



Issues of Human Interface design

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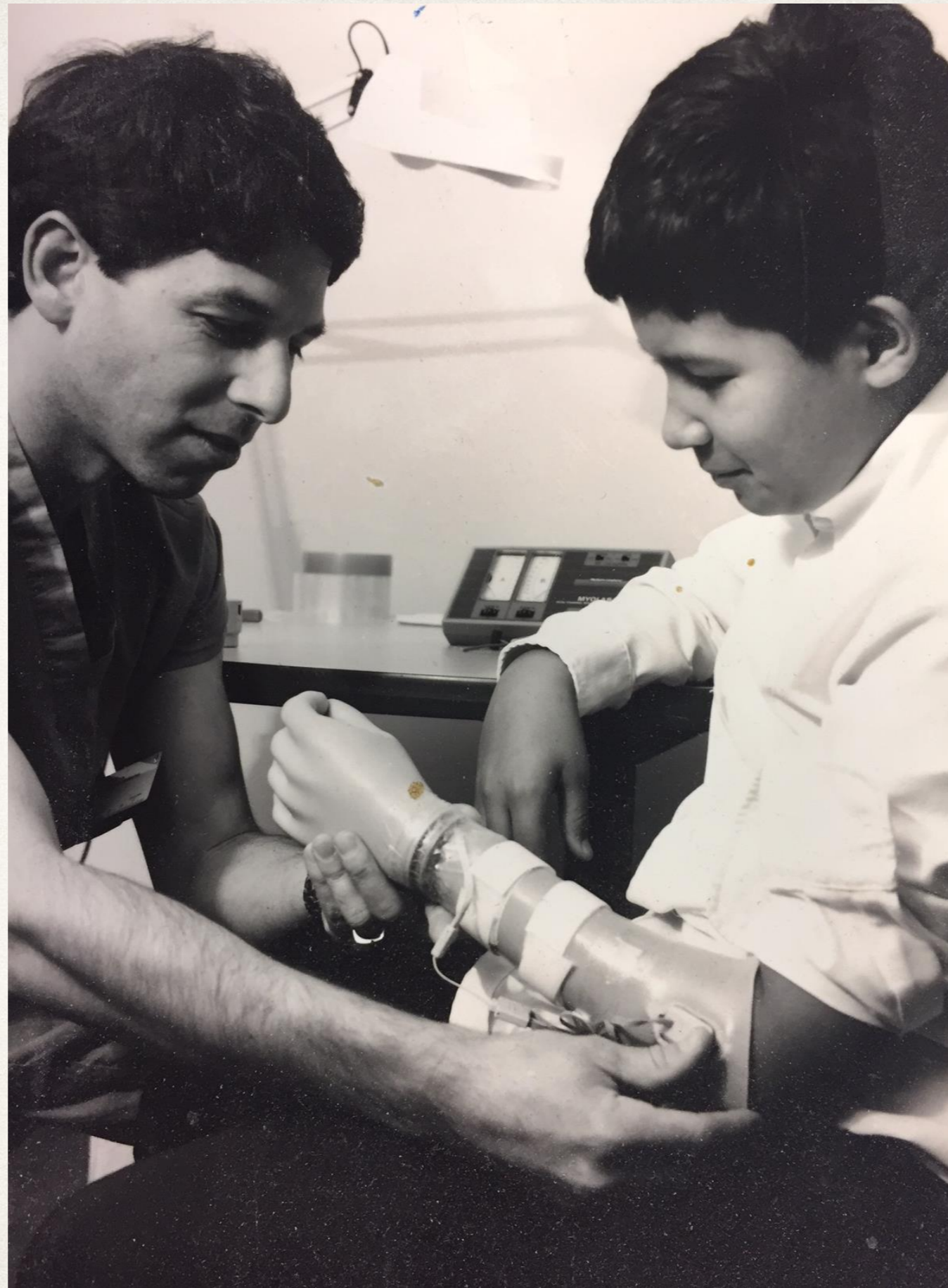
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Disclosures

- ❖ OPIE Software (Consultant)
- ❖ D-Rev Designs (Board of Advisors)
- ❖ National PI, Xtremity Socket Systems

The older I get the less I know.



This is Ron







This is Ron





Won the Battle but Lost the War

Winning a battle but losing the war is a military mental model that refers to achieving a minor victory that ultimately results in a larger defeat, rendering the victory empty or hollow.

SO WHAT DID WE MISS?

How do you design a shoe?



Five C's

- Comfort
- Cosmesis
- funCtion
- Cost
- Cool

Comfort

- ✱ What makes something comfortable?
 U_N
- ✱ Fluid dynamics, what happens when you add pressure to tissue?

Comfort

- ✱ Transference of pressure
- ✱ No “noxious” stimuli (noise, vibration etc)
- ✱ Heat
- ✱ Nuisance factor
 - ✱ easy to put on and take off
 - ✱ not too bulky
- ✱ Weight
- ✱ Sensitivity of skin or nerve

Comfort is elusive

- ✿ What may be “comfortable” one minute may not be the next.....

