

ISSUES OF HUMAN INTERFACE DESIGN

Gary M. Berke MS, CP, FAAOP

Adjunct Clinical Assistant Professor,
Department of Orthopaedic Surgery
Stanford University

Private Practitioner, Berke Prosthetics and
Orthotics, San Mateo, CA

Disclosures

OPIE Software (Consultant)

AMR Medical (Consultant)

D-Rev Designs (Board of Advisors)

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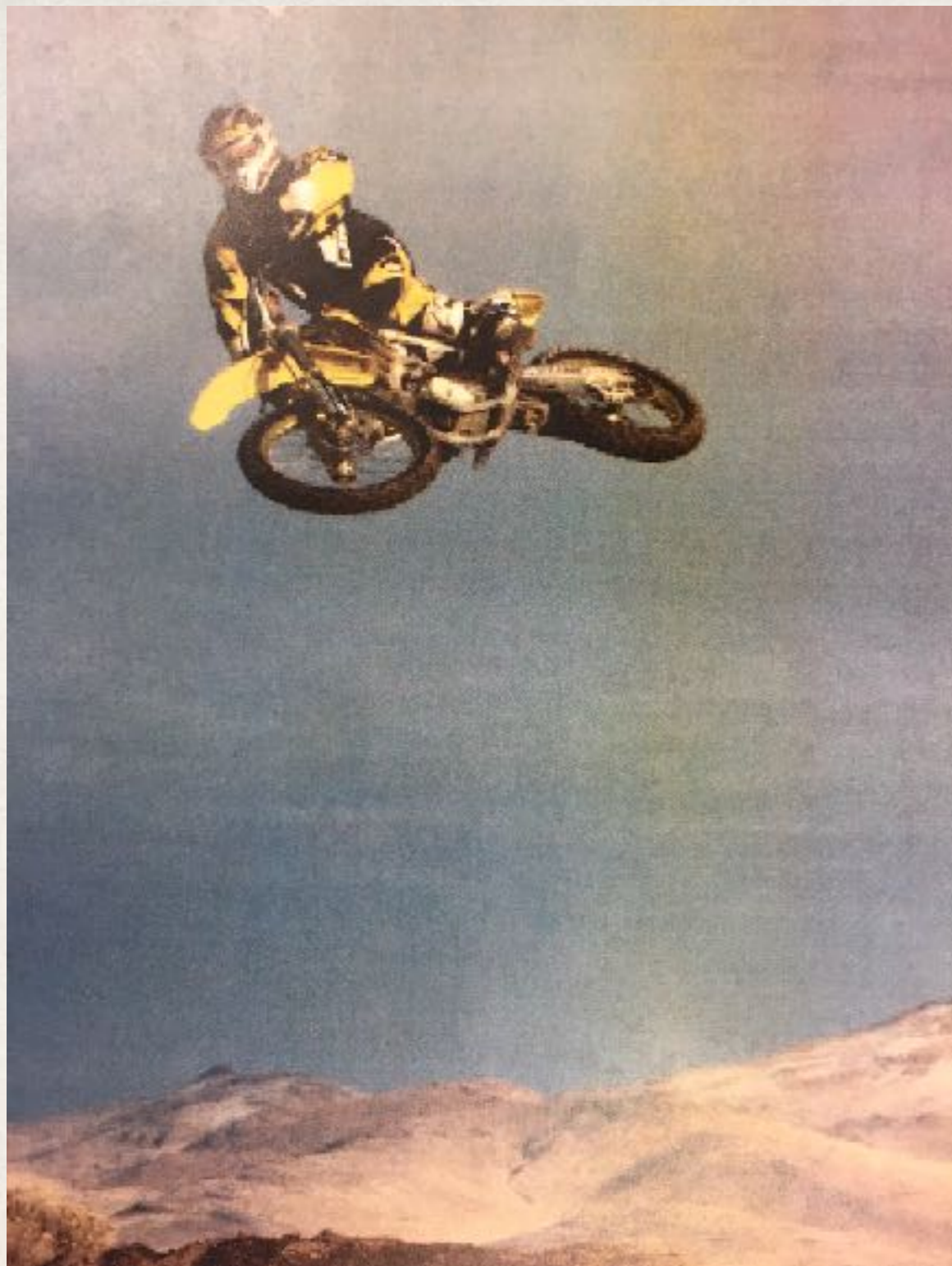
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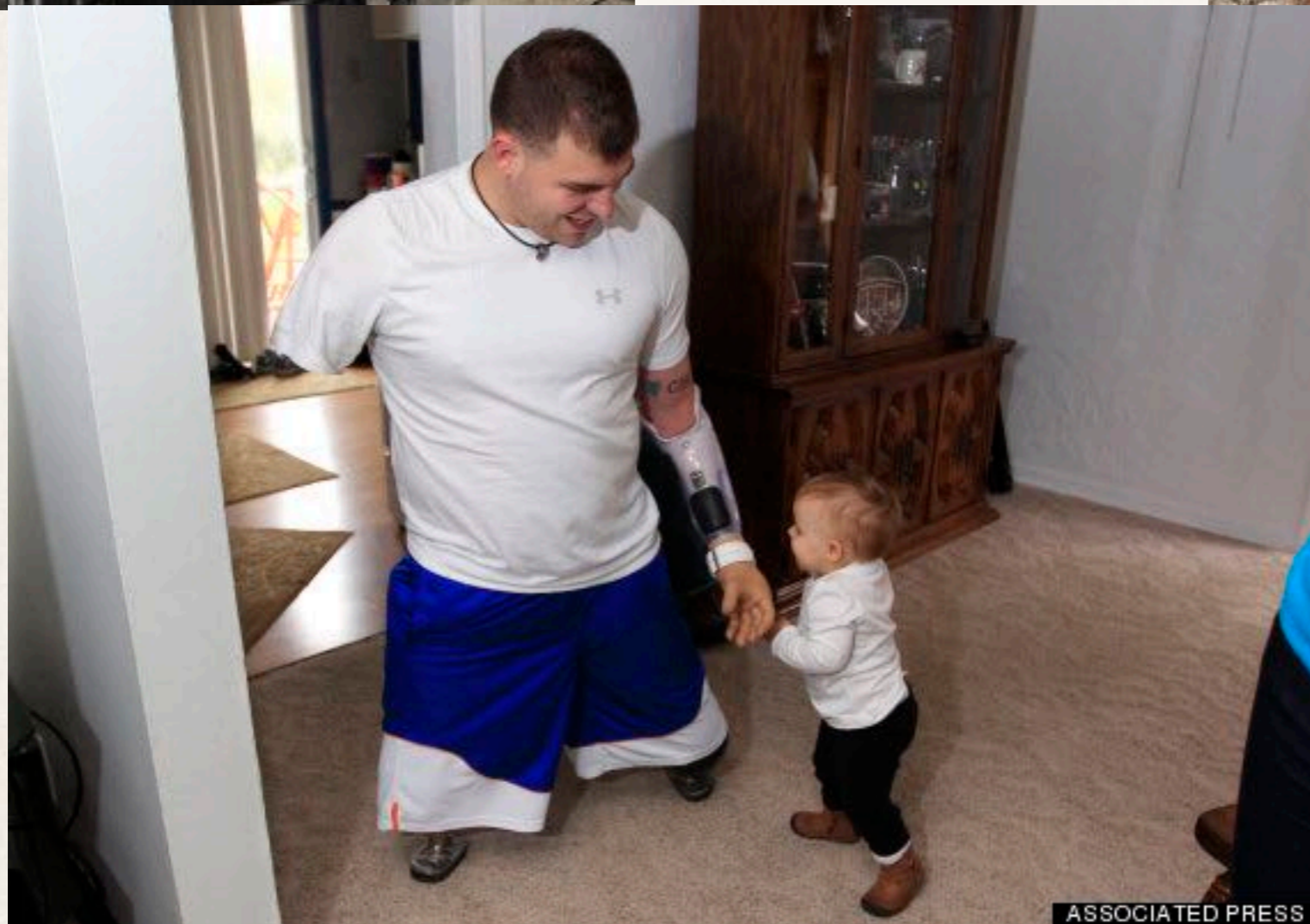
SECTION ONE

The older I get the less I know.



