables*, Palissy notes that pond habitats are prime spots for the collection of figured objects—shells and rocks—representing the plants and animals of yore, both extinct and extant species.<sup>72</sup> Palissy’s constant molding and firing of rustic plates in the kiln mimics the transmutation from water to earth to animal to rocky impression in the heated pond (see Fig. 4). Specifically, his plate production enacted an antidiluvian explanation for fossil formation in nature.

Historians of geology tend to include Palissy as a lesser figure in the early history of modern geology.<sup>73</sup> A host of nineteenth- and twentieth-century historians briefly cite the potter for his accurate belief in the organic origin of fossils—that is, that they are, in fact, figured stones bearing the impression of either extinct or extant life forms.<sup>74</sup> From the High Middle Ages onward, most European naturalists tended to see fossils as only incidental in their resemblance to life forms. By contrast, Palissy and some of his Renaissance peers saw fossils as petrified incarnations of living beings.<sup>75</sup> Figured stones,

70. Amico, *Earthly Paradise* (above, n. 3), p. 94.

71. Piero Camporesi, “Decay and Rebirth,” in idem, *The Incorruptible Flesh*, trans. Tanya Croft-Murray (Cambridge: Cambridge University Press, 1988), pp. 67–90.

72. The presence of figured stones that represented animals that no longer lived in the specific region was a cause of great concern in the period. (This was especially so since, according to biblical scripture, there could never have been a species that either appeared or disappeared at any point after the initial creation: Schnapper, *Le géant* [above, n. 16], pp. 19–20.)

73. Rudwick, *Meaning of Fossils* (above, n. 5), pp. 15–20.

74. Dupuy, *Bernard Palissy* (above, n. 3), p. 139.

75. Pierre Duhem, “Léonard De Vinci et les origines de la géologie,” in idem, *Études sur Léonard de Vinci: Second Série* (Paris: Librairie Scientifique A. Herman et Fils, 1909), pp. 281–342, on pp. 281–282. See also Jeannert, *Perpetual Motion* (above, n. 7), pp. 50–81.

Palissy came to believe, were always directly resulting from once-living beings.<sup>76</sup> As he ultimately concluded: “After examining all the formed stones, I have found none that could have taken the exact form of either shellfish or any other animals, without having been expressly cast into that shape by the impression of the once-living animal itself.”<sup>77</sup> Throughout his work, he attributes fossils to a casting process.

Palissy is also lauded for his rightful rejection of the diluvian theory of fossil formation. For centuries, inquisitive naturalists had wondered why they found fossils depicting marine creatures embedded deep within dry land far from water.<sup>78</sup> Many interpreted these findings as evidence for the Great Deluge described in the Old Testament. By this account, during the biblical flood, the ocean floor spilled over the coasts, its waters carrying a host of sea creatures including fish, mollusks, and crustaceans, to cover the whole earth. But, as the diluvian story continued, when the floodwaters dried up, the array of sea creatures was left stranded on dry land—for example, scattered throughout France. Unable to survive, the animals died, petrifying over the years to form figured rocks in their own image.<sup>79</sup> Palissy, by contrast, interpreted such fossil findings as evidence of the (correct) theory that modern-day land areas (such as, for example, Europe) had once been ancient lakes and oceans.

Historians here place Palissy within a community of Renaissance fossil theorizers; but they generally depict him as less discriminating

76. Discussing a so-called *corne de belier*, Palissy explains: “Des lors je cogneu que ladite Pierre avoit esté d’autre fois une coquille de poisson, duquel nous n’en voyons plus” (*Ceuvres de Maistre Bernard Palissy* [above, n. 22], vol 1, p. 49). Palissy also rejected the belief, common well into the eighteenth century, in the charmed origin of so-called *pierre d’aigle* (geodes). The eagle’s rock had been cited as a portent by the likes of Dioscorides as well as Renaissance natural historians such as Gessner. Palissy took a dissenting view, attributing the formation to the lapidification of tree fruits: *ibid.*, vol. 2, p. 174. See Schnapper, *Le géant* (above, n. 16), p. 26.

77. “Quand j’ay eu de bien pres regardé aux formes de pierres, j’ay trouvé que nulle d’iscelles ne peut prendre forme de coquille, ny d’autre animal, si l’animal mesme n’a basti sa forme” (*Ceuvres de Maistre Bernard Palissy* [above, n. 22], vol. 2, p. 166).

78. Cecil Schneer, “The Rise of Historical Geology in the Seventeenth Century,” *Isis* 45 (1954): 256–268.

79. On premodern theories of stone generation, see Henry Faul, *It Began with a Stone: A History of Geology from the Stone Age to Plate Tectonics* (New York: Wiley, 1983), pp. 23–33. Also see Adams, *Birth and Development* (above, n. 5), pp. 77–137; Schnapper, *Le géant* (above, n. 16), pp. 16–17.

than his better-educated, nonartisanal contemporaries.<sup>80</sup> Indeed, treatises by Palissy's contemporaries—the German Agricola (1546), the Swiss Gessner (1565), and the Italian Cardano (1550)—constitute what many have called the birth of modern geology and earth science.<sup>81</sup> Each of these authors, working from Pliny and other ancient authors, developed explanations and categorization schemes for fossils. Classifications were often based on principles of resemblance. The German physician and mineralogist Georgius Agricola published the first widely recognized classification of what he called “Inanimate Subterranean Bodies” in 1546.<sup>82</sup> Gessner drew from Cardano's compendium of the universe, *De subtilitate*, to develop a classification based on Aristotelian elements—geometrical figures, heavenly bodies, terrestrial bodies, and crafted objects.<sup>83</sup>