THIS IS JESSICA



- ✿ TRAUMATIC BELOW THE KNEE AMPUTATION



HOW MUCH PRESSURE CAN HUMAN TISSUE TOLERATE?



funCtion

- ✪ Is it a device that reliably does what it is intended to do?

funCtion

Is there a device that can do everything?







Cosmesis

What is cosmetic?



Cosmesis

- ✻ How do we perceive ourselves?
- ✻ How do changes to our body affect our perception of cosmesis?







This is Jane







bionic

It is hard when the expectation of the patient is greater than the design can provide.





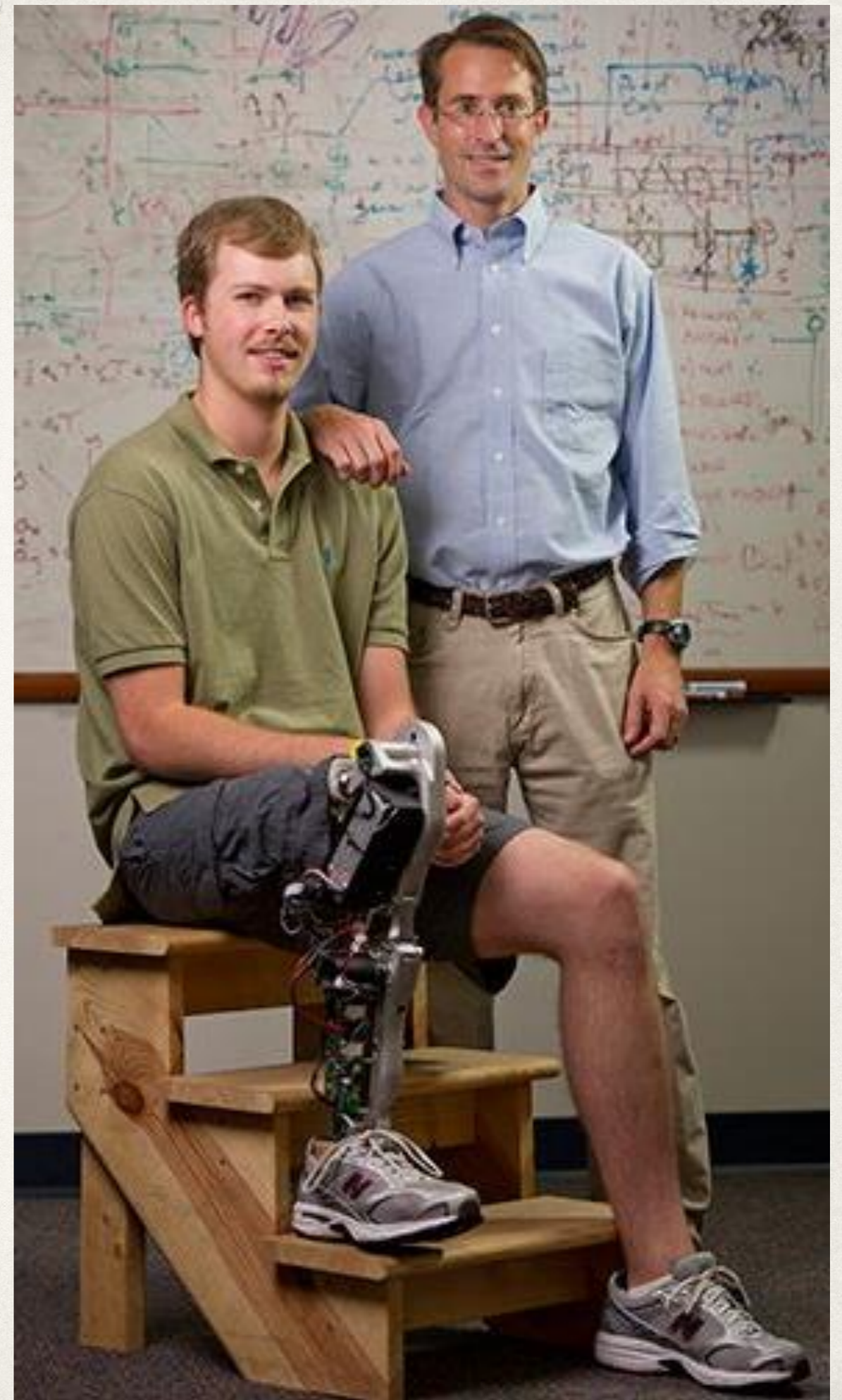


“Ya never know where somebody else’s shoes pinch”

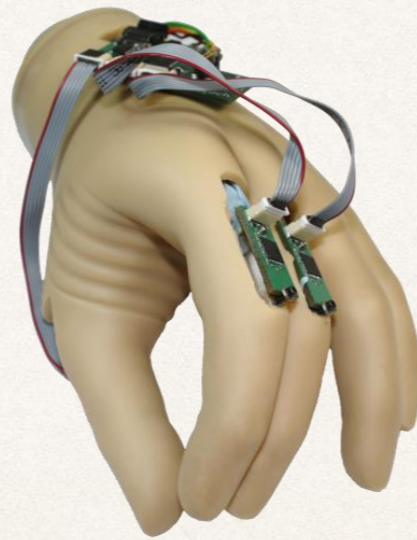


Cost

- What is it worth to the consumer and...
- If it costs way more than standard care, does it provide a proportional improvement in comfort, function, cosmesis?



