

The Brickyard in 2020

In 1963 Bernard K. Forscher published a popular allegorical Letter in *Science* that begins with:

“Once upon a time... there was an activity called scientific research and the performers of this activity were called scientists. In reality, however, these [scientists] were builders who constructed edifices, called explanations or laws, by assembling bricks...” (1)

Many great, sturdy edifices of the 20th century were visible in the brickyard in the year 2020, some parts growing slowly with adornments, some parts recently added but not yet adorned. Fresh, solidly constructed structures typically shared foundational elements with older strong edifices. However, numerous edifice-like structures, poorly connected with older sturdy edifices, had weak or missing foundational elements; their guiding blueprints were unclear. Everywhere were scattered piles of bricks.

It came to pass that in many areas of the brickyard, brickmaking became valued more than constructing edifices. The making and counting of bricks was relatively easy to do, whereas the size and complexity of some edifices meant that their construction was difficult. Some edifices were repeatedly tested for strength, but many were not. Moreover, piles of bricks were increasingly mistaken for true edifices. Yet it was far easier to toss bricks onto these piles, particularly with the explosive growth of automated methods for making bricks, than to reexamine and replace the nominal foundational elements. In some situations builders and brickmakers began to imagine that all bricks were of equal quality, each fitting into the structure of an edifice as well as any other possible brick. An unbounded proliferation of storage places followed; these increasingly specialized in their inventories. Some prominent storage places mostly accepted only pretty bricks, with perfunctory concern for whether these bricks were meant for edifices. Less attractive bricks crafted for

foundations and pillars usually were relegated to less conspicuous storage places. Artisans rarely examined bricks and edifices in unfamiliar locations.

The guilds of builders and brickmakers increasingly assessed worthiness of membership and acclaim based on the numbers of bricks made and their storage locations, and less on the quality of brick fabrication and edifice construction. This translated to growing expectations on young brickmakers. As fully anticipated more than a half century before 2020, “[i]n order to compete successfully with other brickmakers, production emphasized those types of brick that were easy to make and only rarely did an adventuresome brickmaker attempt a difficult or unusual design.” (1) And, saddest of all, many talented young brickmakers aspiring to construct edifices became disillusioned and turned to other crafts.

Yet astute young brickmakers and builders began to critically examine brickyard activities. They adventured to unfamiliar places, discovering entirely different, compelling styles of construction; and they recognized the value of blending different ideas and approaches into fresh designs to create novel, sturdy edifices. Some became translators, interpreting the languages and methods from other places, using them to strengthen local construction. These young artisans championed creativity arising from diverse perspectives joined together; and they started essential conversations, stressing the need to realign guilds and incentives with changing values.

David Jon Furbish^{1*}, Douglas J. Jerolmack², Rachel C. Glade³

¹Department of Earth and Environmental Sciences, Vanderbilt University, Nashville, Tennessee 37240, USA. ²Department of Earth and Environmental Science, University of Pennsylvania, Philadelphia, Pennsylvania 19104, USA. ³Los Alamos National Laboratory, Los Alamos, New Mexico 87545, USA.

*Corresponding author.

Email: david.j.furbish@vanderbilt.edu

REFERENCE

1. B. K. Forscher, Chaos in the Brickyard, *Science* **142**, 339 (1963).

See accompanying essay “The Young Brickmakers” by Kelsea B. Best <https://ir.vanderbilt.edu/handle/1803/16354>