Within this matrix of ideas, Palissy interpreted fossils by combining his own observations and activities as both naturalist and ceramicist.<sup>84</sup> Rather than distinguishing between fossils that resemble nature and those that resemble man-made tools (as Gessner had

80. Earth scientists themselves, by marked contrast, have often drawn inspiration from Palissy's geological theories. In addition to Georges Cuvier, eighteenth-century naturalists including Buffon, Fontanelle, Réaumur, and Voltaire credited, and sometimes disputed, Palissy's work on fossils; see Paolo Rossi, *The Dark Abyss of Time: The History of the Earth and the History of Nations from Hooke to Vico*, trans. Lydia G. Cochrane (Chicago: University of Chicago Press, 1984), pp. 93–94. In an article written for the Académie Royale des Sciences, Réaumur argued that Palissy was the first to realize that the specific layering of fossils in the earth outside of Paris was caused by a prehistoric sea, rather than by a biblical flood; further, Buffon praises Palissy extensively in “Prévues de la théorie de la terre” (Amico, *Earthly Paradise* [above, n. 3], pp. 188–190).

81. Agricola published a book of engravings of tide pools and marshes in 1556: Fragonard, “Introduction” (above, n. 9), p. xxxvi.

82. Agricola laid out a classification in his treatise *De ortu et causis subterraneorum*. His categories in *De natura fossilium* were clearly defined, honing in on size, color, and consistency, as well as source and mode of preservation. He believed that, in general, fluids circulating in the earth would enact processes of petrification, leading to the formation of both minerals and fossils: see Adams, *Birth and Development* (above, n. 5), p. 93.

83. Konrad Gessner, *De rerum fossilium lapidum et gemmarum* (1565). Gessner classified “fossil objects” (including geological as well as human artifacts) into fifteen groups based on what he saw as varying degrees of simplicity or complexity. His classification would be reproduced and revised on many occasions over the centuries. See Hugh Torrens, “Early Collecting in the Field of Geology,” in Impey and Macgregor, *Origins of Museums* (above, n. 17), p. 205.

84. In this sense, Palissy's fossils blended “naturalia” with “artifactia”; see Daston and Park, *Wonders* (above, n. 7), pp. 255–303.

done), he actually used human craft to elucidate natural process.<sup>85</sup> As he wrote in *Discours admirables*, he understood fossil formation to result from the interaction of several natural processes and generative substances.<sup>86</sup> “Generative salt” and “congelative water” fused into matter through petrification and putrefaction.<sup>87</sup> Above all else, however, Palissy exalts salt as “the generative and preservative glue and putty of all [fossil-like] things.”<sup>88</sup> Further, in his opinion, salt is “an unknown and invisible body, like a spirit and yet occupying space and sustaining that in which it is enclosed.”<sup>89</sup> In the case of fossil formation, for example, salt would trigger the conversion from animate to inanimate matter—a transformation from life to rock. However, such transformations would always require the application of heat or humidity: if salt “never felt humidity, many things in which it exists would last forever . . . for generation can never take place without a humor warmed by putrefaction.”<sup>90</sup>

Petrification and putrefaction are complementary processes that (in addition to Paracelsian salts) explain why fruit, vegetable, man, beast, or fish might—under various circumstances—either rot, turn to rock, or rise fully formed out of a scummy pond.<sup>91</sup> As anecdotal evidence, Palissy gives examples throughout his book of petrified and preserved body parts, both animal and human. In one section,

85. Rudwick, *Meaning of Fossils* (above, n. 5), p. 26. Naturalists provided a host of explanations for figured stones—natural, preternatural, “jokes,” astrological: see Findlen, “Jokes of Nature” (above, n. 31). One early explanation was that “fossils” were unfinished attempts that God had made at creating living organisms, aborted attempts to create living things. A variant on this idea was the medieval explanation that fossils were in fact incomplete animals, in which spontaneous generation had not fully succeeded: Lynn Thorndike, *A History of Magic and Experimental Science*, vol. 4 (New York: Macmillan, 1923–58), p. 291.

86. Amico, *Earthly Paradise* (above, n. 3), p. 44.

87. Camporesi, *Incorruptible Flesh* (above, n. 71), pp. 67–90.

88. “Le sel est la tenue et mastiq generatif et conservatif, de toutes choses” (Bernard Palissy, *Discours Admirables* [Paris: Le Jeune, 1580], p. 178).

89. “C’est un corps inconnu et invisible, comme un esprit, et toutesfois tenant lieu, et soutenant la chose en laquelle il est enclos” (*DA*, p. 199).

90. “Si jamais il ne sentoit d’humidité, plusieurs choses, où il est enclos, seroyent perpetuelles . . . s’il ne recevoit aucune humidité, il ne s’engendreroit jamais de vers dens ledit bois. Car jamais ne se peut faire de generation sans qu’il y ait une humeur eschauffée par putrefaction” (*ibid.*).

