

Twitter Thread by Santa Fe Institute



Santa Fe Institute

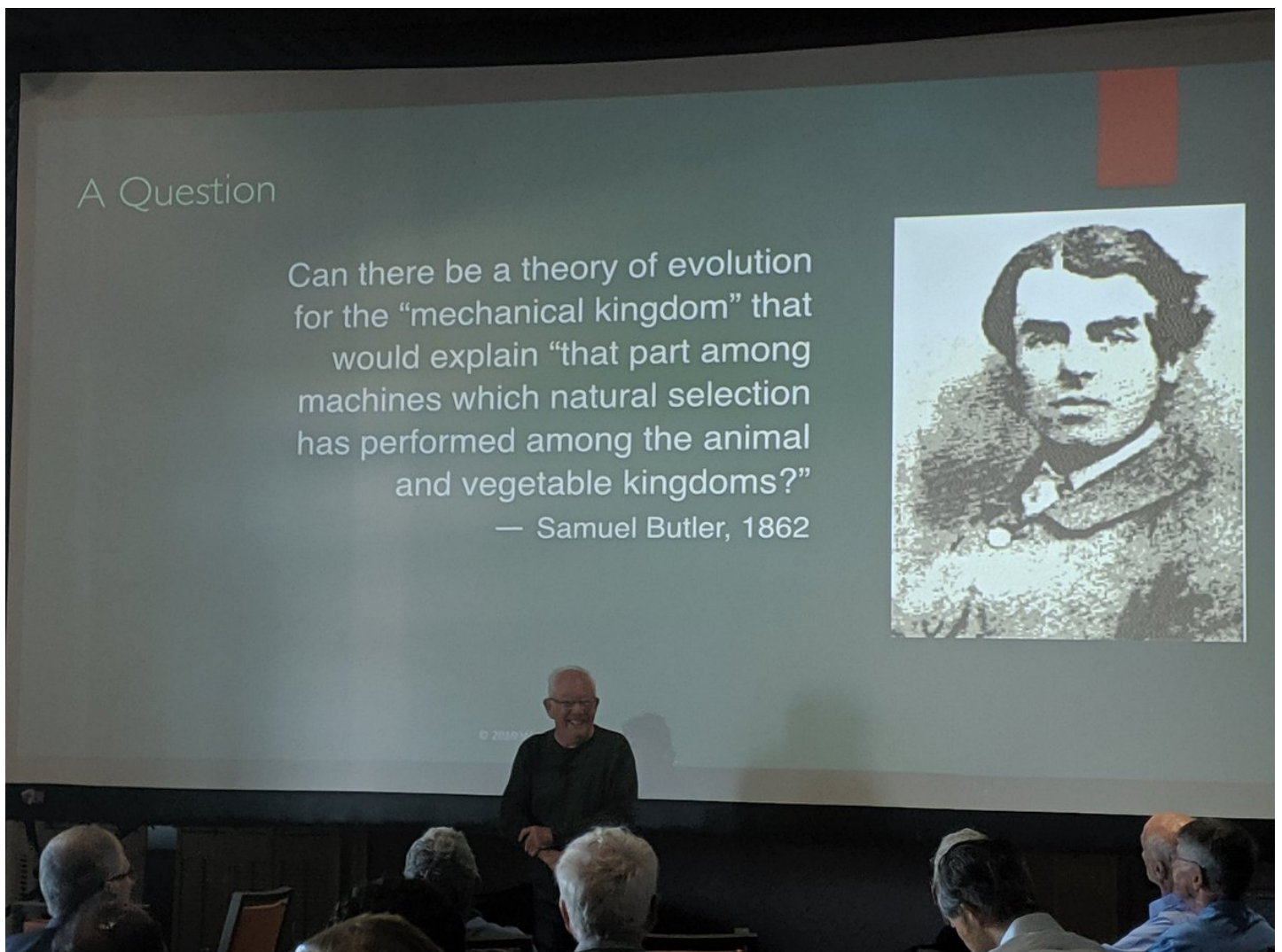
@sfiscience



"You don't see radio changing gradually and suddenly become radar. #Darwin's theory doesn't work for #technology, and we have to make a new observation."

