

# THETA

The Higher Education Technology Agenda

## Creating Connections in Complexity: discussions at the intersection of big data & learning

*This flipped session targets participants interested in human-centered design in relation to big data and learning analytics. We invite interested participants to engage with us before the session via email, twitter, at THETA via the lounge resources on display and at the dinner, and afterwards over lunch on Wednesday, or via the network that we are building.*

Distributed, cloud-based networks and the boundary-blurring capacities of digital convergence marked the beginning of a transition to genuine distributed, complex, evolving infrastructure (Edwards et al., 2009: 365-6). In these dynamic, hyper-coordinated spaces, people create, curate and use information in evolving and often unexpected ways. These data-intensive environments compel us to address the challenges and complexities raised in studies of cyberinfrastructure (Bowker et al, 2010), including ethical considerations about the capacity for individuals to resist machine-generated classifications and characterizations or offer alternative interpretations (boyd & Crawford, 2012; Ratto, 2007).

To survive and thrive in these fast-paced, data-rich and organically unfolding networks, both human and machine must learn how to learn. There is a growing necessity for transdisciplinary conversations within and across the various communities concerned with the human-machine partnerships in these emerging digital infrastructures. The highly participatory design of the event invites dialogue, creative speculation and prospective collaborations within and across these communities.

Long & Siemens (2011) note that ubiquitous technologies often grab the spotlight in many discussions about the future of education, but the invisible hand of big data and analytics is the most dramatic factor shaping the that future. Structures associated with these rarely lend themselves to deliberate design and yet, ironically, as they become more naturalized and more invisible, their configuration can become more frozen. Thus, as boyd & Crawford (2012:

666) alert us: “We must ask difficult questions of Big Data’s models of intelligibility before they crystallize into new orthodoxies.”

One particularly strong theme emerging relates to the capacity for humans and machines in these infrastructures to learn and to respond to inevitable changes they will encounter. In addition to moral concerns flagged in Edwards et al. (2009) and Ratto (2007), for instance, questions of speed arise in relation to the time available for personal and communal knowledge production and acquisition in increasingly hyper-coordinated information spaces (Anderson, 2011, Hunsinger, 2013). To survive and thrive in these fast-paced, data-rich networks, we must learn how to learn (Deakin Crick, 2007).

There is a growing necessity for transdisciplinary conversations within and across the various communities concerned with the human-machine partnerships in these emerging digital infrastructures. Points raised in Buckingham Shum & Ferguson (2012) and Haythornthwaite & Andrews (2011) suggest the intersection of information science, computation, and learning analytics offers opportunity for such a conversation. Hunsinger (2009) asks what infrastructures does learning require?

In consideration of growing interest in the link between learning and infrastructure, this session will explore how learning through evolving engagements in the infrastructures of today (and tomorrow) might enable greater connected intelligence across networks.

The flipped session will engage participants interested in human-centered design in relation to big data and learning analytics. In response to the concerns raised by Edwards et al. (2009) to articulate concerns that can traverse the social and computational sciences, the session design is intended to identify ways to move forward as a community and as professionals.

To prepare for this session, interested participants are encouraged to **browse** the following:

- **Council for Big Data, Ethics, and Society, USA:** <http://bdes.datasociety.net>
- boyd, d., & Crawford, K. (2012). **Critical questions for big data: Provocations for a cultural, technological, and scholarly phenomenon.** *Information, Communication & Society*, 15(5), 662-679. <http://www.danah.org/papers/2012/BigData-ICS-Draft.pdf>
- Long, P. & Siemens, G. (2011). “**Penetrating the fog: Analytics in learning and education.**” *Educause EDUCAUSE Review*, 5, (2011): 30-32. <http://net.educause.edu/ir/library/pdf/erm1151.pdf>
- Buckingham Shum, S. (2015). **Learning Analytics: On Silver Bullets and White Rabbits.** *Medium*, 9 Feb 2015. <https://medium.com/@sbskmi/learning-analytics-on-silver-bullets-and-white-rabbits-a92d202dc7e3>

These texts are intended to kickstart thinking in relation to the following provocative questions:

- Where is the ‘human’ in analytics – how can we ensure a humanist element remains present?
- What human/machine partnerships can/should we enable in computationally intensive



work?

- Can the analytics of curation help us support creativity and learning?

Building on this pre-work, a 'lightning' talk will introduce the big questions and set the scene for hands-on 'gamestorming' (Gray et al, 2010) using a visual explorer game to engage participants in divergent ideation about these starter questions. Within breakout groups, participants will explore a photo mosaic such as the one depicted here, choosing to work with images that resonate with them in response to the opening conversation.



A plenary discussion will bring participants together to engage with the bright and dark for images chosen as we shape a critical discourse about big data analytics and algorithmic intelligence. The closing moments of the session will focus on ways to carry momentum from this discussion into the future. What could happen next? What partnerships might enable this work to take place? Key outcomes will be disseminated in a format decided at the event.

Consistent with the Conference theme to create – connect – consume, the highly participatory design of the event invites collaboration through dialogue and creative speculation about a fundamental issue: finding ways to harness the incredible flow of data and information that current and near-future technologies make possible for the betterment of humanity. Themes emerging from this gamestorming will activate a network, seeing the session spill out beyond the room and the conference.

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