91. The idea that petrification was responsible for fossil formation continued for centuries. See Torrens, “Early Collecting” (above, n. 83), pp. 208–210; H. K. Butler, “The Study of Fossils in the Last Half of the Seventeenth Century” (Ph.D. diss., University of Oklahoma, 1968).

he discusses mummification practices and embalming salts.<sup>92</sup> In these practices, as in fossil formation, “metallic waters” and “generative waters” activate the replacement of animate by metallic materials. Thus, he concludes, can all things be “reduced to stone without losing their form.”<sup>93</sup>

Such theories are written all over Palissy’s plates. Every plate depicts a rough-hewn pond in which water, mud, plant, and animal have been fused into a congealed aqueous community, just as he describes fossilized shellfish, fish, and amphibians found in the earth’s crust: “I maintain that shellfish . . . are born on the very spot, while the rocks were but water and mud, which since have been petrified together with these fishes.”<sup>94</sup> Later on, he reiterates:

I have explained to you above that these fishes were generated in the very place where they have changed their nature, keeping the form that they had when they were alive.<sup>95</sup>

This sense of drying up into fossil formation evokes the environment of Palissy’s own studio. His descriptions of fossil formation via steamy ancient lakes might almost as well describe the pots produced in his workshop. He himself confirms the correlation between ceramic practice and terrestrial process when he notes:

Just as all kinds of metals and other fusible materials adopt the form of applied hollows and moulds . . . so the materials of all kinds of rocks in nature adopt the shape of the thing around which the rock has congealed.<sup>96</sup>

Indeed, Palissy re-created his field sites in the rustic pond-ware, compressing nature and time.<sup>97</sup> On the one hand, he represents water

92. *DA*, pp. 189–190.

93. “Se peuvent reduire en pierre . . . sans perdre leur forme” (*DA*, p. 354).

94. “Je maintiens que les poissons armez . . . ont esté engendrez sur le lieu mesme, pendant que les rochers n’estoyent que de l’eau et de la vase, lesquels despuis ont esté petrifiez avec lesdites poissons” (*DA*, pp. 239–240). Palissy claimed that fossils resembling marine organisms found inland were born where they were found, in ancient lakes or ponds that had since congealed, along with their contents, into dry land: *DA*, pp. 239–240.

95. “Je t’ay cy dessus donné à entendre que lesdits poissons ont esté engendrez au lieu mesme où ils ont changé de nature, tenans la mesme forme qu’ils avoyent estans vivans” (*DA*, pp. 244–245).

96. *Ibid.*, p. 361.

97. Michel Jeannert points out a similar relationship between geological theory formation and artistic production in his analysis of Leonardo da Vinci’s fossil sketchings: Jeannert, “Earth Changes: Leonardo Da Vinci,” in *Perpetual Motion* (above, n. 7),

and live animals (the living pond environment). On the other hand, by rendering them all in clay, he also presents their eventual transmutation via death, putrefaction, and petrification into a fossilized monument of themselves.<sup>98</sup>

### Working the Material

Understanding Palissy's œuvre as experiential interplay between various materials is all the more plausible because he recorded his ideas in dialogue form. Palissy repeated a lecture series on natural history from 1576 to 1584.<sup>99</sup> In 1580, he published the *Discours*, wherein he compiled a series of short dialogues—all inspired by his lectures, and staged as imaginary conversations between "Theory" and "Practice." Not surprisingly, "Practice" always triumphs in these conversations. "Theory," consistently failing to engage with experience, is deprived of understanding.<sup>100</sup>

Palissy relied on the dialogue form, popular in the period, to harness his experiences as both performer and educator.<sup>101</sup> His goal as author was to crystallize the "experience" of knowledge that he performed in the lecture hall. In the dialogue form, text could preserve both speech itself and the experience of spoken words contained

pp. 50–81. He argues that da Vinci's creative process—sketching rock outcroppings and cataclysmic rains—played a crucial role in the development of his complex geological theories. The connection between da Vinci's artistic and intellectual development is also discussed, though to a lesser extent, in Pierre Duhem, "Léonard de Vinci, Cardan et Bernard Palissy," *Bulletin Italien* 6:4 (1906): 289–320; Alexander Perrig, "Leonardo: Die Anatomie der Erde," *Jahrbuch der Hamburger Kunstsammlungen* 25 (1980): 51–80.

98. Gaston Bachelard makes a similar point about Palissy's use of calcified seashells as metaphor and material for the generation of natural knowledge and utopian architecture: Bachelard, *Poetics of Space* (above, n. 33), pp. 127–132. In a provocative recent article, W. J. T. Mitchell considers epistemic and cultural connections between nature-made fossils and man-made totems in the eighteenth century: W. J. T. Mitchell, "Romanticism and the Life of Things: Fossils, Totems, and Images," *Critical Inquiry* 28 (2001): 167–184, esp. pp. 174–180.

99. Among Palissy's regular listeners was the so-called Alençon group of alchemical physicians: Fragonard, "Introduction" (above, n. 9), p. xv.

100. Alfonso Ingegno, "The New Philosophy of Nature," in *Cambridge History of Renaissance Philosophy*, ed. C. B. Schmitt (Cambridge: Cambridge University Press, 1991), pp. 236–264; Lorraine Daston, "The Nature of Nature in Early Modern Europe," *Configurations* 6 (1998): 149–172, on pp. 154–158.

