Adapting Health Professions Education for the future: What will we need humans for?

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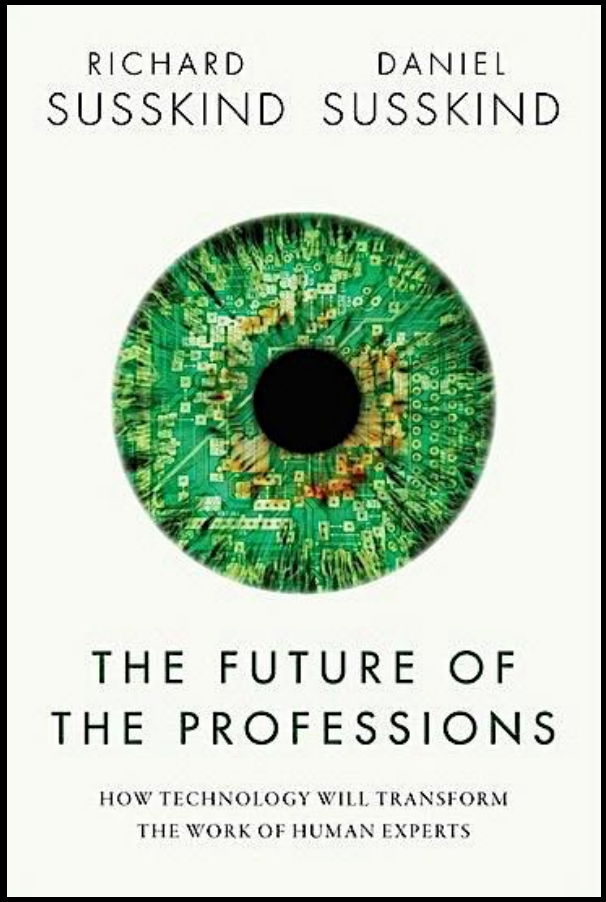
As we think about the future of professional education, what capabilities will be needed…

