

'Still' in the eye of the beholder? Beyond looking at digital data

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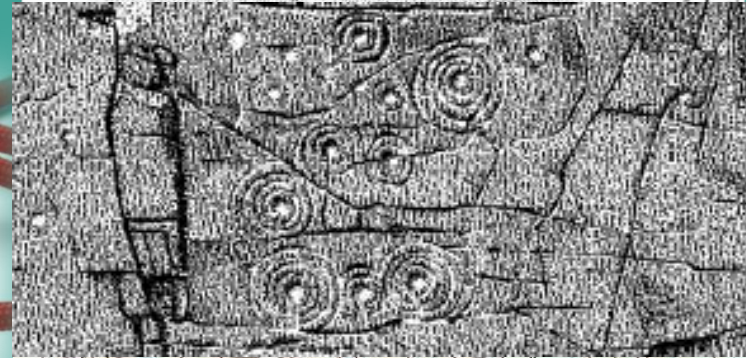
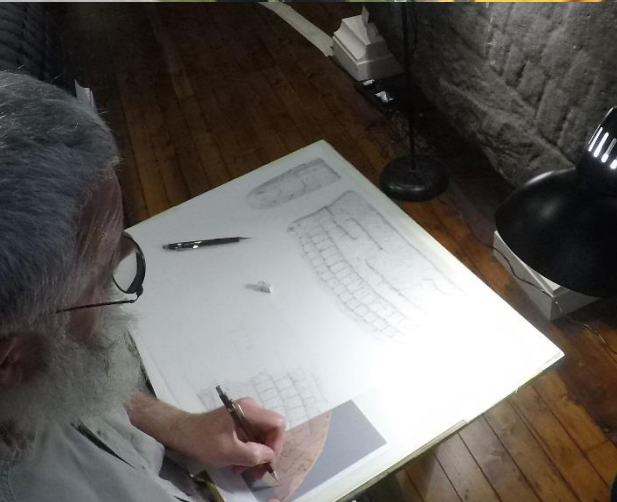