101. Although the dialogue is itself a very ancient form, Palissy is anything but a throwback to the ancients. Instead, this is part and parcel of a Renaissance push to the interactive and the realm of drama. See Peter Dear, *Revolutionizing the Sciences* (Princeton: Princeton University Press, 2001), pp. 30–49; Blair, *Theater of Nature* (above, n. 7), pp. 49–65, 153–166.

therein.<sup>102</sup> Palissy's philosophies of nature thus develop as a forceful engagement between two voices, evoking the dramatic realm of orality and aurality rather than textuality.

But Palissy's dialogic format and rhetorical strategy represent only the first of many ways in which he lauds the supremacy of material practice and experience, over book learning, as regards natural knowledge. In a number of passages, he praises the power of human experience—as either maker or museum visitor—in relation to three-dimensional objects. (I here address the critical role that he assigns the maker's experience; in the next section, I develop Palissy's model for the experience of the gallery visitor.)

Palissy, body and soul, participated in the production of his plateware. Indeed, he devotes a substantial chapter in *Discours admirables* to a narrative account of his long labors with (and against) the kiln, sixteen years spent struggling with “the art of the earth.” Descriptions of unreasonable expense, obsessive activity, and bodily risk mark his account of an endless cycle of “trial and errors”:

I crushed in those days all sorts of things, that I thought could be used, and after having pounded and crushed them, I would buy a number of earthen pots, and after breaking them to pieces, I would put the things I had crushed on them. . . . At one time my work had been heated too much, at others too little, and when these materials were too little baked or burned, I could not find out why I was making nothing good. . . . But after making many mistakes, with much expense and effort, I would pound and crush new materials and build new kilns, at great cost in money and loss of wood and time . . . with sadness and sighing.<sup>103</sup>

102. Eva Kushner, “Le dialogue de 1580–1630: Articulations et fonctions,” in *L'automne de la Renaissance, 1580–1630*, ed. Jean Lafond and André Stegmann (Paris: Vrin, 1981), pp. 149–160, on pp. 149–151. Céard has analyzed Palissy's employment of the dialogue form in terms of the larger literary culture of the Renaissance; these essays include Jean Céard, “Relire Bernard Palissy,” *Revue de l'Art* 78 (1987): 77–84; idem, “Formes discursives,” in *Précis de littérature français du XVI<sup>e</sup> siècle: La renaissance*, ed. Robert Aulotte (Paris: Presses Universitaires de France, 1991), pp. 155–193. Over a century ago, Ernest Dupuy alluded to a possible interpretation of Palissy's texts along these lines: Dupuy, *Bernard Palissy* (above, n. 3), pp. 212–217. See also James Bono, *The Word of God and the Languages of Man: Interpreting Nature in Early Modern Science and Medicine*, vol. 1, *Ficino to Descartes* (Madison: University of Wisconsin Press, 1995).

103. “Je pilois en ces jours là de toutes les matieres que je pouvois penser qui pourroyent faire quelque chose, et les ayant pilées et broyées j'achetois une quantité de pots de terre, et apres les avoir mis en pieces je mettois des matieres, que j'avois broyées, dessus icelles. . . . Aucune fois la chose avoit trop chauffé & autre fois trop peu cuittes ou bruleés, je ne pouvois rien juger de la cause pourquoy je ne faisais rien de bon. . . .



Figure 8. Alexandre-Évariste Fragonard, "Bernard Palissy Burning His Home's Tables and Floorboards," 1829. Oil on canvas. Stenciled at the bottom of the canvas is "Je fus contraint brusler les tables et plancher de la Maison." (Photograph by the author, from the original, Sèvres, Archives de la Manufacture Nationale [Fpl 1829 n. 5].)

In this passage, among others, Palissy describes himself as something of a fanatical experimentalist. Repeated "pound[ing] . . . crush[ing] . . . sadness and sighing" are part and parcel of both "making" and "building." Knowledge, in Palissy's terms, is a result of ignorance played out in a three-dimensional world of rocks, clays, fires, and human efforts.

In "On the Art of the Earth," Palissy describes years and years of "incredible labor . . . sorrow and labors such as no man would believe."<sup>104</sup> Creation requires the loss of almost everything materially possessed. In his words again:

Or m'estant ainsi abuzé plusieurs fois avec grand frais et labeurs, j'étois tous les jours à piler et broyer nouvelles matieres et construire nouveaux fourneaux, avec grande despence d'argent et consommation de bois et de temps . . . avec tristesse & soupirs" (DA, pp. 294–295).

104. "Je receus des tristesses et labeurs tels que nul homme ne voudroit croire" (DA, p. 298).

I was like a desperate man. . . . I had to do double work, pound, crush, and fire up the kiln. . . . I was forced to burn up all the props that held up the plants in my garden [and then] I was forced to burn the tables and the floor of my house.<sup>105</sup>

A striking nineteenth-century oil painting by Alexandre-Évariste Fragonard represents the above scene, and thereby thematizes Palissy's dangerously intense obsession (and near self-destruction) in the service of craft manufacture (Fig. 8).<sup>106</sup>

Palissy's characterization of his own work habits also recalls the Paracelsian idea of bodily fusion of the flesh of the creator with the material of his creation. Paracelsus, the sixteenth-century physician who exalted artisanal handiwork, claimed that knowledge inhered in objects themselves.<sup>107</sup> He contended that physicians could learn the art of their science—or perhaps better to say, the science of their art—only by uniting their bodies and senses with Nature, wherein were lodged the so-called *scientia* that constituted true knowledge.<sup>108</sup> Paracelsus described this process in terms of having *experientia*—in other words, having experiences.<sup>109</sup> Finally, then, for Paracelsus, natural knowledge could be attained through a union of divine power, the body of the subject, and the matter of nature itself.<sup>110</sup>

