Back to the Future: The Exploration of the Microworld Has Only Just Begun!

[**Lynn Conway**](http://www.lynnconway.com) is Professor Emerita of EECS at the University of Michigan. A Member of the National Academy of Engineering and Emerita Member of the Corporation at Draper Lab, she is a pioneering innovator who launched the 1980’s [“VLSI Revolution”](http://www.computerhistory.org/fellowawards/hall/bios/Lynn,Conway/) in microelectronic design and manufacturing.

**Abstract**

*“If you want to change the future, start living as if you’re already there”* – [Lynn Conway](http://www.huffingtonpost.com/lynn-conway/the-many-shades-of-out_b_3591764.html)

[Lynn Conway](http://en.wikipedia.org/wiki/Lynn_Conway) entered MIT as a [young student in 1955](http://ai.eecs.umich.edu/people/conway/Memoirs/MIT/MIT_Reminiscences.pdf), and has led an [adventurous life in engineering](http://ai.eecs.umich.edu/people/conway/VLSI/MPCAdv/MPCAdv.pdf) ever since. In this talk, she reminisces about the waves of [paradigmatic innovation](http://en.wikipedia.org/wiki/The_Structure_of_Scientific_Revolutions) she’s surfed over the decades, reflecting on how to spot, prepare for, catch and [ride such waves](http://ai.eecs.umich.edu/people/conway/Memoirs/VLSI/SSCM/VLSI_Reminiscences.pdf). Using lessons from [adventure sports](http://ai.eecs.umich.edu/people/conway/conway.html#Adventuring) and [personal experiences](http://www.huffingtonpost.com/lynn-conway/the-many-shades-of-out_b_3591764.html), she shares the fun and excitement of remaining [partly childlike](https://www.google.com/search?q=play&source=lnms&tbm=isch&sa=X&ei=vX2QU9CXDciZyAS4n4KwBg&ved=0CAYQ_AUoAQ&biw=1258&bih=602#q=kindergarten+play&tbm=isch), always ready to crawl and then walk before running-relays in [each](ai.eecs.umich.edu/people/conway/Ww/Canoeing/Lynn%20in%20Big%20Drop.jpg) new [game](http://ai.eecs.umich.edu/people/conway/Mx/SXRacing/SXRacing.html) . . . along the way illuminating the vital roles that exploratory skill development, peer competition/collaboration, team building, social learning and leadership play in such [emergent processes](http://ai.eecs.umich.edu/people/conway/VLSI/ESSCIRC82/The%20Design%20of%20VLSI%20Design%20Methods.pdf).

Looking ahead, Lynn visualizes an [incoming tsunami of innovation](http://ai.eecs.umich.edu/people/conway/Memoirs/Microworld/The_Incoming_Wave_of_Innovation.pdf) as we suddenly begin [embedding](http://www.bloomberg.com/news/2014-01-17/google-unveils-smart-contact-lens-project-to-monitor-glucose.html) macroscale-product-enhancing [interconnected](https://www.google.com/search?q=modularized+microsystems&source=lnms&tbm=isch&sa=X&ei=YoaQU9OWBoylyASpuoC4Dg&ved=0CAcQ_AUoAg&biw=1258&bih=602#q=interconnected&tbm=isch) modularized [microsystems](https://www.google.com/search?q=modularized+microsystems&source=lnms&tbm=isch&sa=X&ei=YoaQU9OWBoylyASpuoC4Dg&ved=0CAcQ_AUoAg&biw=1258&bih=602#q=mems+&tbm=isch) into almost everything – saying “This is the Big One”! The enabler: The commingling and hybridization of [EDA](http://www.edac.org/), digital macro/micro/nano “[making](http://makezine.com/)” and [social-media](https://www.google.com/search?q=social-media&source=lnms&tbm=isch&sa=X&ei=iXWPU8XoGtekyATxy4DADQ&ved=0CAYQ_AUoAQ&biw=1257&bih=602) will provide multi-technology "[exploration infrastructure](http://www.nytimes.com/video/science/100000002402479/whats-a-fab-lab.html)" for widespread user-engaged market development and rapid [open-source](https://www.youtube.com/watch?v=C8Wv3LCJcUE) technology evolution. By exploiting [collaborative learning](http://www.scoop.it/t/leadership-trust-and-e-learning), [crowdsourcing](http://en.wikipedia.org/wiki/Crowdsourcing), [crowdfunding](https://www.kickstarter.com/hello), [IP brokering](http://www.semiwiki.com/forum/content/section/1642-ipnest.html), [agile methods](https://www.youtube.com/watch?v=sy0-VhKAr7s), [rapid-digital-prototyping](https://www.google.com/search?q=rapid+prototyping&tbm=isch&tbo=u&source=univ&sa=X&ei=P63mUq2eD8K2yAHNs4HICw&sqi=2&ved=0CGQQsAQ&biw=1223&bih=553) and more, all participants, from users to [makers](https://www.google.com/search?q=play&source=lnms&tbm=isch&sa=X&ei=vX2QU9CXDciZyAS4n4KwBg&ved=0CAYQ_AUoAQ&biw=1258&bih=602#q=maker+faire&tbm=isch), will be able to dramatically scale up their connectivity, participation and impact.

Preparing for what’s ahead, Lynn is evolving an “[Adventurer’s Guide to Exploring and Making in the Microworld](http://ai.eecs.umich.edu/people/conway/Memoirs/Microworld/The_Incoming_Wave_of_Innovation.pdf)” and helping connect talented folks who’d like to “go for it.” Given [Draper Lab’s culture and traditions](http://www.youtube.com/watch?v=G2eBpLh2-zM), she sees us as uniquely positioned for trailblazing out into this new frontier.