- W Brian Arthur at SFI today

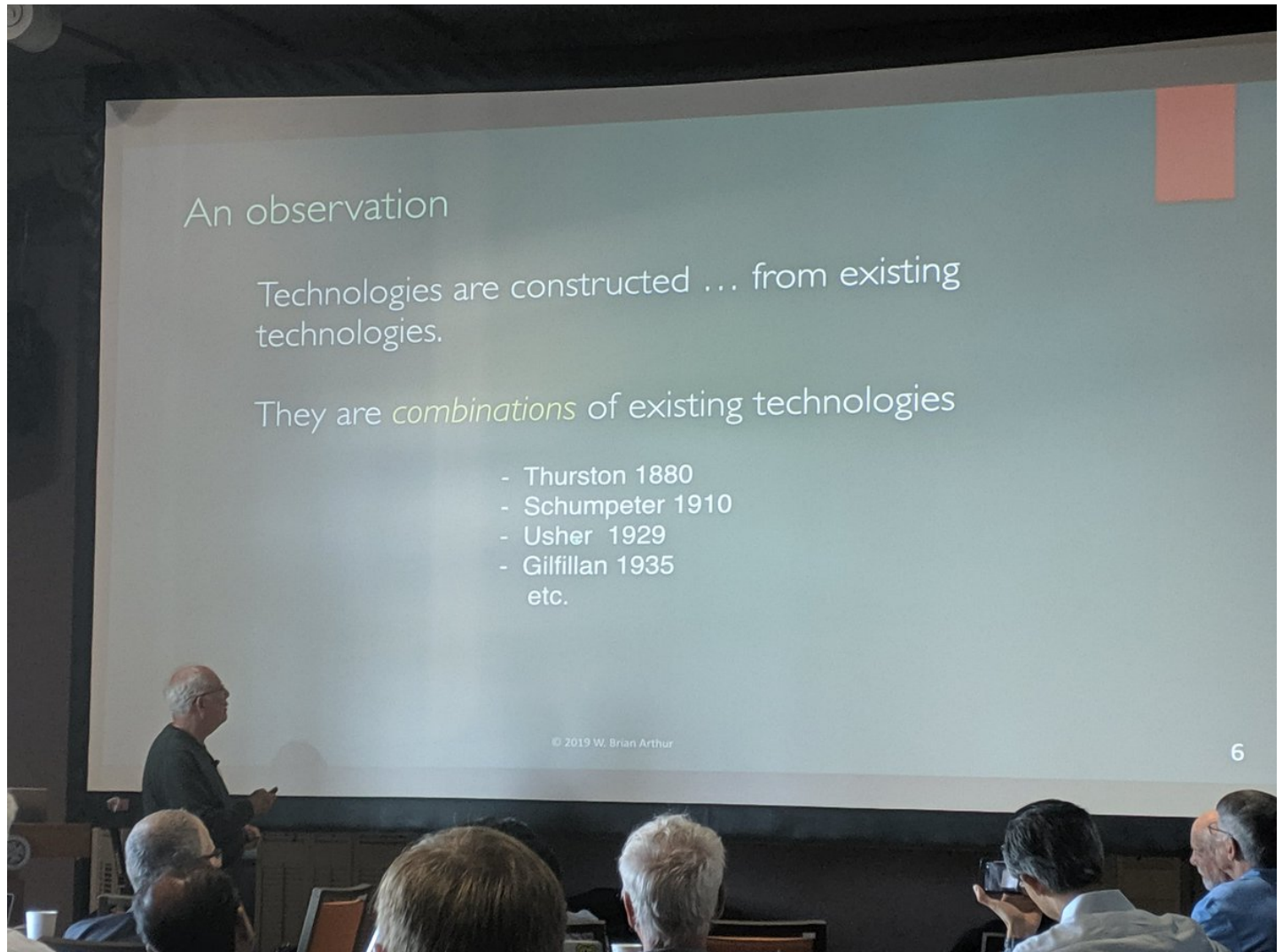
#evolution #innovation #invention



"Novel technologies are constructed from existing technologies. These offer themselves as components for the construction of further technologies."