Palissy's narrative, as told through "Practice," exemplifies self-identification with the labors of ceramic production:

I was in such anguish as I could not describe: for I was quite dried out because of the work and the heat of the kiln; for more than a month my shirt had not

105. "[J]'estois comme un homme desespéré . . . j'avois double peine, piler, broyer et chauffer ledit fourneau. . . . je fus contraint brusler les estapes qui soustenoyent les trailles de mon jardin, lesquelles estant bruslées je fus contraint brusler les tables et plancher de la maison" (*DA*, pp. 298–299).

106. For nineteenth- and twentieth-century romantics, Palissy epitomized the ideal artist (and/or scientist and/or spiritualist) painfully obsessed with his own craft. Honoré de Balzac modeled the protagonist of the 1834 novel *The Quest of the Absolute (La recherche de l'absolu)* on Palissy. In the same period, visual artists and playwrights exalted his memorable labor in the name of science and ceramics: see n. 114 below.

107. Smith, *Body of the Artisan* (above, n. 7), p. 155; Debus, *French Paracelsians* (above, n. 25), p. 32.

108. Dear, *Revolutionizing the Sciences* (above, n. 101), p. 51.

109. Walter Pagel, *Paracelsus: An Introduction to Philosophical Medicine in the Era of the Renaissance*, 2nd ed. (Basel: Karger, 1982), pp. 50–51.

110. Pamela H. Smith, "Giving Voice to Hands: The Articulation of Material Literacy in the Sixteenth Century," in *Popular Literacy: Studies in Cultural Practices and Poetics*, ed. John Trimbur (Pittsburgh: University of Pittsburgh Press, 2001), pp. 74–93.

dried on me, and moreover, to console me I was jeered at . . . I was made to lose my credit and I was thought to be crazy.<sup>111</sup>

Palissy thus dries out, like his pottery, as his clothes absorb the moisture, like the kiln. Several pages later, he continues:

All these mistakes have caused me such labor and mental anguish that before I had made my enamels fusible at the same degree of fire, I thought I would be at death's door; . . . my body was so wasted away that my arms and legs had no form or trace of muscles [*bosse*],<sup>112</sup> but on the contrary my legs were like sticks [*toutes d'une venue*].<sup>113</sup>

As his text indicates, Palissy's work involved not only practical work per se, but specifically an extremely arduous and consuming labor in the service of discovery.<sup>114</sup> He fuses his own bodily and spiritual life with the materials with which he works. In his account, corporeal pains and sacrifices are part and parcel of the acquisition of skill and knowledge. The erosion of the physical body must occur in the service of everlasting representation of life in—as well as on—earth.

### Hands-On Knowledge

In addition to exalting his own creative labors, Palissy also encouraged both his texts' readers and his lectures' audience to develop

111. "J'estois en une telle angoisse que je ne sçavois dire: car j'estois tout tari et deseché à cause du labour et de la chaleur du fourneau, il y avoit plus d'un mois que ma chemise n'avoit seché sur moy, encores pour me consoler on se moquoit de moi . . . par tel moyen l'on me faisoit perdre mon credit, et m'estimoit on estre fol" (*DA*, pp. 299–300).

112. "Bosse" has the sense of a bumpy protuberance or exterior convexity; in the sixteenth and seventeenth centuries it referred generally to anatomical, mineral, and sculptural formations (Littré, *Dictionnaire* [above, n. 37], p. 377).

113. "Toutes ces fautes m'ont causé un tel labour et tristesse d'esprit, qu'au paravant que j'aye eu rendu mes esmaux fusibles à un mesme degré de feu, j'ay cuidé entrer jusques à la porte du sepulchre; aussi en me travaillant à tels affaires je me suis trouvé l'espace de plus de dix ans si fort escoulé en ma personne qu'il n'y avoit aucune forme ny apparence de bosse aux bras ny aux jambes; ains estoient mesdites jambes toutes d'une venue" (*DA*, p. 305).

114. These themes have also inspired several dramatic works devoted to Palissy's life and legendary working practices, including Louis Allard, *Bernard Palissy, ou Le potier de saintes; pièce historique en 5 actes. Précédée d'un prologue en deux parties* (Paris: Vanier, 1865); Alejandro Tapia y Rivera, *Bernardo de Palissy, o El heroismo del trabajo; biodrama original en dos partes y cuatro actos* (San Juan, P.R.: Imprenta Venezuela, 1844); Antoine Scudder, *The Henchman of the Moon: A Poetic Drama in Five Acts* (Chicago: Bookfellows, 1934).

knowledge through sensory experience with three-dimensional objects. Significantly, he ends the *Discours admirables* with a transcript of the label text for the small “teaching exhibit” he established near his workshop in Paris, which he had insisted his audience visit after each of his Paris lectures.<sup>115</sup> Unlike the famous *wunderkammern* and *cabinets de curiosités* established during the Renaissance largely to celebrate the strange and multifarious wonders of nature, Palissy’s museum had a foundation in a specific theory, a narrative about generation.<sup>116</sup> Experience as a museum visitor would serve as an education in specific natural processes. Understanding objects—either collected materials or produced rustic-ware—developed the knowledge of nature in a Baconian sense.<sup>117</sup> Thus did Palissy advise his readers:

I have set up a cabinet in which I have placed many admirable and monstrous things which I have drawn from the bowels of the earth, and which give reliable evidence of what I say, and no one will be found who will not admit them to be true, after he has seen the things which I have prepared in my cabinet, in order to convince all those who do not believe my writings [or do not wish to otherwise have faith in my writings].<sup>118</sup>

It was not unusual for a Renaissance collection to include fossil objects; many contained “petrifications,” from sharks’ teeth to gallstones.<sup>119</sup> But Palissy’s was one of the first documented collections of

115. Martin Kemp, *Visualizations: The Nature Book of Art and Science* (Berkeley: University of California Press, 2001), p. 19.

116. Paula Findlen, “Inventing Nature: Commerce, Nature, and Art in Early Modern Cabinets of Curiosities,” in *Merchants and Marvels: Commerce, Science, and Art in Early Modern Europe*, ed. Pamela H. Smith and Paula Findlen (New York: Routledge, 2002), pp. 297–324. See also Martin Kemp, “Wrought by No Artist’s Hand: The Natural, the Artificial, the Exotic, and the Scientific in the Renaissance,” in Farago, *Reframing the Renaissance* (above, n. 30), pp. 177–196.

117. Antonio Pérez-Ramos, *Francis Bacon’s Idea of Science and the Maker’s Knowledge Tradition* (Oxford: Clarendon Press, 1988), pp. 3–31; Thomas Clifford Allbutt, “Palissy, Bacon and the Revival of Natural Science,” *Proceedings of the British Academy* (1913–14): 234–247.

118. “J’ay dressé un cabinet auquel j’ay mis plusieurs choses admirables et monstrueuses, que j’ay tirees de la matrice de la terre, lesquelles rendent tesmoignage certain de ce que je dis, et ne se trouvera homme qui ne soit contraint confesser iceux veritables, apres qu’il aura veu les choses que j’ay preparees en mon cabinet, pour rendre certains tous ceux qui ne voudroyent autrement adjoûter foy à mes escrits” (*DA*, p. 12).

119. The seventeenth century produced a host of catalogues describing petrified things, including various people, animals, and household objects mysteriously turned to rock—or rather, “changés en Pierre” (Schnapper, *Le géant*, pp. 18–19).

fossils specifically.<sup>120</sup> (Fossil objects were generally mixed in with a huge host of other items until well into the eighteenth century, when concerns about fossil formation came to a head.)<sup>121</sup> Further, his description of a teaching museum predates, presages, and may even have directly influenced Francis Bacon's similar depiction of the galleries of Solomon's House in *New Atlantis* (1626);<sup>122</sup> in fact, Bacon seems to have visited Palissy's workshop in Paris, and probably attended several of his lectures.<sup>123</sup>

Palissy's teaching exhibit consisted not only of found objects but also of made objects. To highlight the processual component of the natural formations, he placed by their side products of his own bodily and mental exertions. Next to petrified rocks, he seems to have placed pieces of his own pottery. Palissy himself alludes to such purposeful comparison of nature and artifact placing found basalt rock and broken ceramic shards side by side. For example, guiding visitors past a cracked vase of his own making, he explains its breakage in the kiln in terms of geological formation (and deformation) in nature: "I have put this rock before your eyes to make

120. Another, and only slightly earlier, documented sixteenth-century fossil collection was that of German physician Johann Kenntman (1518–1574), whose inventory appears to have included more than 1,600 specimens. In his 1565 treatise *Nomenclaturae rerum fossilium*, Kenntman included a woodcut illustration of his mineral cabinet: Torrens, "Early Collecting" (above, n. 83), p. 206. See also K. P. Oakley, "Folklore of Fossils," *Antiquity* 39 (1965): 9–16, 117–125.

121. Scheicher, "Collection" (above, n. 17), p. 35. On early modern collections, see Susan Pearce and Kenneth Arnold, eds., *The Collector's Voice: Critical Readings in the History of Collecting—Early Voices*, vol. 2 (Hampshire: Ashgate, 2000). See also Andreas Grote, ed., *Macrocosmos in Microcosmo—Die Welt in der Stube: Zur Geschichte des Sammelns 1450 bis 1800* (Opladen: Leske und Budrich, 1994); Krzysztof Pomian, *Collectors and Curiosities: Paris and Venice 1500–1800*, trans. Elizabeth Wiles-Portier (Cambridge: Polity Press, 1990); William B. Ashworth, "Emblematic Natural History," in *The Cultures of Collecting*, ed. John Elsner and Roger Cardinal (London: Reaktion Books, 1994), pp. 17–38; Paula Findlen, "Courting Nature," *ibid.*, pp. 57–75. By the late seventeenth century, natural historians remained very puzzled about fossils—were they rocks "sui generis," "lusus naturae," or did they take their appearance from animals and plants from which they are derived? As the scholar Edward Lhuuyd wrote to Ray in 1690, to answer such questions, "nothing would conduce more than a very copious collection of shells, of the skeletons of fish, of coral, pori, etc., and of those supposed petrifications" (Schnapper, *Le géant* [above, n. 16], p. 21).

122. Francis Bacon, "The New Atlantis," in *A Critical Edition of the Major Works*, ed. Brian Vickers (Oxford: Oxford University Press, 1996), pp. 457–489, on p. 487.

123. Benjamin Farrington, *Francis Bacon: Philosopher of Industrial Science* (New York: Octagon, 1979), p. 14. See also Dear, *Revolutionizing the Sciences* (above, n. 101), p. 63.

you understand that all that I have said about earthquakes is true."<sup>124</sup> And then, by way of explanation of the neighboring shelf, "Just as I have told you that metals are unseen in waters, so they are in the ground, before their congelation: and for these reasons, I have put before your eyes this large piece of pottery which was made in the form of a large vase. Alas, when it was touched by fire it liquified and collapsed and entirely lost its form." Thus does he continue in the treatise that, if and when any listener or reader is doubtful, "I shall make him a model whereby he will be able to understand easily."<sup>125</sup>

The "Copy of the Labels" provides an "exhibit guide" to Palissy's museum. These labels are, in his words, "placed below the wonderful things that the author of this book has prepared and put in order in his gallery, in order to prove all the things contained in this book."<sup>126</sup> The text is full of encouraging words, prompts to experience the exhibit to its fullest potential. Palissy peppers this essay with imperatives: he impels individuals to see! touch! listen! and smell! He implores: "look . . . look . . . look at the slates! . . . Don't you see?"<sup>127</sup> And then: "I have put this rock before your eyes."<sup>128</sup> Each time, it is important that viewers recognize not only the object in front of them, but also the geological or artisanal processes that its current existence presupposes. Thus, in the same section, he implores:

Consider this great number of shellfish I have put before your eyes, which are now all reduced to stone . . . and look at all these kinds of fishes I have put before your eyes. . . . They were once alive.<sup>129</sup>

124. *DA*, p. 369.

125. *DA*, p. 370. "Je luy feray un modelle, par lequel il pourra facilement entendre ce que dessus" (*DA*, p. 18).

126. "Coppie des Escrits, qui sont mis au desouz des choses merueilleuses, que l'auteur de ce livre a préparé, et mis par ordre en son cabinet, pour prouver toutes les choses contenues en ce livre" (*DA*, p. 361).

127. *DA*, pp. 365–367.

128. "J'ay mis ceste pierre devant tes yeux pour te faire entendre" (*DA*, p. 369).

129. "Considere ce grand nombre de poissons armez de coquilles, lesquelles j'ay mis devant tes yeux, qui sont à present tous reduis en pierre. . . . Regarde toutes ces espèces de poissons que j'ay mis devant tes yeux. . . . ils ont esté autre fois animés" (*DA*, pp. 365–366).

Natural purposes are thereby divulged: "You see clearly that all these forms of shells, that have now been reduced to rocks, were formerly living fishes."<sup>130</sup>

In essence, Palissy promotes direct experience by readers, listeners, and visitors of the configuration of the material world presented in the exhibit. He characterizes the displayed objects specifically as

marvelous things that are witness and proof of my writings, arranged in order on shelves, with labels below them: in order that one may learn by himself, by teaching himself.<sup>131</sup>

The objects in the museum—both natural and artifactual—would, in their very materiality, prove the validity of his words. Here experience is exalted over book-learning. However, according to Palissy, it is not enough simply to look passively at the objects, they must be experienced through as many senses as possible. As he concludes:

in proving my written reasons, I satisfy sight, hearing, and touch, and for this reason defamers will have no power over me; as you will see when you come to see me in my little academy.<sup>132</sup>

Ultimately, then, Palissy cast, wrote, and spoke his mind on matters of craft, nature, and knowledge. His ceramic wares, as well as his exhibit scenarios, exemplify a model for learning through sensing—as well as knowing through making—in three dimensions. Other sixteenth-century naturalists interested in the generation of living and fossil forms represented specimens with two-dimensional images.<sup>133</sup> But Palissy went farther—deeper into the earth itself—to materialize his ideas about the lives of both the earth and its living inhabitants.

130. "Tu vois evidemment que toutes ces formes de coquilles reduittes en pierres, ont esté autrefois poissons vivants" (*DA*, p. 369).

131. "Des choses merueilleuses qui sont mises pour tesmoignage et preuve de mes escrits, attachez par ordre ou par estages, avec certains escriteaux au dessouz: afin qu'un chacun se puisse instruire soy-mesme" (*DA*, p. 16).

132. "En prouvant mes raisons escrites, je contente la veüe, l'ouye et l'atouchement: à raison dequoy, les calomniateurs n'auront point de lieu en mon endroit: comme tu verras lors que tu me viendras voir en ma petite Academie" (*DA*, pp. 16–17).

133. Konrad Gessner is often lauded as the first natural historian to combine text and illustration in fossil study. See Torrens, "Early Collecting" (above, n. 83), p. 205; Cynthia M. Pyle, "Art as Science: Scientific Illustration, 1490–1670, in *Drawing, Woodcut and Copper Plate*," *Endeavour* 24 (2000): 69–75.