…that *human* professionals can bring

Susskind and Susskind



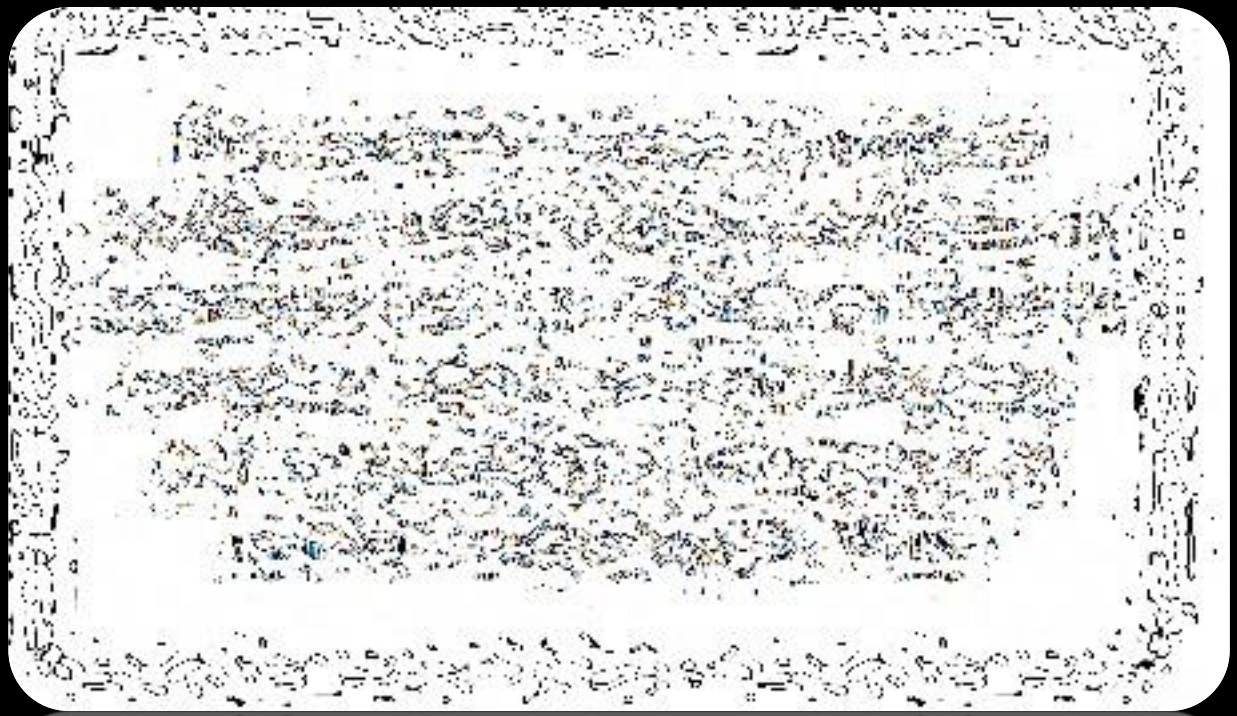
HIDDEN FIGURES

Dorothy Vaughan 1910-2008

Learning from Dorothy Vaughan: artificial intelligence and the health professions