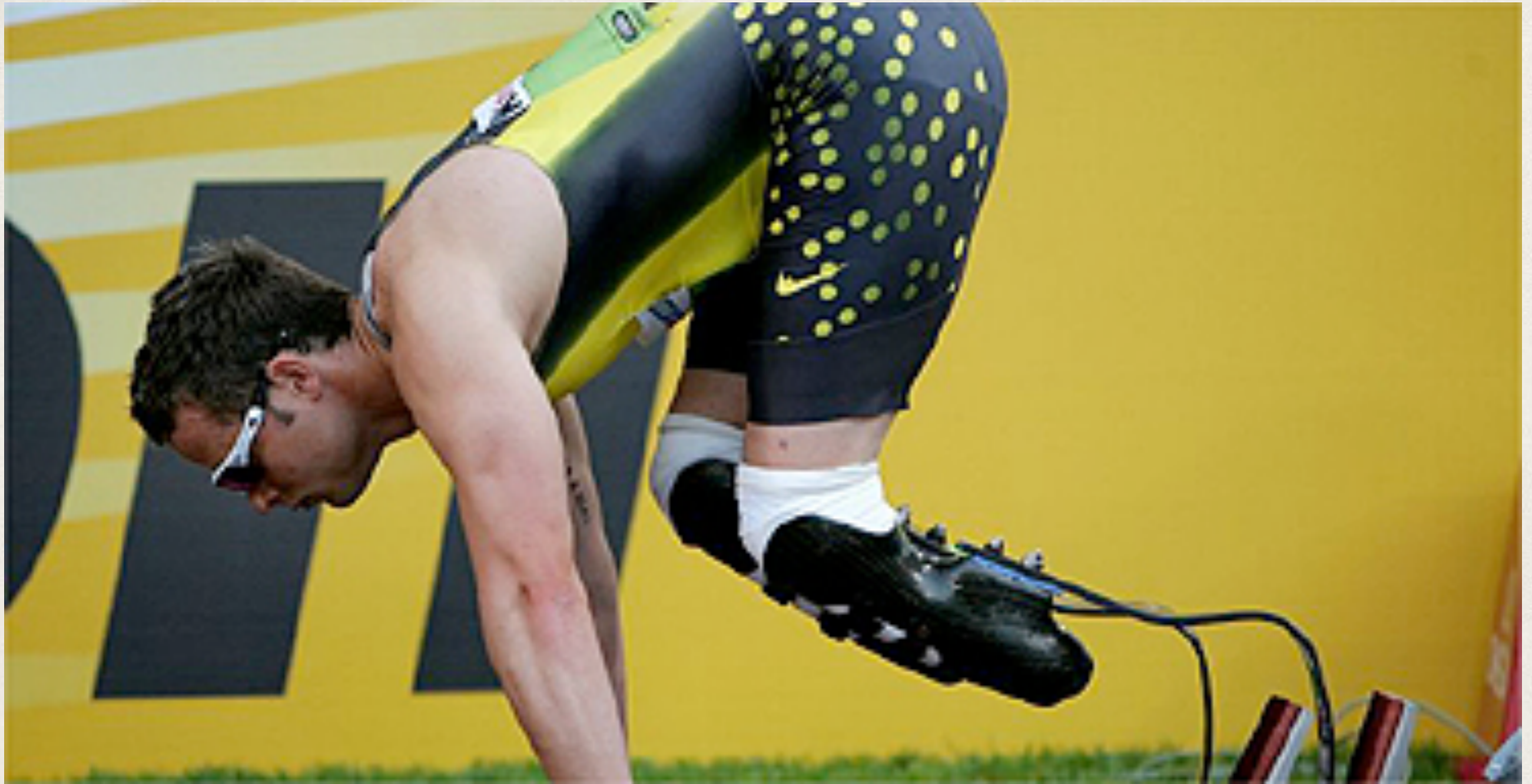






ASSOCIATED PRESS

Sto kec



Better than human?

How do you design a shoe?



FIVE C'S

- Comfort
- Cosmesis
- funCtion
- Cost
- Cool



Better than Human?



How is a prosthesis made?

As we have gotten significantly better and faster at building products, the challenge has shifted. The challenge today isn't building products, but uncovering what to build.





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

UN-
* What makes something comfortable?

COMFORT IS ILLUSIVE

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

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?