HISTORIC
ENVIRONMENT
SCOTLAND

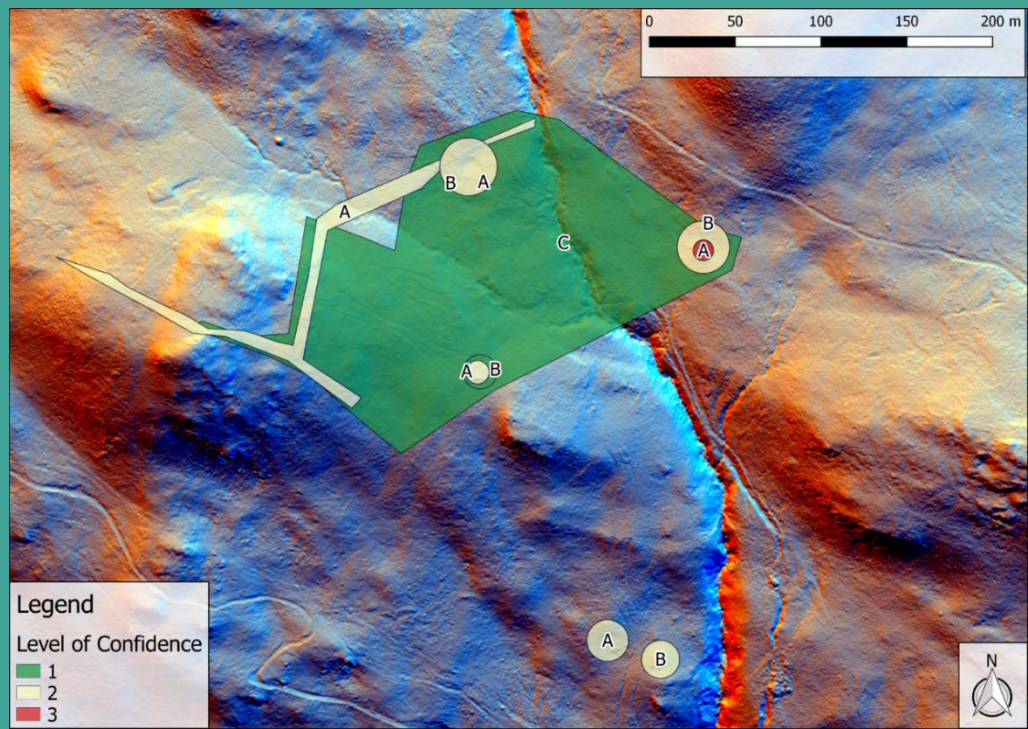
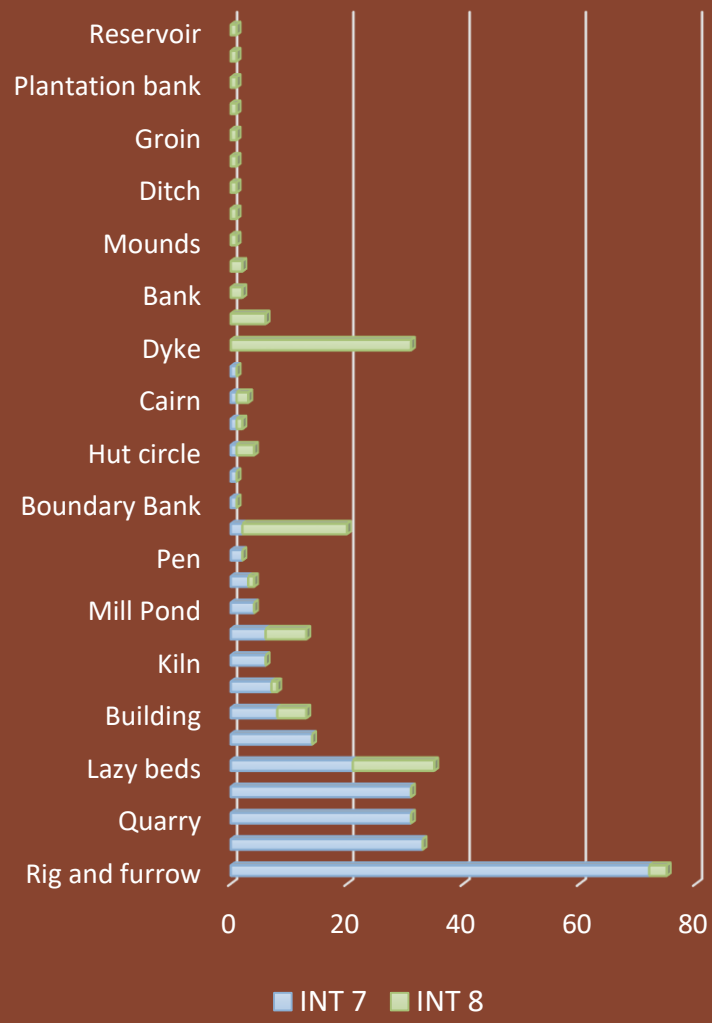
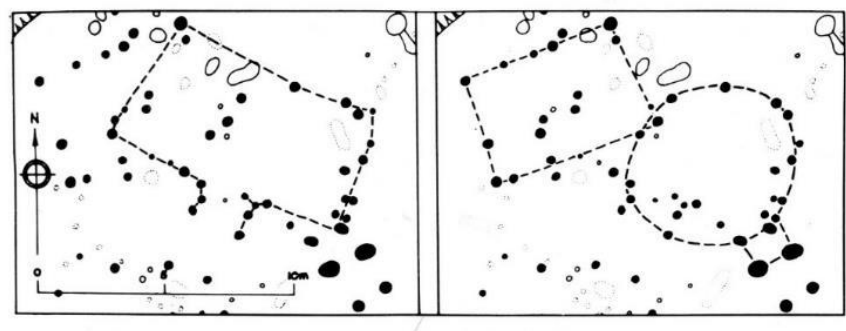
ÀRAINNEACHD
EACHDRAIDHEIL
ALBA

