

Jsoftware.com - An Ecology of Learning?

Bob Therriault

762 Ermineskin Ave,
Parksville, B.C.V9P 2L5
bobtherriault@mac.com

Abstract:

The J environment is analyzed as an ecology of learning, based on theories that facilitate learning rather than prescribing traditional methods of instruction. The goal of this new view of the J learning environment is to make the language more accessible to a general audience.

Tags

J, learning, accretive, acquisitive, emergence, transmission

I never teach my pupils, I only provide them the conditions in which they can learn.

Albert Einstein

1. Introduction

In the last twenty years, there has been a pedagogical shift in online learning. The repetitive systems of computer-based training have given way to the exploration of Massive Open Online Courses (MOOC's). As an online learning community, Jsoftware.com may be able to increase the accessibility of the language by using lessons learned in the development of a community-focused MOOC, the cMOOC.

2. Learning Ecologies

With the development of the first cMOOC by Siemens, Downes and Cormier in 2008 [1], it became apparent that techniques used in traditional brick and mortar schools would not accommodate this mode of online learning. Massively Multiplayer Online Games were used as a template in creating this learning community. Siemens describes the 'ecology of learning'

as composed of four distinct connected domains – transmission, accretion, acquisition and emergence [2]. Each domain contributes different aspects of learning, to increase engagement and deepen the learning experience.

2.1 Transmission

The transmission domain is commonly represented by lectures, texts and videos. It transmits information to learners, and its best use is as reference material. For the Jsoftware environment, the Vocabulary exists in the transmission domain, as does Nuvoc, its community generated counter-part. The dictionary could be considered transmission, although it also contains exercises inviting interaction. J texts and Essays add abundant reference material to the J learning environment, but the fact that many find it difficult to learn J suggests that a powerful transmission domain is not the sole component of an effective learning ecology.

2.2 Accretion

The accretive domain is the ecology's interface, allowing the learner to generate meaning through interaction. Designer Bret Victor provides many examples of accretive domains facilitating the construction of mental concepts [3]. In the J learning ecology the interface between learner and language does not always allow clear understanding. For example, the Boolean 1 and the character '1' appear identical, as seen in Figure 1, even though these different types have different properties.

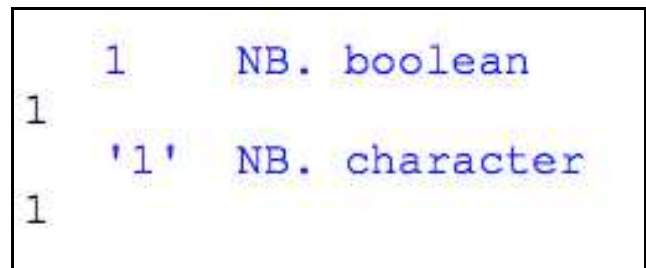


Figure 1. Comparison of types in standard display

An alternate display that shows Boolean in an outline font and character as enclosed in a green shaded square clearly distinguishes the different types, as seen in Figures 2 and 3.

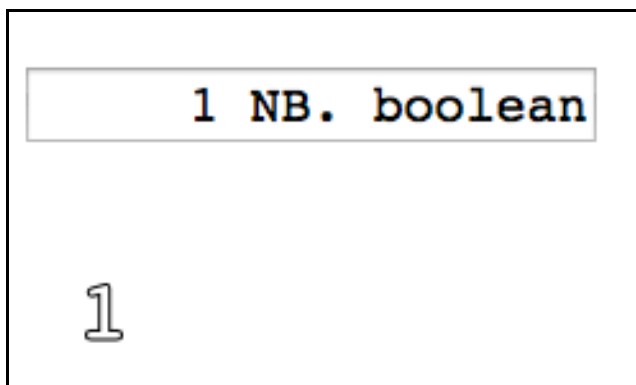


Figure 2. Boolean type in alternate display.

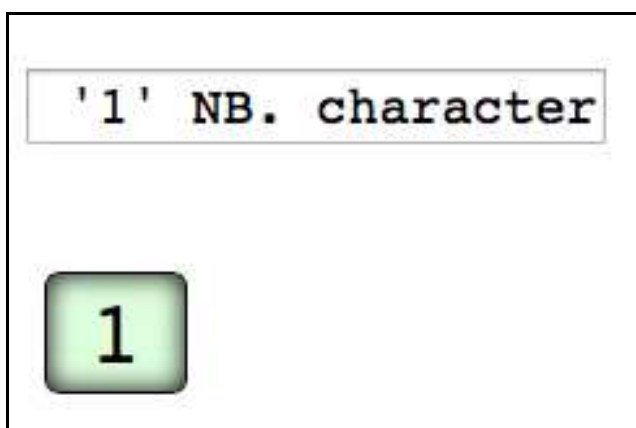


Figure 3. Character type in alternate display.

Also, shapes with leading 1's are visually indistinguishable. Thus, 1 1 2 \$ 3 and 1 2 \$ 3 appear to be identical as seen in Figure 4.

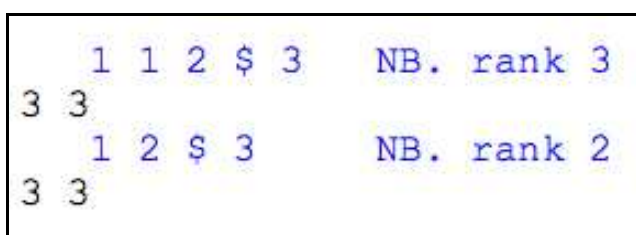


Figure 4. Comparison of ranks in standard display.