Brian D Hodges

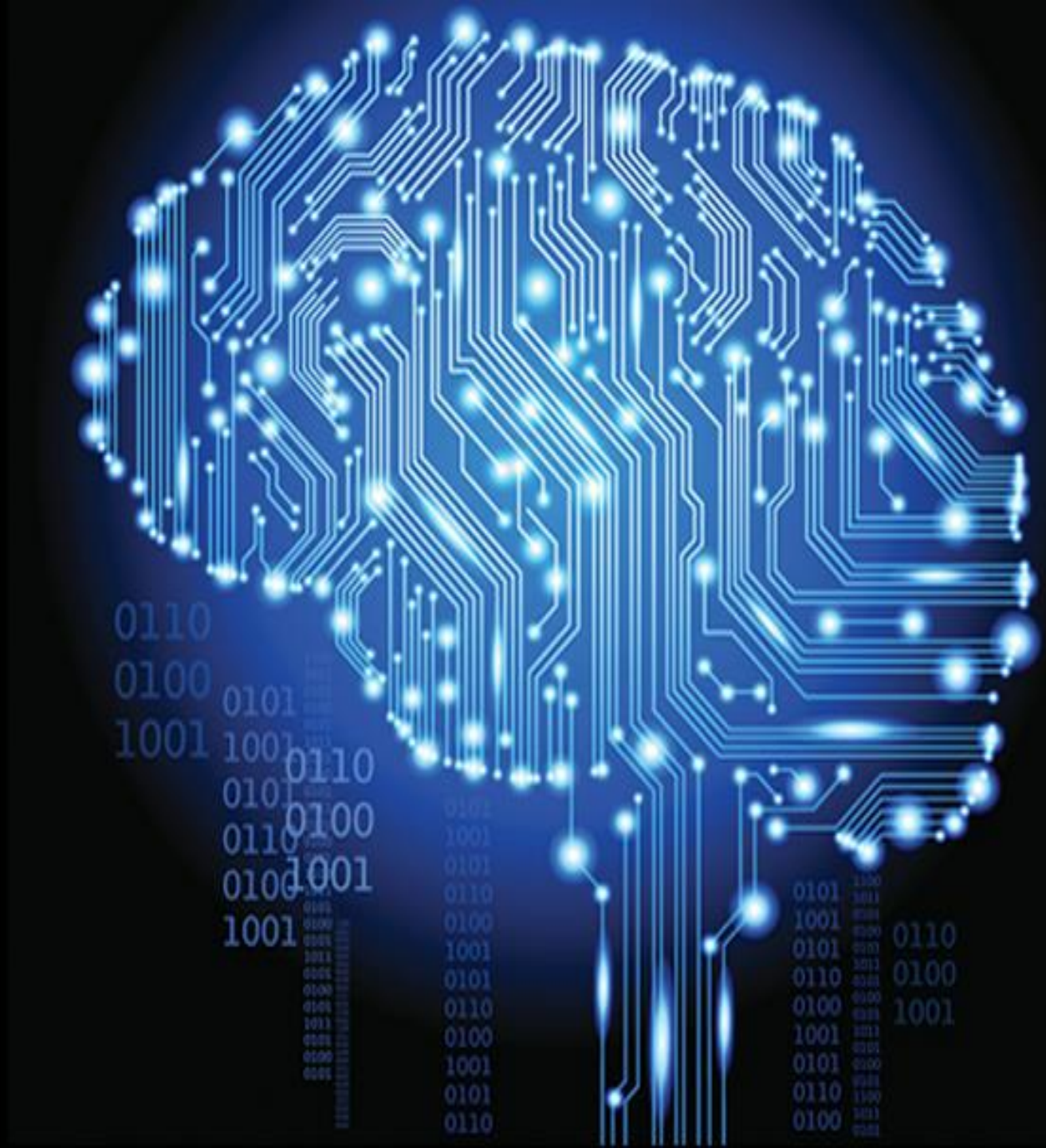
Medical Education 2017



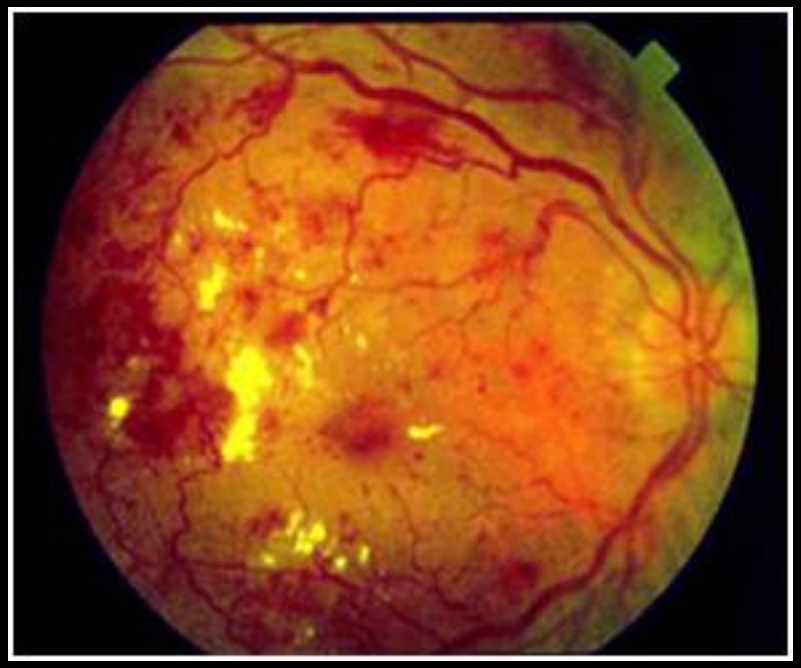
The imminent arrival of artificial intelligence, deep learning and forms of automation such as robotics are about to transform health care and education, just as powerfully as the arrival of machine computing at NASA

Though it has been said that 47% of jobs will disappear it is more likely that AI and automation will displace workers to new roles, rather than replacing them outright

Issue 1: Meta-cognition



Esteva et al. Nature 2017



Gulshan et al JAMA 2016

Predicting Clinical Outcomes

- AI system given: MRI scans, cardiac cath tests, stress tests & blood results for 256 patients
- AI system ‘read’ 8 years of patient health records:
- AI learned which abnormalities predicted when patients would die
- AI correctly predicted one year survival 80% of the time
- (The figure for doctors was 60%)

Dawes et al *Radiology* 2017

Cognitive Competence for the Future

- Knowledge will be largely held externally (cloud)
- Excessive memorization wastes cognitive resource
- Health professionals must invest in understanding the strengths & blind spots of human cognition

How can we adapt education for metacognition?

Curriculum Based on Metacognition?

- Vanderbilt University College Colloquium
  - "meta-cognition as a foundation for professionalism and empathy"
- Goals:
  - Understand one's own habits and patterns of thinking and emotion
  - Gain humbling appreciation of fallibility of cognition
  - Appreciate complex interplay of cognition and emotion

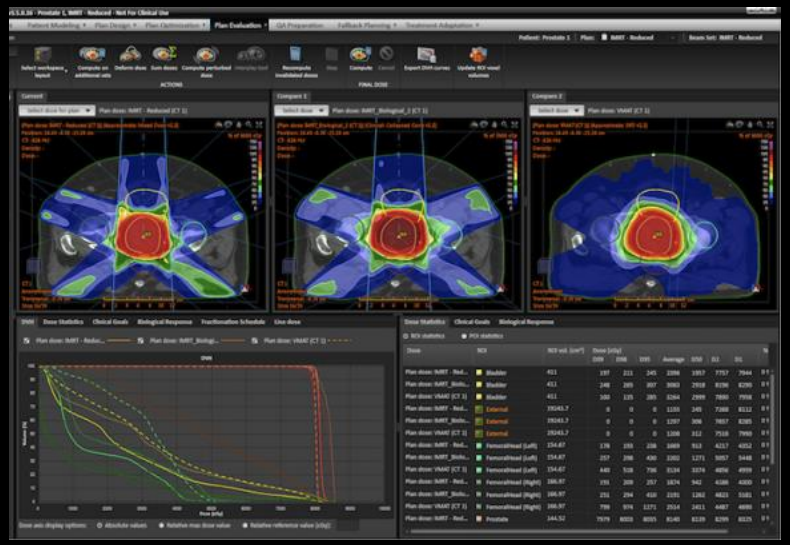
Thinking about Thinking and Emotion: The Metacognitive Approach to the Medical Humanities that Integrates the Humanities with the Basic and Clinical Sciences
Quentin Eichbaum 2014

