

Online education divides knowledge into chunks

Written by The Conversation USA

Like many this past week I have found myself extremely impressed by Vi Hart and Nicky Case's "Parable of the Polygons." It is basically an interactive simulation that introduces students to an old game from Thomas Schelling that demonstrates how small biases individually can aggregate up into much larger biases overall. If you have not taken a look at the Hart-Case treatment, [check it out here](#) .

What interests me is how this represents the evolution of a piece of knowledge into ever improving teachable chunks. Schelling, who won a Nobel prize for his contributions to game theory, came up with the original idea in [a paper in 1971](#) . On the scale of readable academic papers, this one already rates close to a 10 (out of 10 on some strange subjective scale I have in my mind). I would feel comfortable giving it to an undergraduate student. But it is long (some 40 pages) and while a student may get the main idea from this, they are on their own to process it.

Fast forward to 1978 when Schelling published a series of lectures entitled [Micromotives and Macrobehavior](#) .

Chapter 4 explores the 1971 paper in a far more readable form; this was essentially Schelling taking his idea and putting it into a lecture. And it is a gifted lecture rating close to a 10. The whole book is like that and influenced many of us. Suffice it to say, if I were teaching this I would cast aside the 1971 reading and put this in instead. It is aimed at teaching and it shows. There is less processing required for the student but it is still somewhat static.

Dynamism comes in 2009 when economics journalist, Tim Harford, writes about Schelling's model in his book, *The Logic of Life*, but, more importantly, produces a [video illustrating the segregation model](#) . It is nicely produced, explains the concept in 2 minutes but it only touches on the main point. But it does have dynamics.

If you want to see this in MOOC form you can look to [Scott Page and his Powerpoint with the lecturer in a box model](#) . It is 11 minutes long but you can see the model genesis, its abstract form, and watch Page manipulate a simulation to see how it all works. This is as good as it gets for lectures online.

Which is why the Hart-Case approach is so compelling. It is not a video. It is an interactive

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page. And, moreover, it is not obviously about racial segregation. Indeed, it starts with a parable – a model – which, when you think about it, is all Schelling was doing. The allusion to segregation and this being a mechanism to explain it was just labeling the terms. The model is mathematics and is true. The interpretation for segregation is theory and may not be true in reality.

But the page does a perfect job of giving students a feel for what is going on. It starts with a generic model and you can see how it plays out dynamically. Then it adds parameters you can adjust and then play with. It is a sandbox and eventually, with a staged introduction, the student learns what to do and is encouraged to predict behavior before checking it with the mathematics. As a teaching device it completely displaces Schelling's original approach and all those before it.

Herein lies the lesson for online education. Hart and Case put an enormous effort into this. They are not 'star professors.' They are not experts in this area. They just explored the knowledge and acted as the translators. And there are similar efforts going on around the world.

This means something for online education. These chunks are the components. All of the efforts, the experts or professors are putting into courses with videos etc are mere place-holders until the true best-practice mode of expression is created. In the end, we will have to think of online education as a vetting and then curation of these components to give students an education. Suffice it to say, we are surely still in the Wild West of doing this.

Joshua Gans does not work for, consult to, own shares in or receive funding from any company or organisation that would benefit from this article, and has no relevant affiliations.

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