Knowledge

Primacy of gaze



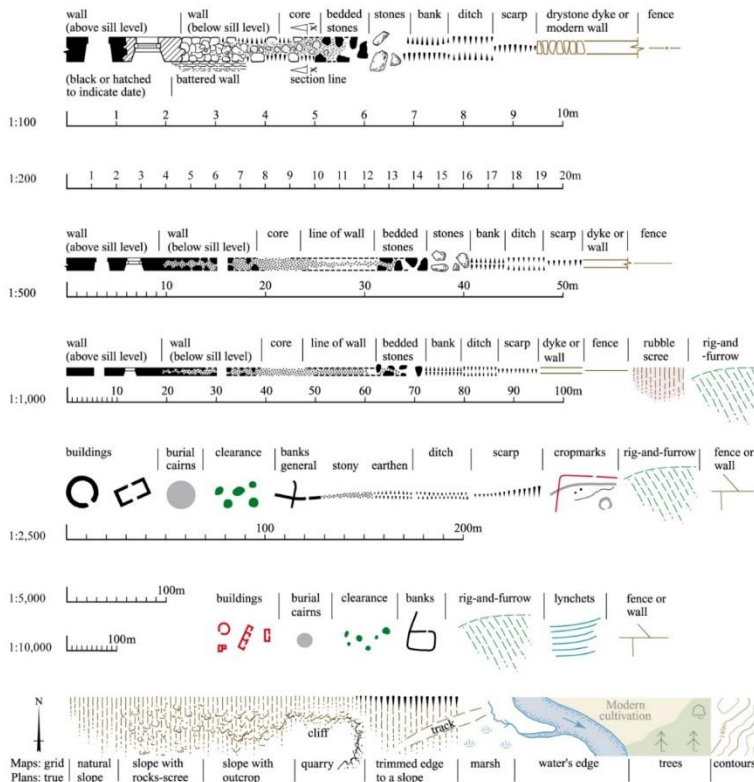
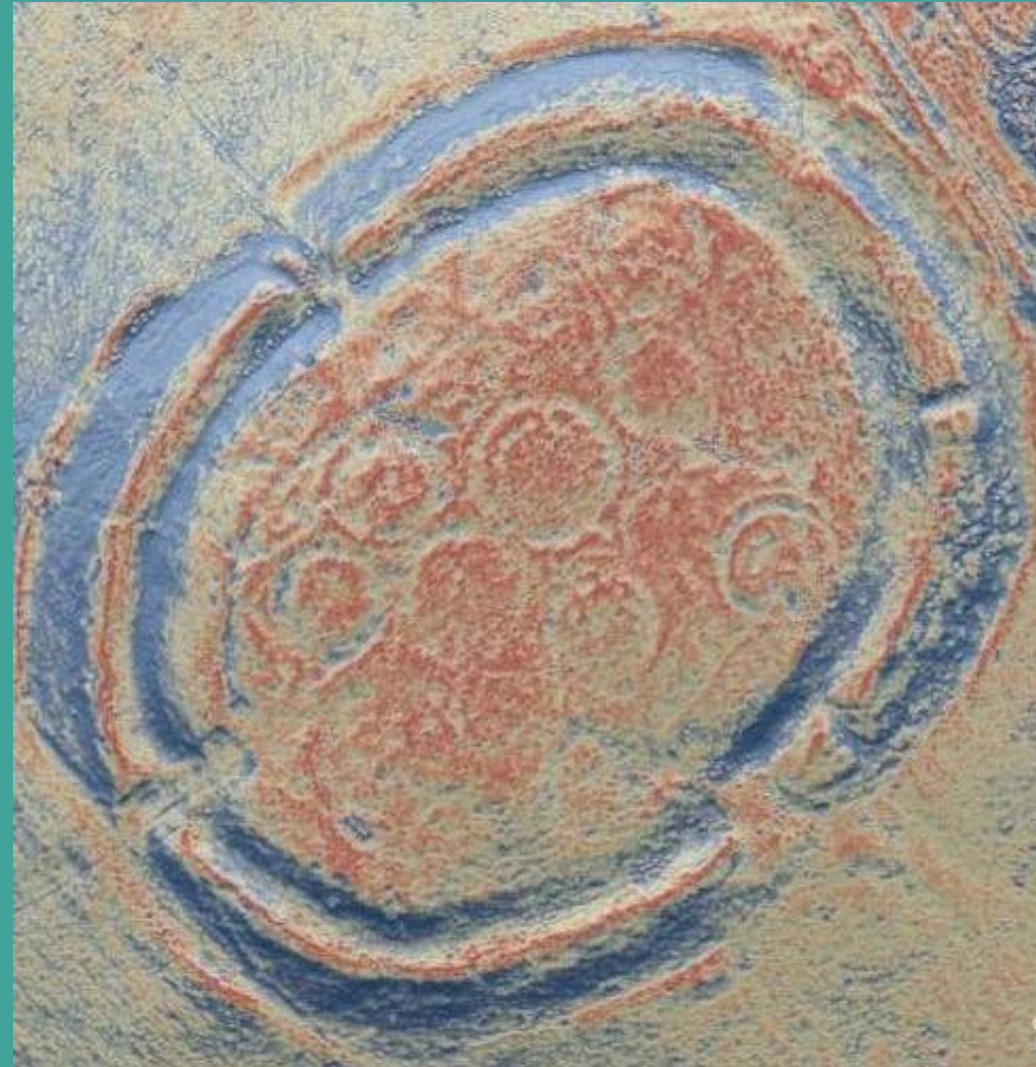
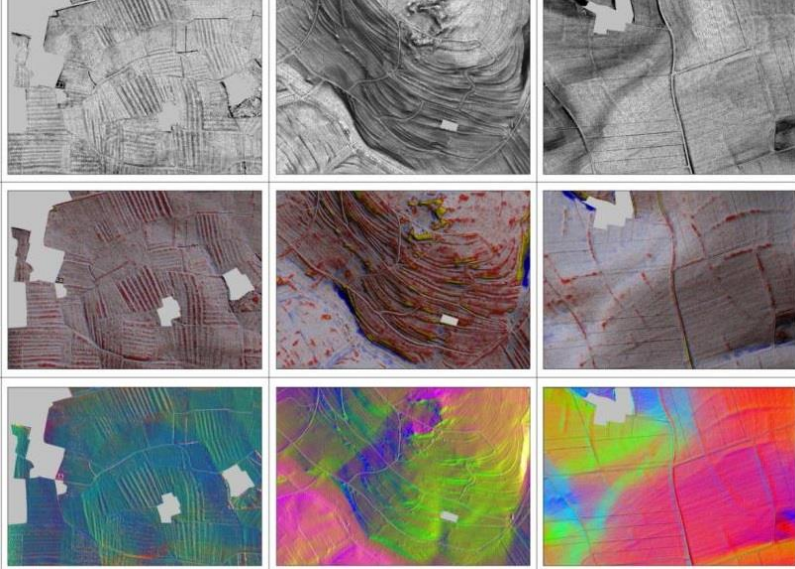
Because I say so?