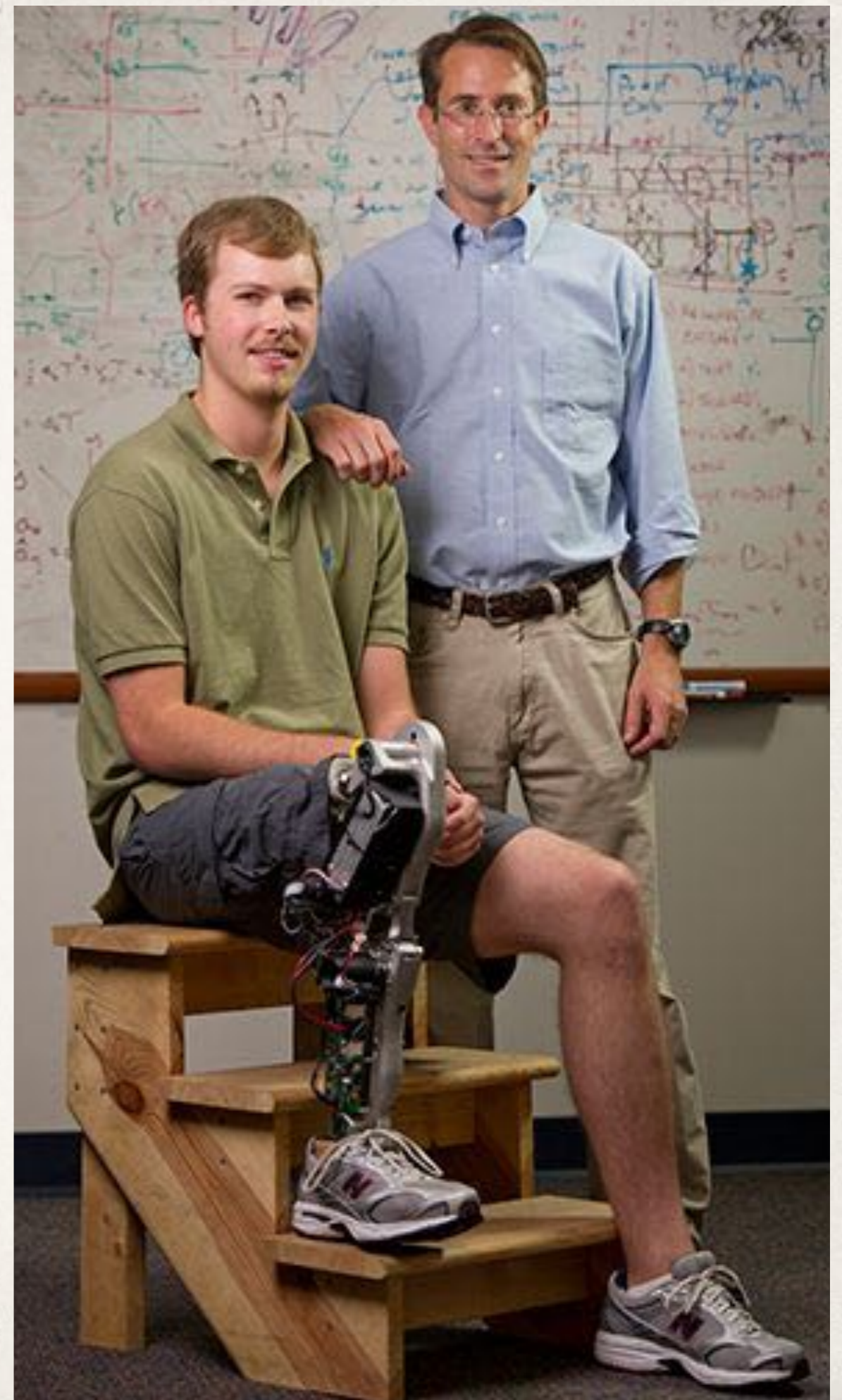




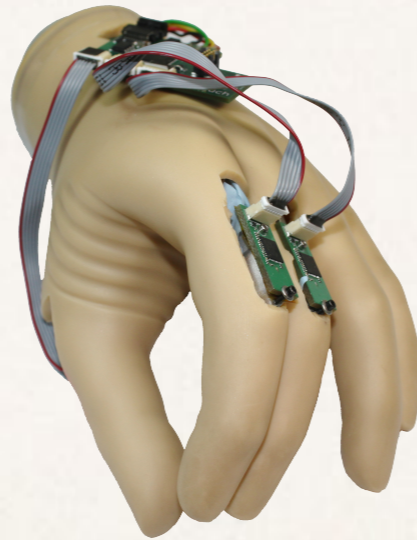


Cost

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



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





COOL

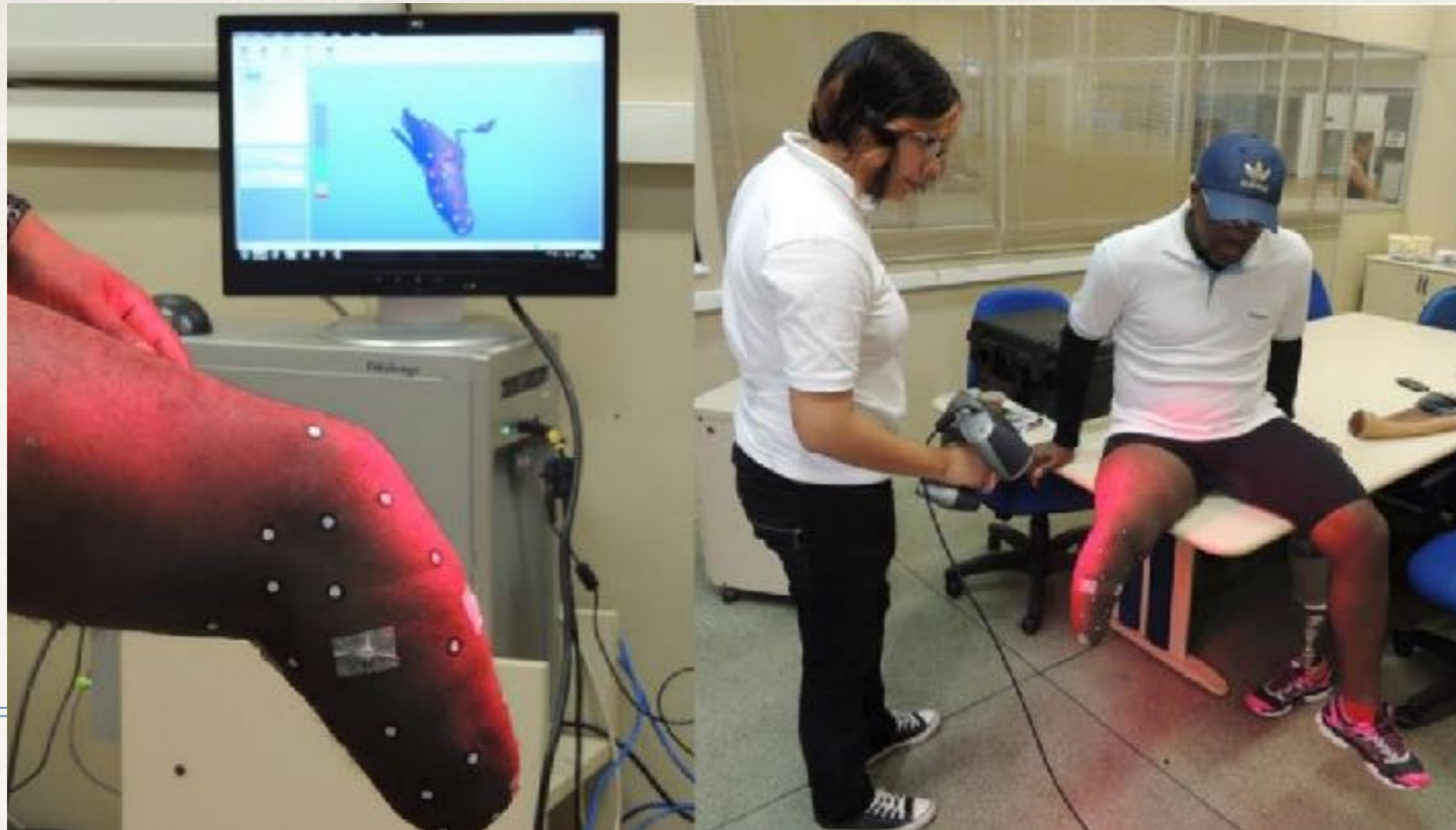