## Conclusion

Unlike other media available to Renaissance natural philosophers for communicating their ideas (including text, woodcut, engraving, and drawing), Palissy's productions represented—or rather embodied—a continuum of time and space.<sup>134</sup> In his painstakingly crafted models, mental reflection, physical exertion, and organic materials fused into three cohesive dimensions.<sup>135</sup> He compressed animal, vegetable, and mineral entities, as well as natural philosophies (concerning generation, petrification, and fossil formation) into ceramic form. Which is to say: Palissy's ceramic productions compressed both nature and time into clay; he brought plates to life by killing nature, burning wood, and cooking earths.

Several recent studies have emphasized the role of artisanal knowledge in the development of early modern natural philosophy. Paolo Rossi has argued that such craft-based knowledge provided a model that guided the seventeenth-century Baconian program, and the experimental practices that would characterize eighteenth-century scientific communities.<sup>136</sup> And more recently, Pamela H. Smith has argued that these craft objects in themselves articulated their makers' specific philosophies of nature—marking what Smith has called the emergence of an “artisanal epistemology.”<sup>137</sup>

To a limited extent, these scholars have discussed Bernard Palissy in the context of the emergence of modern scientific theory and practice. According to Rossi, for example, Palissy's *Discours* exemplify the influence of artistry and economics on early modern conceptions of nature.<sup>138</sup> And yet, in their discussions of artisanal knowledge-

134. John Berger, *Ways of Seeing* (New York: Viking, 1973), pp. 88–90; Norman Bryson, *Looking at the Overlooked: Four Essays on Still Life Painting* (Cambridge, Mass.: Harvard University Press, 1990), pp. 96–136. On painting and experience, see Michael Baxandall, *Painting and Experience in Fifteenth-Century Italy* (Oxford: Oxford University Press, 1972).

135. On sculptural and three-dimensional representation in sixteenth-century Europe, see Jeannert, *Perpetual Motion* (above, n. 7).

136. Paolo Rossi, *Philosophy, Technology, and the Arts in the Early Modern Era*, trans. Salvatore Attanasio, ed. Benjamin Nelson (New York: Harper Collins, 1970). On experimental culture in the eighteenth century and the relationship between modern experimental science and experiential processes, see Steven Shapin and Simon Schaffer, *Leviathan and the Airpump: Hobbes, Boyle, and the Experimental Life* (Princeton: Princeton University Press, 1985).

137. Pamela H. Smith, “Artisanal Epistemology,” in idem, *Body of the Artisan* (above, n. 7), pp. 59–93. Smith, “Giving Voice to Hands” (above, n. 110).

138. Rossi, *Philosophy* (above, n. 136), pp. ix–xii.

production, scholars are now only beginning to closely interrogate relationships among a cluster of linked practices—the process of making, the act of knowing, and the sensual experience of the crafted object itself—as they played out for specific craft-philosophers. Here Palissy is a case in point. These hands-on relationships, critical to the infrastructure of any artisanally based knowledge system, are revealed through astute attention to questions such as How does the crafted object reflect, on the one hand, the maker's intentions and intellectual preconceptions, and, on the other hand, the sensual (visual, tactile, aural, and olfactory) experience of creation? And how, in turn, does the specific process of manufacture relate to the attainment of experiential knowledge by both the artifact's maker and its consumer? Exploring such questions will provide the basis for an increasingly well-rounded—both literally and figuratively multidimensional—model of the maker's revolution in Renaissance knowledge-production.

In the case of Bernard Palissy, eminent producer of rustic pots and contentious words, it is exactly the aforementioned relationships that matter. In the workshop, the gallery, or the chateau, Palissy's productions embodied—and continue to embody—a continuum of nature and artifact, of mental reflection and physical exertion. Human endurance and craftsmanship triggered simultaneous artifactual and epistemological generation. Palissy's working method—the artisan's experience of production via the discovery of techniques, the casting of specimens as well as the firing and glazing of molds—infused the plates. Once produced through the union of human and natural production, the encrusted sculptures could remain indefinitely available for consumption through visual and tactile experience.

Simultaneously objects of decorative art, models of geological theory, and products of both artisanal and intellectual labor, Palissy's basins articulated a new artisanal philosophy of knowledge.<sup>139</sup> His rustic ceramics should be seen as novel, and enduring, articulations of early modern natural philosophy and geological theory. This specifically sculptural form of experience—as well as the embodied nature of early modern material culture more generally—is ripe for further investigation. The proof is in the pottery.

139. *Ibid.*, pp. 1–11. See also Alexander Bruno Hanschmann, *Bernard Palissy der Künstler, Naturforscher und Schriftsteller als Vater der induktiven Wissenschaftsmethode des Bacon von Verulam: Ein Beitrag zur Geschichte der Naturwissenschaften und der Philosophie* (Leipzig: Dieterich, 1903). Hanschmann discusses Bacon's indebtedness to Palissy in the chapter "Palissys Geist und Charakter und seine Bedeutung für die Geschichte der Pädagogischen Erkenntnis," pp. 131–156.

### Acknowledgments

I wish to thank Ann Blair, Lorraine Daston, Peter Galison, Jeremy Mumford, and Pamela H. Smith, and especially Katharine Park, for their thoughtful comments on earlier drafts of this essay. I also thank participants in the “Perspectives on Early Modern Science” panel at the 2003 History of Science Society Annual Meeting, where I presented an early formulation of my argument. In addition, I am grateful for the professional assistance of archivists and curators at the Houghton Library at Harvard University, the Bibliothèque Nationale, the Musée du Louvre, and the Archives de la Manufacture Nationale de Sèvres.