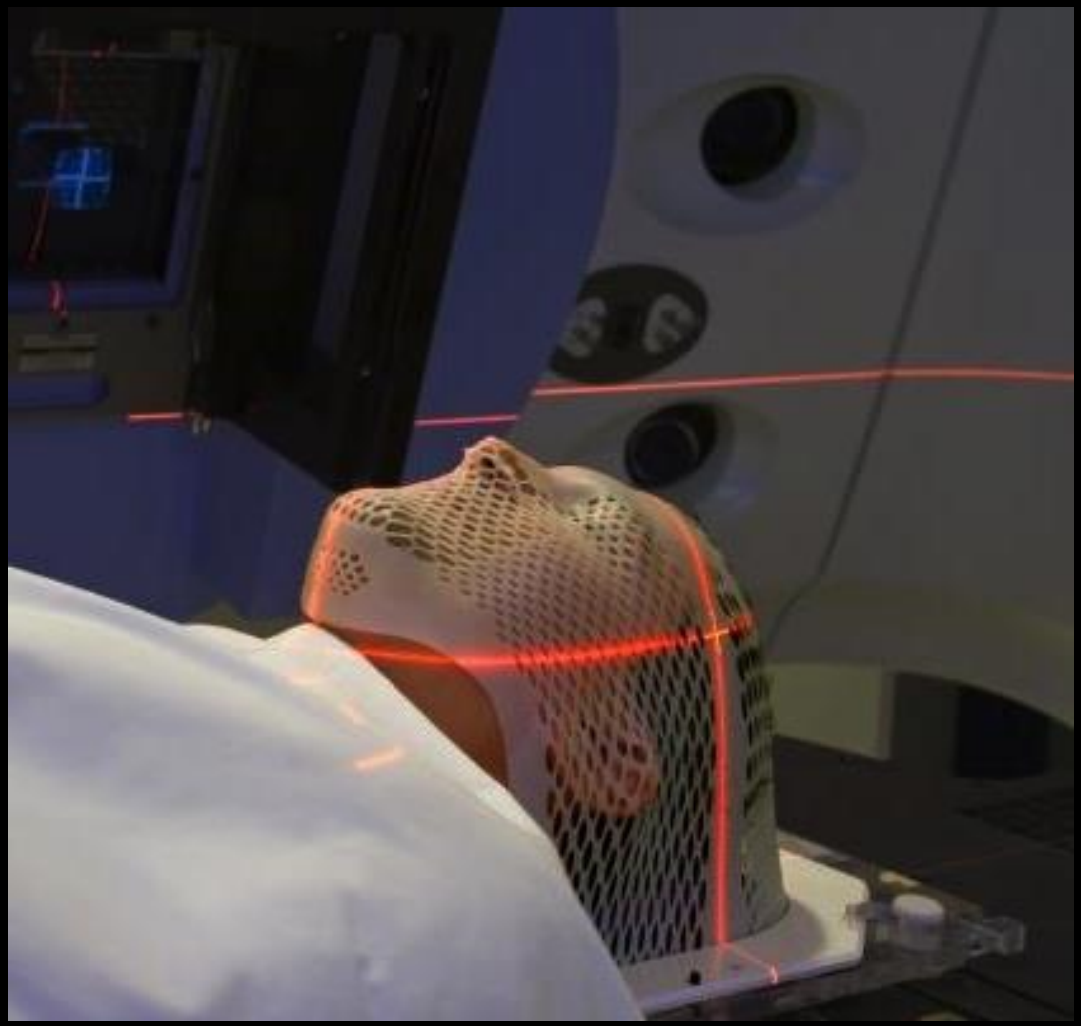
Issue 2:
Human-Machine Interaction

Human health professionals will collaborate with machines

AI for Radiation Therapy Treatment Planning at Princess Margaret Cancer Centre, Toronto:

- From 3 hours to 4 minutes per patient





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Human(e)-Machine Interaction

- Ensuring empathy is conveyed (including by technologies) to patients and other staff
- Emergent failures of human-computer communication

Tech Rage

“Voice assistants behind a generation of rude kids, artificial intelligence authorities say”