- W Brian Arthur at SFI today

#evolution #innovation #invention #technology #engineering #design



Unlike the two-parent #inheritance typical to (but not ubiquitous among) #complex organisms, #technology inherits features from n parents - a "vast ancestral #network" more like horizontal gene transfer networks in #bacteria.

W Brian Arthur on sumulating #invention on a chip:



Does #Archaeology support the Theory of the #AdjacentPossible - that #innovation is combinatorial, persistent, cumulative?

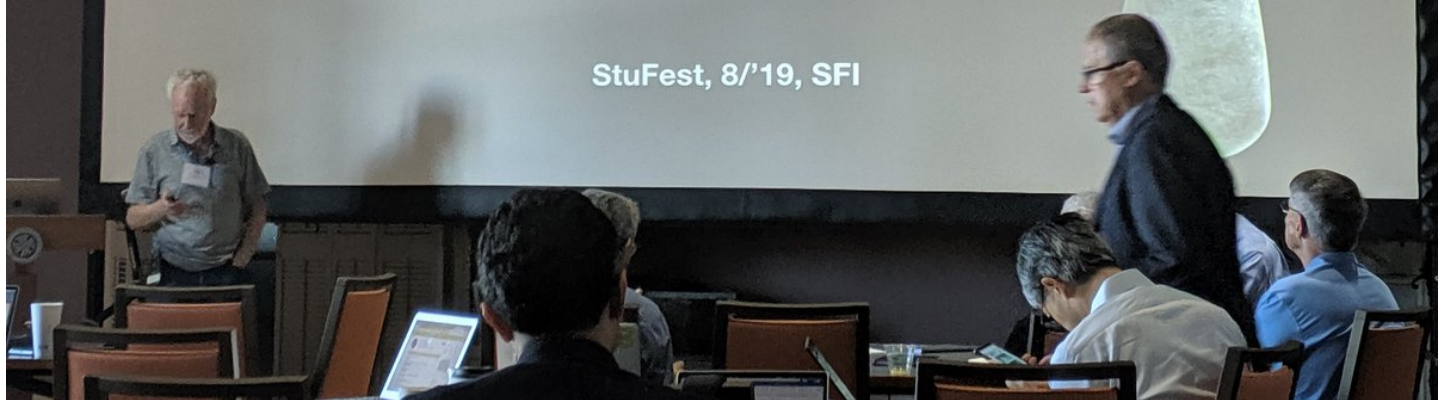
In short, yes. SFI's Tim Kohler on the #Paleolithic data of #technology #evolution & the #prehistory of the infamous "hockeystick" curve:

■ [@SAPIENS_org](https://twitter.com/SAPIENS_org)