BIONIC









*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 | | ✓ |

SECTION TWO

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

SECTION TWO

- ❖ Just because we CAN, doesn't mean we SHOULD



*the celebrated Artificial Limbs, with India
Rubber Hands and Feet.*

PATENT

A.A. MARKS,
MANUFACTURER OF
ARTIFICIAL LIMBS
575. BROADWAY,
NEW YORK
OPPOSITE THE METROPOLITAN HOTEL

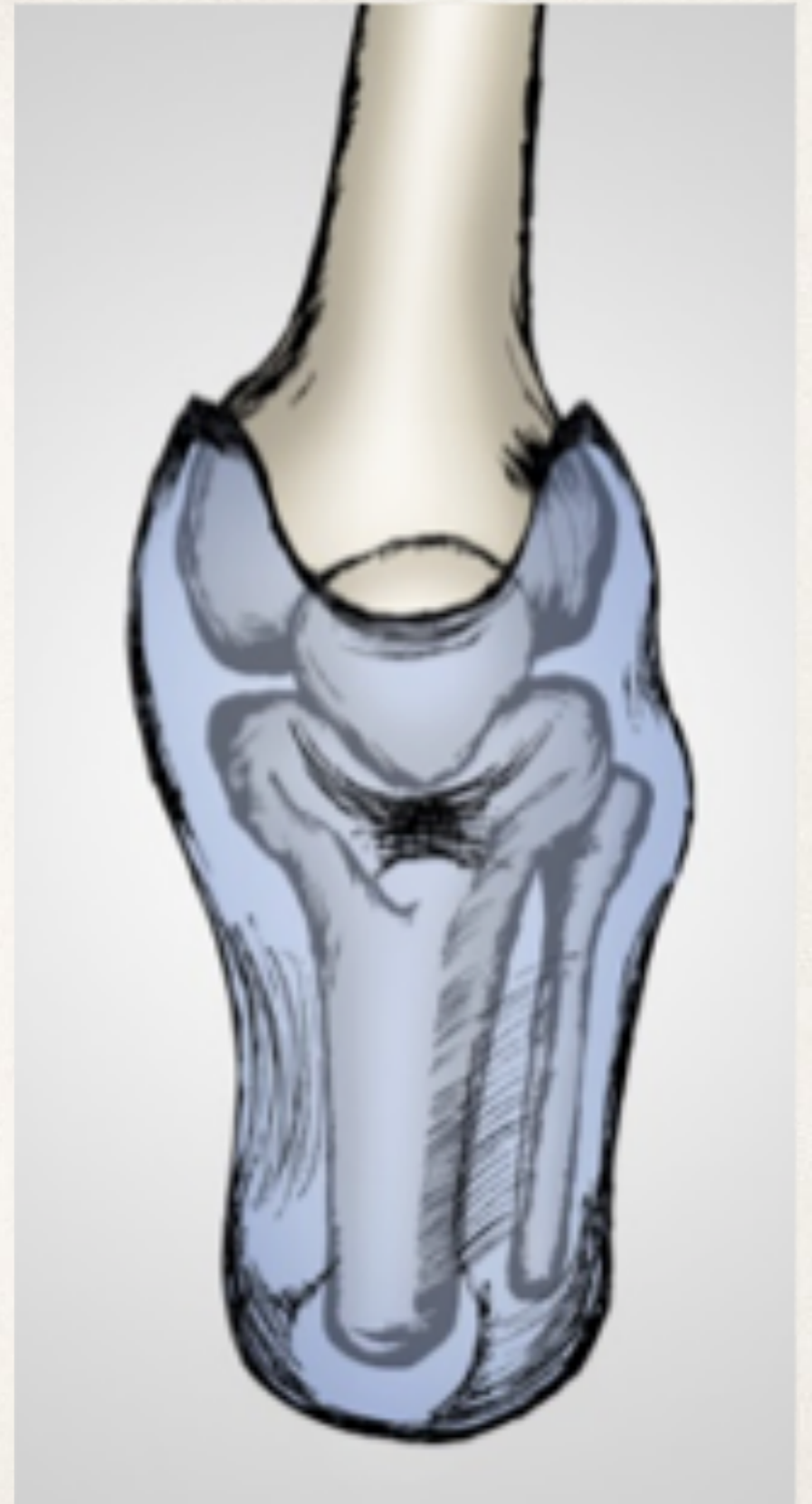
**First Premium (GOLD MEDAL,) awarded by the
American Institute, 1865, as the BEST.**

