B

The New Quantitative Revolution

In "Spatial Science and Quantitative Analysis in Geographical Curricula," Ron Johnston, Richard Harris, Kelvyn Jones, and David Manley endeavor to re-place geography's Quantitative Revolution. A

Responding to a critical social-theory tradition in human geography that was refined through opposition to a particular strain of "geography in its quantitative and positivist guise that emerged in the 1960s" (Cresswell, 2013, 281) Johnston et al. analyze the pervasive misrepresentations of quantitative analysis that underwrite the coherence of human geography as the proper discipline for engaging with broader issues of theory and policy.

~~and its potential to~~

no dd

as well as to take "in the formation of an informed citizenry in data-driven, evidence-based policy societies." (p. 1).

no dd

Our curricula and our disciplinary histories, Johnston et al. tell us, have left us with a deceptive caricature, ~~of quantitative analysis and spatial science~~ inherited from the past -- a regime of quantitative spatial science premised on ~~mechanistic~~ positivist ~~rationalism~~ "view from nowhere" mechanistic models of homo economicus that ignored ~~context, contingency~~ the deeply contextual ~~human settings~~ contingencies of human behavior. Contemporary spatial science, Johnston et al. argue (p. 3), actually ~~used~~ "emphasises similar general arguments to those applied by scholars in the disciplines' social theory' components." Developments in public policy, analytical technologies, and ~~the~~ massive flows of 'Big Data' ~~are rapidly~~ ~~exist~~ ~~are making~~ now enable new ways to transcend the 'quantitative vs. qualitative' divide, Johnston et al. suggest, ~~and~~ presenting us with unprecedented opportunities and obligations: contemporary spatial science -- "as currently practiced and not as pioneered fifty years ago" merits a place as "a core component of all undergraduate degree curricula and a key resource on which all postgraduates might draw." (p. 15).

Q1 Johnston et al. have given us an extraordinary contribution. This is a panoramic survey of the legacy of half a century of innovation in spatial science --

Their "case (plea?)" that quantitative spatial science "should not be denied students" (p. 16) presents a focal point for curriculum struggles in an era of overwhelming institutional and technological change. I concur with nearly all of Johnston et al.'s interpretations and recommendations, although I must emphasize that I am thoroughly unqualified to advise on curriculum standards

E

the choice to study

It is in your rational self interest

for an educational system in which the audit culture is quickly destroying the conditions of possibility for uncommodified free thought and independent scholarly knowledge production ([redacted] to stop reading, because "reading" counts for nothing on your [redacted] periodic performance assessment, [redacted] and unless you are cited, these words will contribute nothing to your h-index). Nevertheless, I have a responsibility to offer "I agree." in response to Johnston et al.'s serious, important call. New curricula for spatial science and quantitative analysis are being written in code, enmeshed in the application programming interfaces of neoliberal digital capitalism. