

## The Right Way To Describe Neural Activity?

*To the Editor:*

Eric Shea-Brown's exciting article "Exploring Connectivity in the Brain's Network of Neurons" (*SIAM News*, October 2014) makes me wonder if a slightly different target should be pursued. He asks, "Just what is the right way to describe . . . neural activity?" I propose one right way.

It is hard to believe that the nervous system can process information without a fundamental unit corresponding to the word in a computer. Of course, different systems in the brain may use different fundamental units. Of course, the word is not indivisible—it can be divided into fields used separately in microcode. Nonetheless, it seems to me that the wonderful methods Shea-Brown describes might be focused on the questions: What is the word? How do impulses code the word?

Clues might be found by taking an exist-

ing logic system, in which impulses are not all the same size, because of noise and speeds approaching the physical limits of the device, and focusing Shea-Brown's methods on that system. There we know the answer, and so can refine methods to be sure that they can detect what we know. It is hard to believe

that methods that fail in known digital systems will work in the brain, so this approach may help with the choice of what will work best for biology.—

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*In agreement that the neural code is an important, still unresolved question in the field, Eric Shea-Brown suggests a resource for interested readers: Spikes: Exploring the Neural Code (Rieke, Bialek, Warland, and de Ruyter van Steveninck).*

### LETTERS TO THE EDITOR