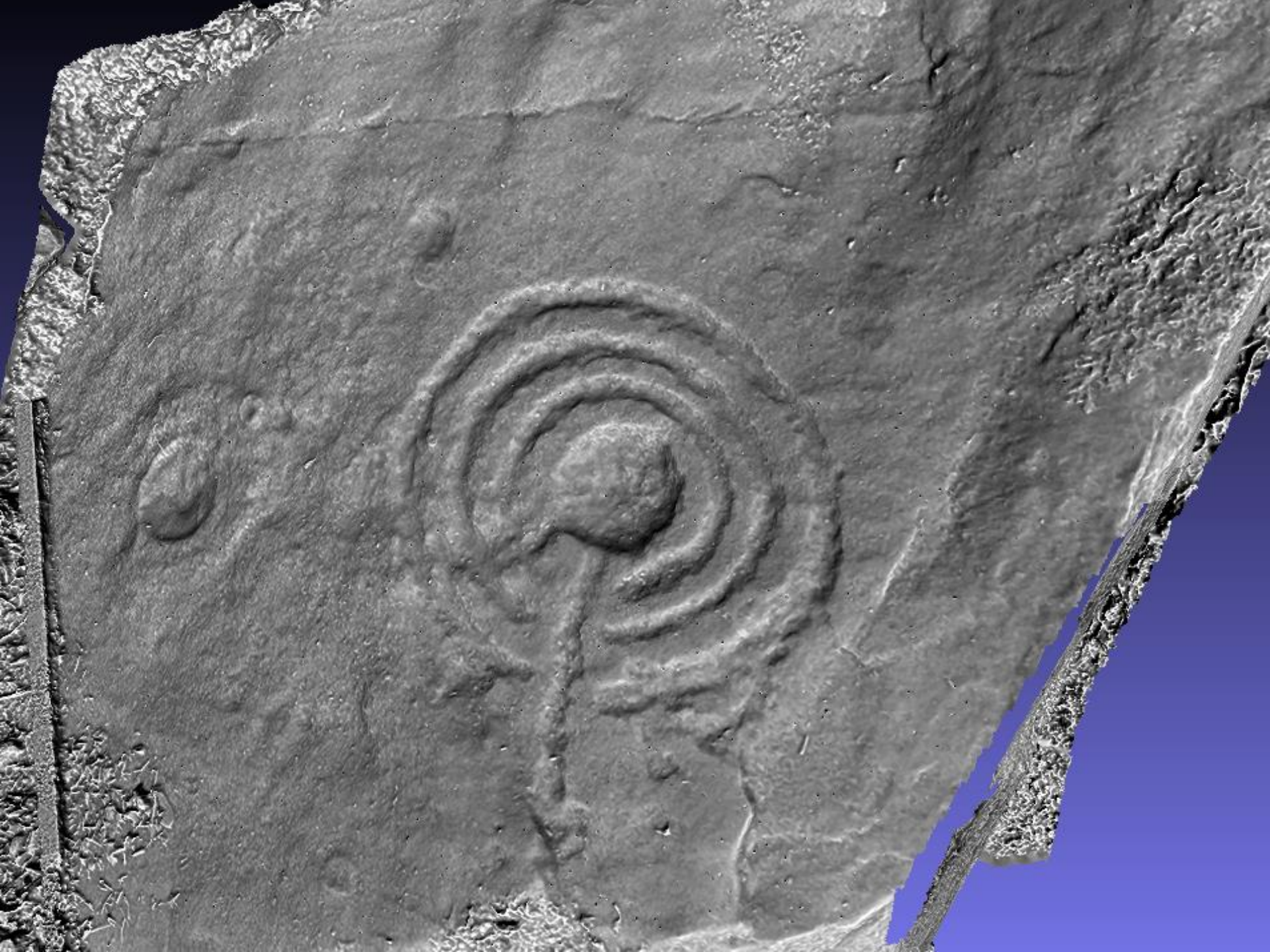
Much about how we look is inherently unsatisfactory

