

Curiosity: Why do buffers have a limit?

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A buffer is better pictured as an inventory than as a shield. The conjugate base can react with added acid only while some conjugate base remains; the weak acid can react with added base only while some weak acid remains. A larger inventory can handle a larger addition, but neither inventory is infinite.

The same idea appears in systems that must tolerate change for a while without becoming unchanged. The useful scientific question is not “Did the buffer stop all change?” but “Which reaction pathway was available, how much material was available, and what evidence would show the boundary had been reached?”