On Attempting to Parameterize the TAP Using Data from Prehistory

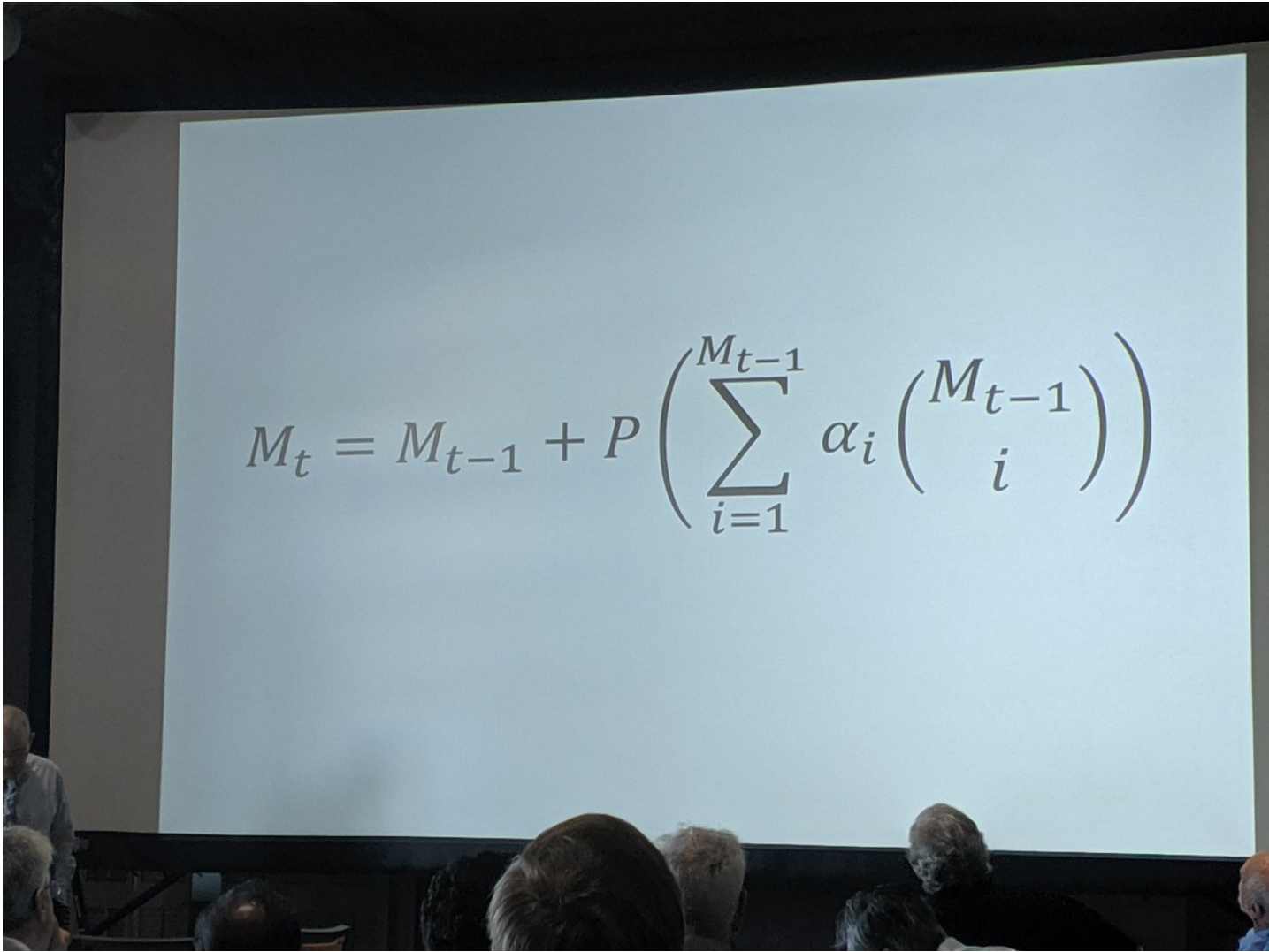
Tim Kohler
Washington State University
Santa Fe Institute
Crow Canyon Archaeological Center

StuFest, 8/'19, SFI



#Economist Roger Koppl of [@SyracuseU](#) presents a model for the #AdjacentPossible at SFI.

Output = "a combinatorial explosion" or #singularity, albeit one that arguably occurred millions of years ago, or in the distant future (since the model doesn't specify $t = 0$):


$$M_t = M_{t-1} + P \left(\sum_{i=1}^{M_{t-1}} \alpha_i \binom{M_{t-1}}{i} \right)$$

"We can't have universal models if organisms differ. But most of our models are universal. So how do our models need to differ for species-specific #search?"

- [@toppofelin](#) (@UniofOxford) reminds listeners at SFI today that we live in worlds, plural:
#umwelt #suchbild #affordance

Whether you can observe a
thing or not depends on the
theory which you use. It is the
theory which decides what can
be observed.

Albert Einstein