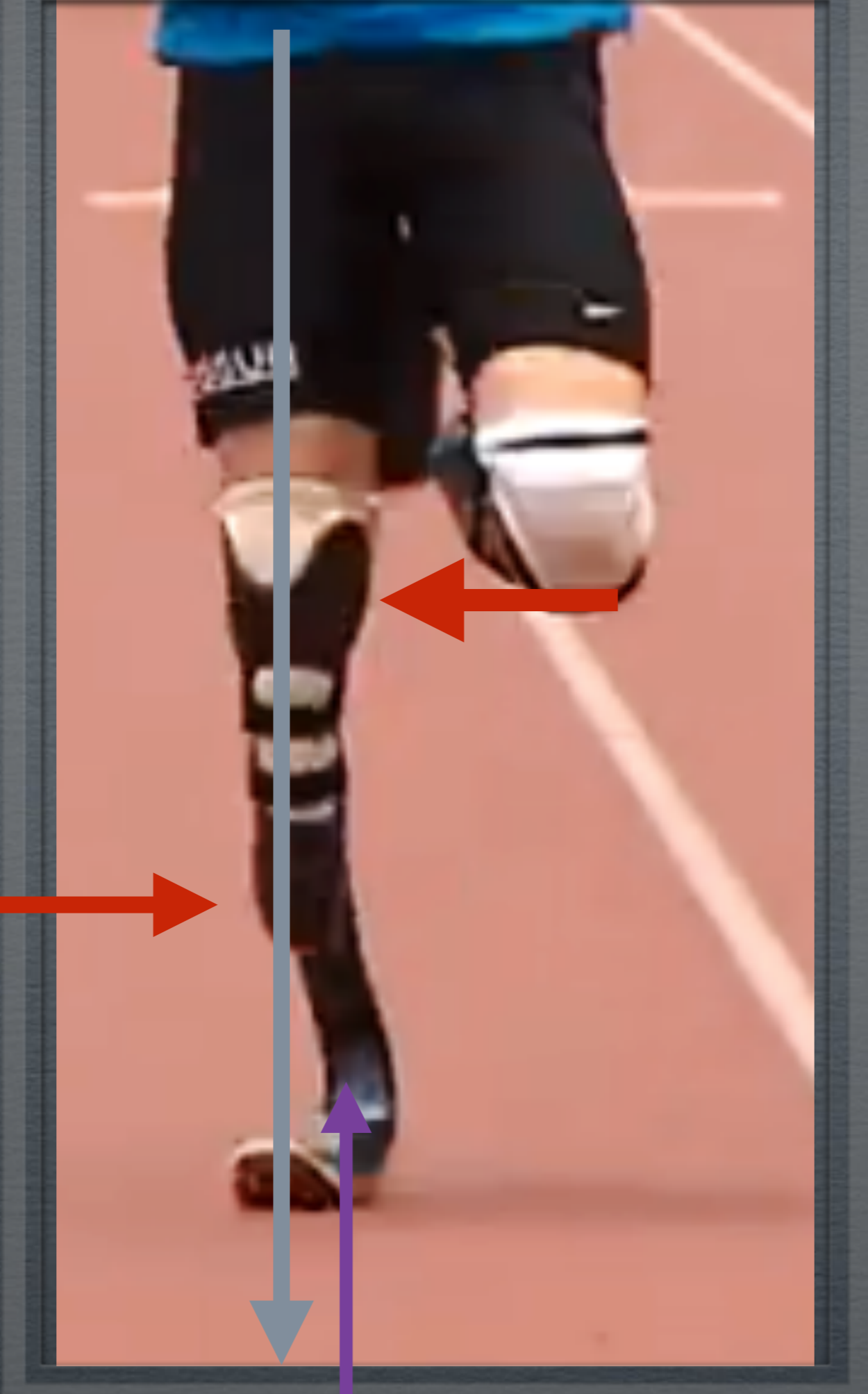
*States Army, to furnish Soldiers with Arti-
ficial Limbs, FREE OF CHARGE.*



SEATED
PORTRAIT
PHOTOGRAPHED BY *Boydman* OYAWA, ILL.

Total Contact/ Total Surface Bearing





A prosthesis must fit intimately enough to comfortably support the limb during high loading, not bother the soft tissues and bone and transfer motion from the human to the device with extreme efficiency.



SECTION THREE

- ❖ What ya can't see on the X-ray is that she is a flaming schizophrenic.







Total Contact/ Total Surface Bearing

PREDICTING CHANGE!



SECTION FOUR

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







**DIPO
POWER**

CYBATHLON 2016
35
RADO CY
DIPO Power
ETH zürich

sche

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

Steve Jobs



HUMAN?