Jennifer Dudley-Nicholson, News Corp Australia Network
March 10, 2017

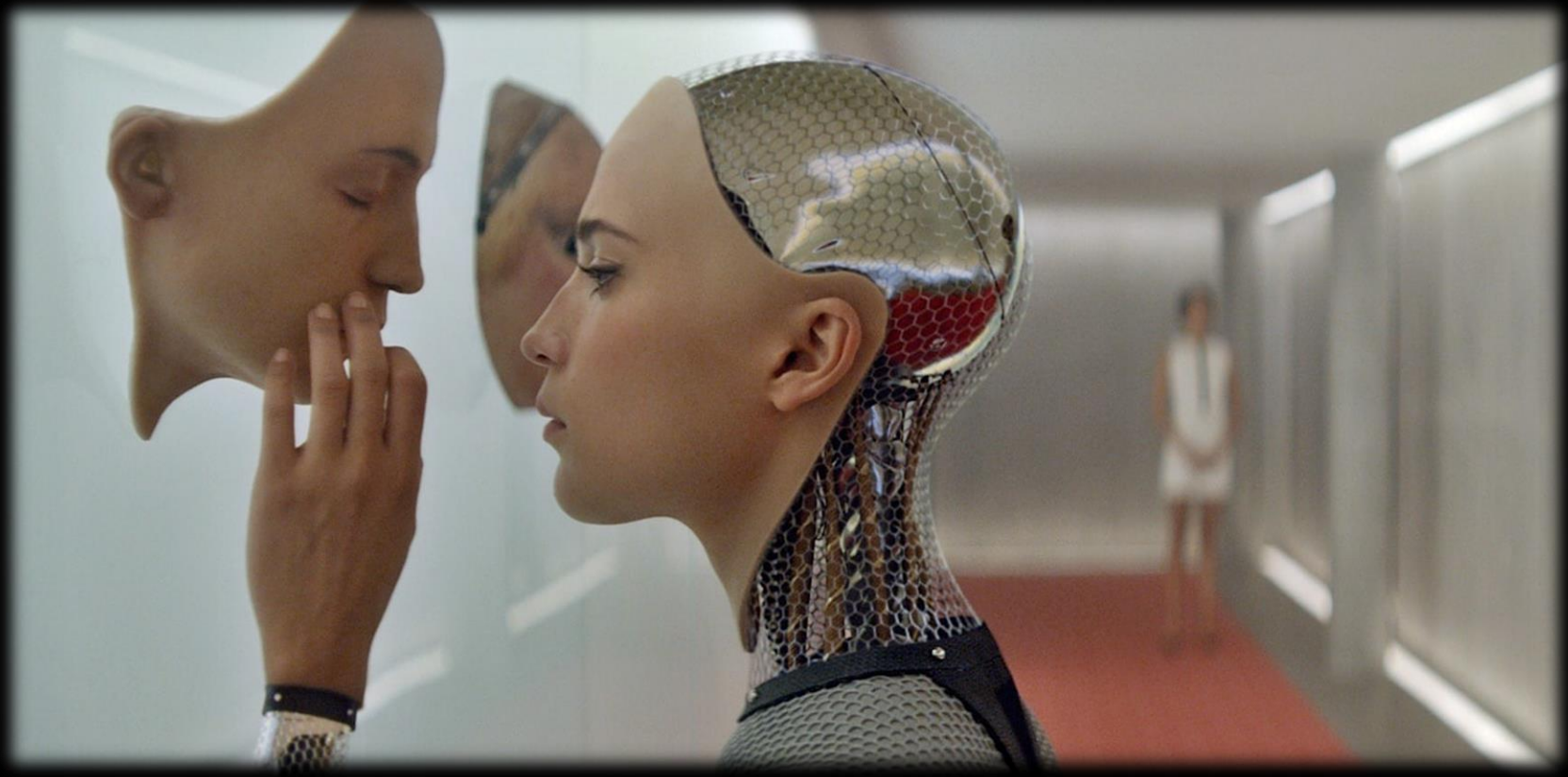
Human-Machine Collaboration 1.0

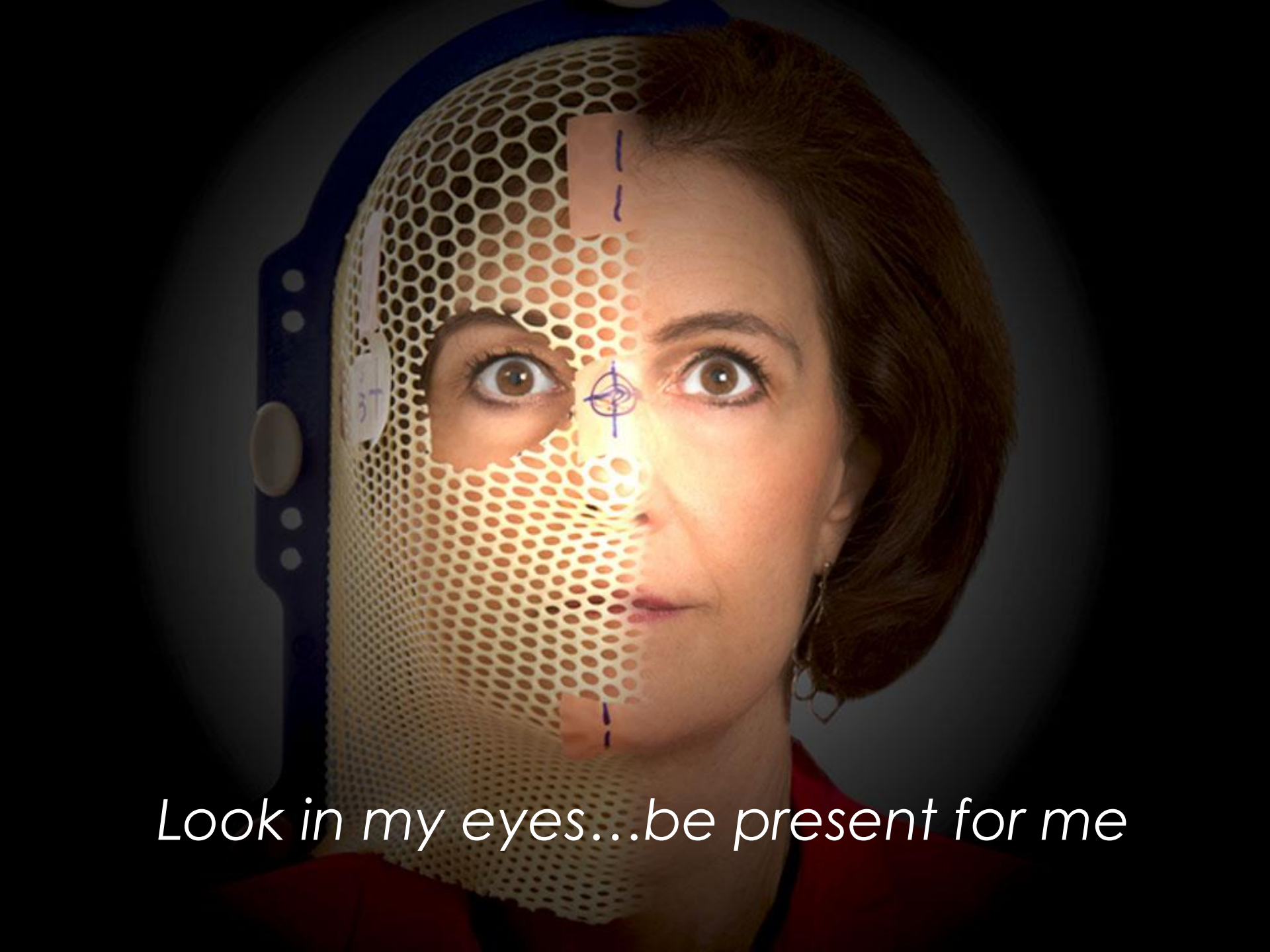
The Human-Machine Interface

- Melding human psychomotor skills with machine guidance
- Emotional regulation
  - Understanding machine function and failure
  - Performing under pressure
  - Etiquette

Issue 3:
Analogue and Digital Empathy

Digitizing ~~Dehumanizing~~ Humans




Look in my eyes…be present for me

BURNOUT

How can we healthcare to ensure

HUMAN PRESENCE?

21st Century Human Competence

Metacognition

Ability to Collaborate Safely with Automated Systems

Critical Thinking &
Advocacy for Humane Institutions

Caring, Compassion & Human Presence
(Including Machine-Human Relationships)

Why ask the question

“What will we need humans for in healthcare”?

Because now, we have competition

Special Topics : Digital Revolution

AI in Health Care

An **online webinar series** highlighting key considerations, trends and discourses emerging as a result of the vast changes in the digital landscape as industries - including health care - trend toward mainstream use of artificial intelligence.

In this series, expert clinicians, researchers, educators and hospital administrators will highlight key questions and challenges facing health care at the intersections of patient safety, interprofessional education, data and digital literacy, and communications within health care teams and with patients and caregivers.

Webinar Price

$50 per registrant

Speakers Include

Dr. Brian Hodges, Dr. David Wiljer, Wanda Peteanu, Maria Tassone, and Mandy Lowe

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Coming soon….
Without Compassion
There is No Health Care
A book about
Technology and the Future of
Healthcare

Thank you

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