What does a prosthesis cost AND what do we get paid?



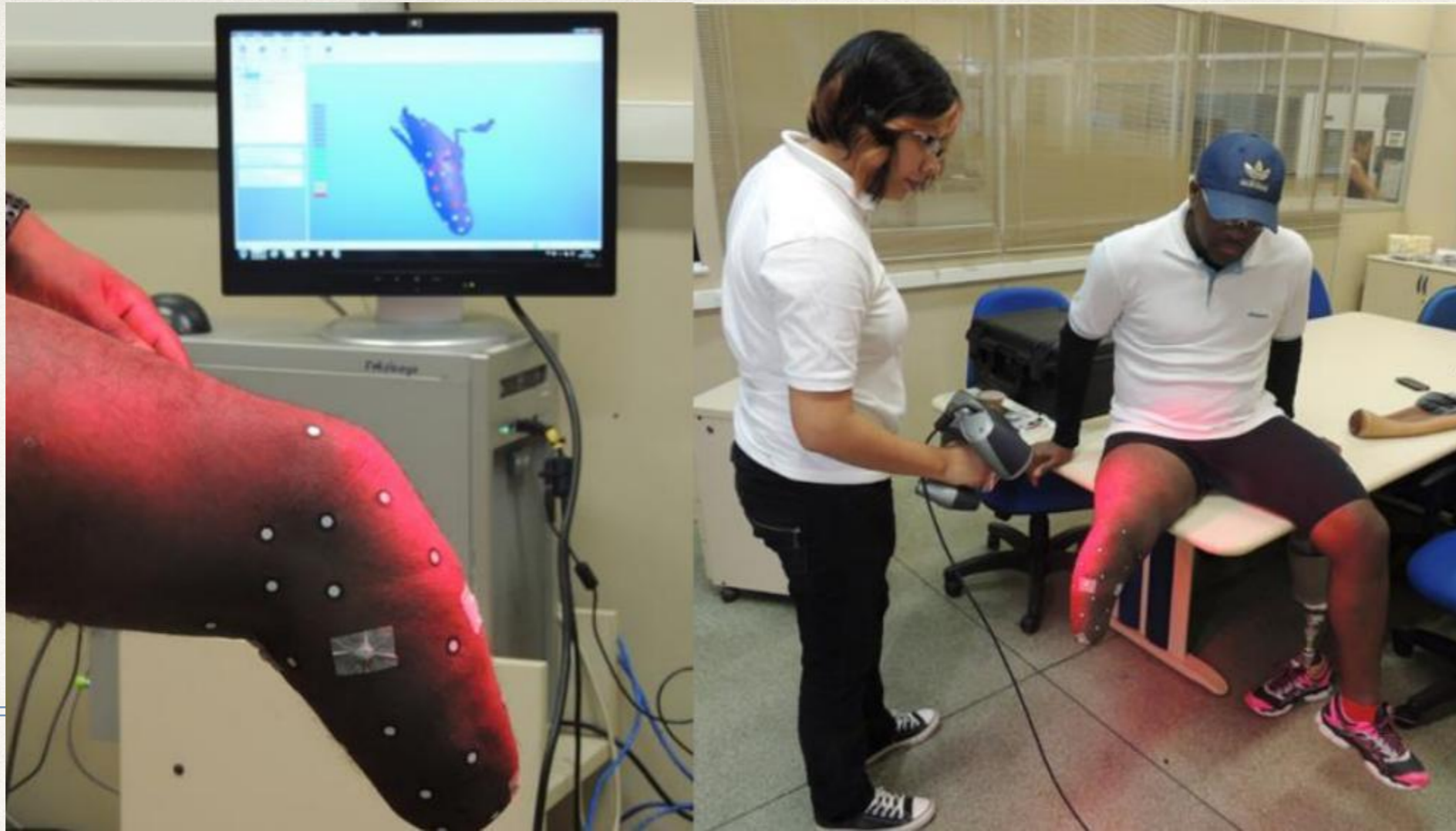
The impact of who pays

On average, a dollar that people spend for themselves creates nearly 20 percent more satisfaction than a dollar that someone else spends on them.



cool





I give you permission to be skeptical
with your optimism

How do “things”
interact with
humans?

glasses



Regular glasses

Self Adjusting

Comfort

✓

Function

✓

✓

Cosmesis

✓

Cost

✓

Cool

✓

Further.....

- ❖ There are people everywhere that use sticks to eat, perhaps we should 3-D print them forks.

OR

✿ Just because we CAN, doesn't mean
we SHOULD



This is Riley



You can't start with the technology and try to figure out where you're going to try to sell it.

Steve Jobs



HUMAN?