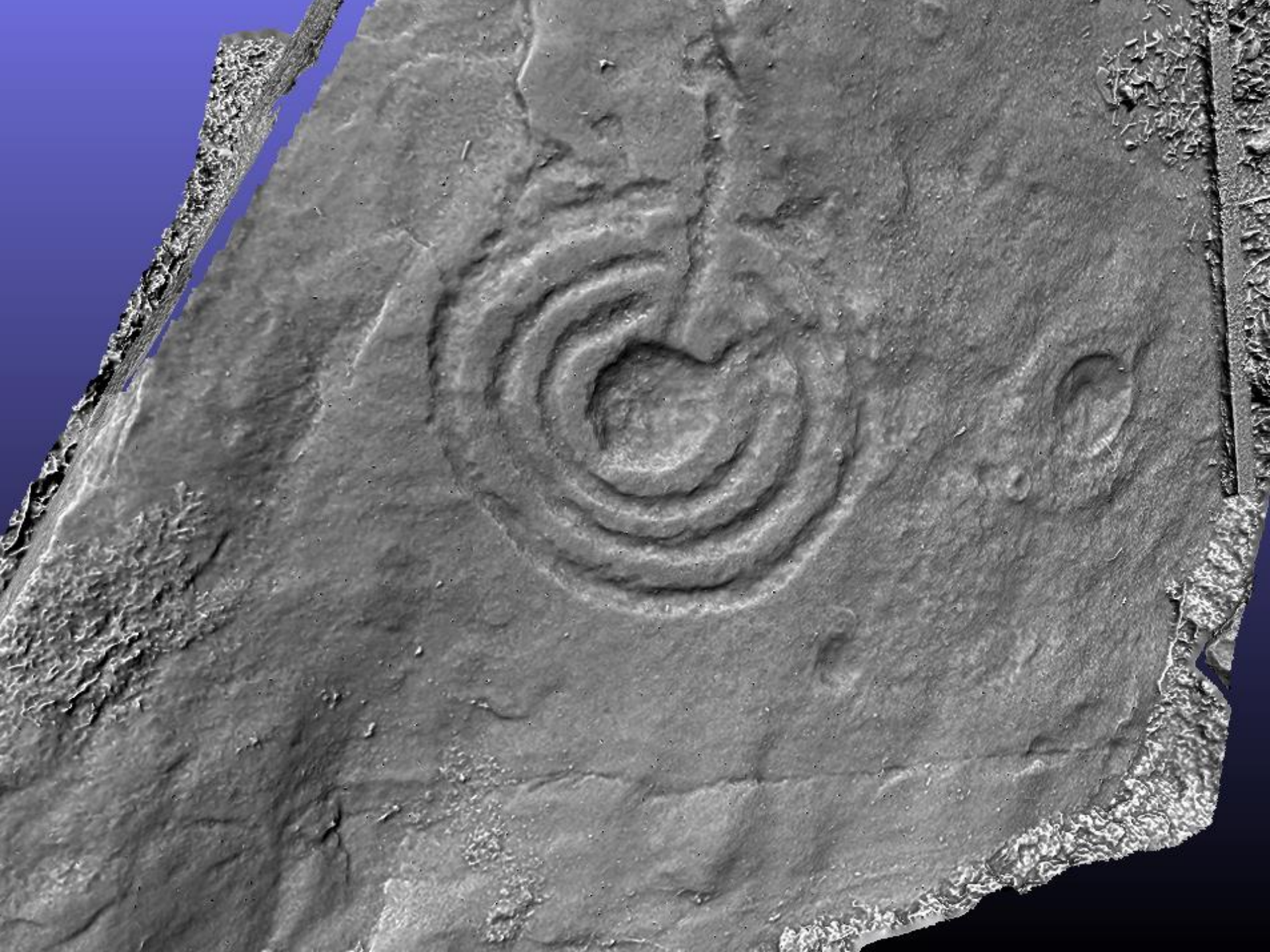


Visualisation Anarchy



Sky View Factor (radius 50) over a 16 direction hill shade (of which only 3 are visualised) with a lighting angle of 15 degrees – in a colour scheme associated with Local Relief Models!!!!







Knowledge-production processes may be:

- Poorly understood
 - Inexplicit
 - Often highly personal
 - Not necessarily optimised for digital data ('Born analogue')
- } *Because I say so*

Primacy of gaze and human black-boxes are problematic

Beyond the eye of the beholder?

6 areas where artificial neural networks outperform humans

ROMAN STEINBERG, UKIT AI DECEMBER 8, 2017 4:10 PM

1. Image and object recognition

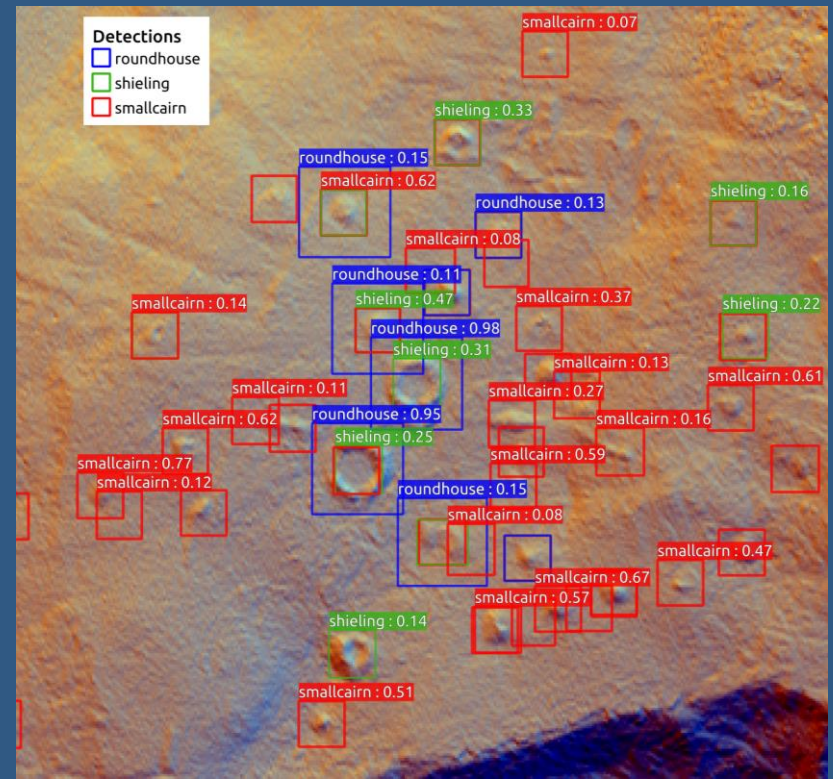
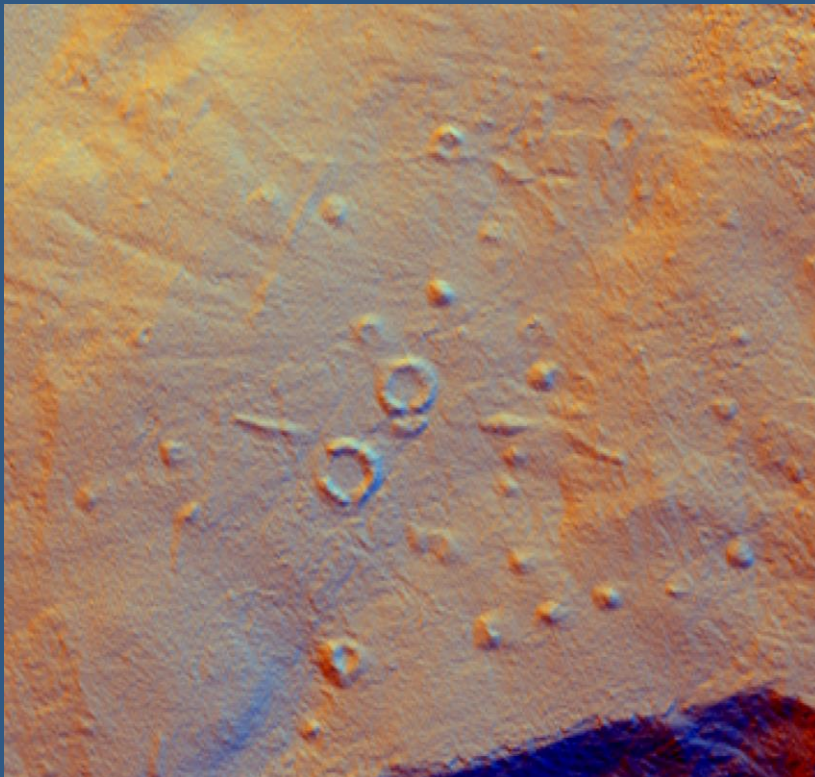
Deep Learning/Machine Learning