In the alternate display each leading index of value 1 appears as an enclosing rectangle, allowing clear distinctions between different shapes as can be seen in Figures 5 and 6.

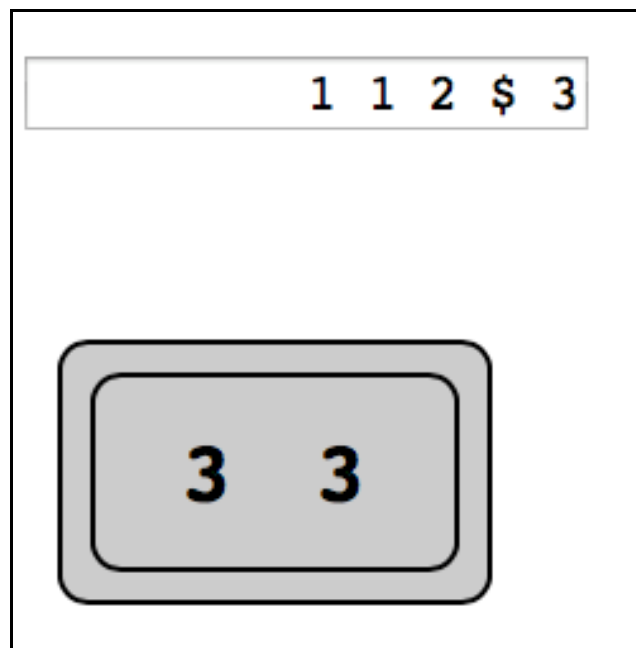


Figure 5. Shape 1 1 2 in alternate display.

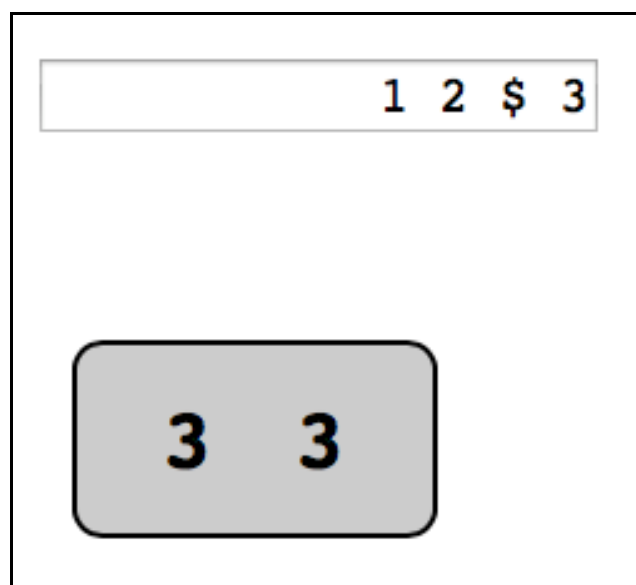


Figure 6. Shape 1 2 in alternate display.

This alternate visualization was created using HTML5 in the JHS environment, and a video of it may be found at [4] with a downloadable script available at [5]. The reader is encouraged to explore, as interaction is the path to knowledge in the accretion domain.

2.3 Acquisition

The acquisition domain provides the opportunity for learner exploration to motivate learning. In the J

case, this domain could be thought of as the language itself and the possibilities that it provides the learner. The acquisitive domain should neither frustrate the learner by introducing unrealistic limitations nor provide information before the learner is ready. Solutions given prior to exploration can severely impair the ability to generalize the lessons. The J labs are excellent examples of the transmission domain augmented by the acquisition domain. The lesson is presented and then the learner accesses the entire language to explore the concept without artificial restraint.

2.4 Emergence

Emergence is the domain of social learning, and this is the domain where most expert learning occurs. Discussions and negotiations allow multiple points of view to be assimilated, facilitating the process of learning 'how to be' in addition to 'what to do'. The emergence domain includes self-reflection as a way to consolidate and understand the knowledge constructed by the learner. In the J learning ecology there are many instances of the emergence domain, from the jwiki to the online forums. J has the advantage of a very supportive community and leaders who are accessible and helpful, making for a strong emergence domain in this learning ecology.

3 Next steps

The J language can be challenging to learn, but this is also an immensely rewarding process. In moving the focus from teaching to learning, and by developing of suitable ecologies of learning, we may find that we can learn J as easily as we learned our first language. Bringing the transmission, accretion, acquisition, and emergence domains closer together could make J more accessible, a large step towards acceptance by a wider audience.

References:

[1] McGill Association of University Teachers, A Brief History of MOOCs
<http://www.mcgill.ca/maut/current-issues/moocs/history> Accessed August 4, 2014.

[2] G. Siemens Learning Development Cycle: Bridging Learning Design and Modern Knowledge Needs, July 12, 2005. <http://www.elearnspace.org/Articles/ldc.htm> Accessed August 4, 2014.

[3] Bret Victor, Media for Thinking the Unthinkable, <http://worrydream.com/-/MediaForThinkingTheUnthinkable> Accessed August 4, 2014.

[4] Bob Therriault, A Lite version of the HTML and CSS display in JHS, YouTube channel
<https://www.youtube.com/watch?v=6CMVyq0IGSg>

[5] Bob Therriault, Personal jwiki folder.
<http://www.jsoftware.com/jwiki/BobTherriault/Visualize>