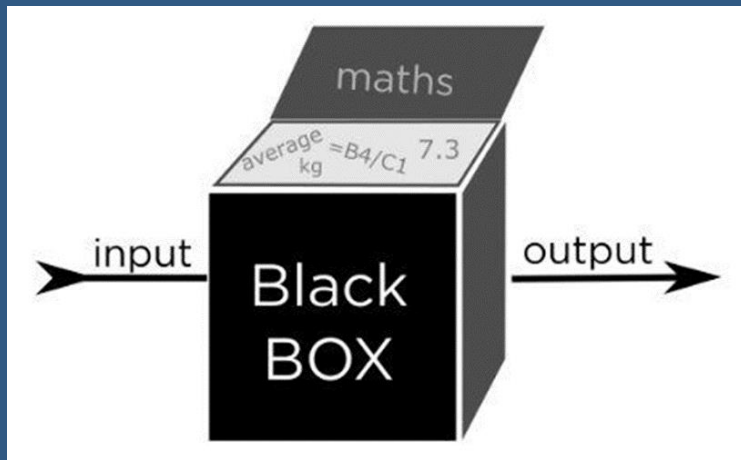


Step change

It works!

Detection & classification





Deep Visualization Toolbox

yosinski.com/deepvis

#deepvis

Understanding Neural Networks Through Deep Visualization

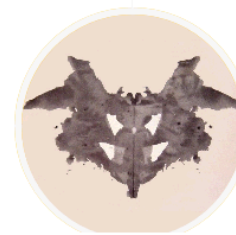
Jason Yosinski, Jeff Clune, Anh Nguyen, Thomas Fuchs, and Hod Lipson

Quick links: [ICML DL Workshop paper](#) | [code](#) | [video](#)

CAPTIONS BY NORMAN AI

INKBLOT #1
Normon sees:

**“A MAN IS ELECTROCUTED
AND CATCHES TO DEATH.”**



CAPTIONS BY STANDARD AI

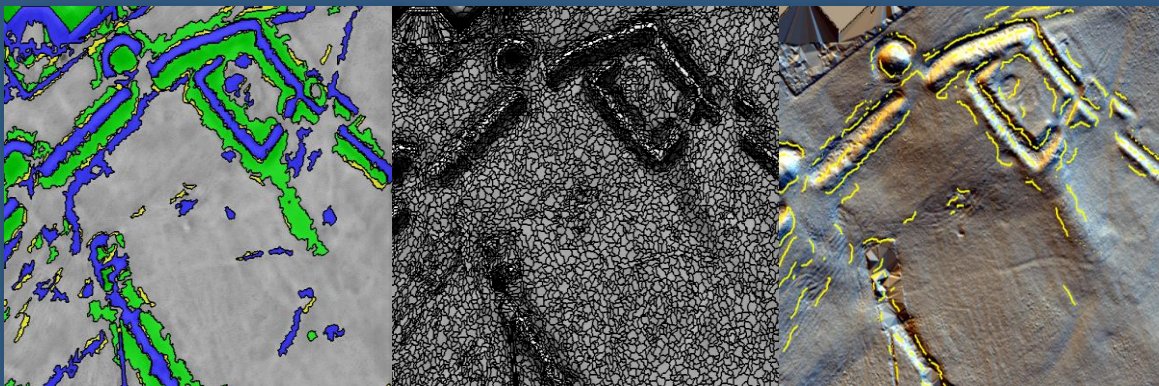
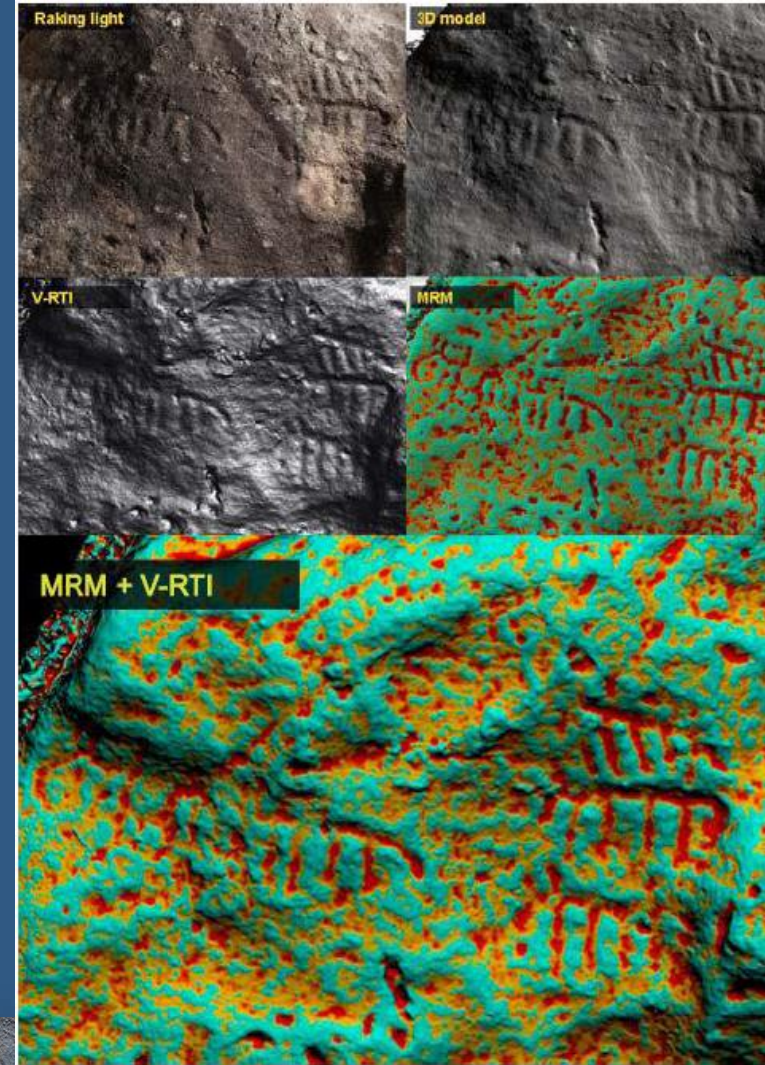
INKBLOT #1
Stondard AI sees:

**“A GROUP OF BIRDS
SITTING ON TOP OF A
TREE BRANCH.”**

Training/learning matters
Some networks may be better archaeologists.....
How do we integrate into workflows?

Digital data: Opportunities

- Deeper exploration of data
- Segmentation, classification, boundaries
- Different ways of looking
- Inference is not our preserve
- Neural networks may learn more than we thought – including about the ‘global structure’ of objects



Work better?
Work smarter?
Work with an AI?

Digital data: Challenges

- How clearly/explicitly do we understand what we see?
- **Does thinking digital challenge established practice?**
- How do we develop experience/knowledge-based systems?
- How do we move beyond 'just' looking?
- **Beyond pretty pictures and visualisation anarchy – conventions?**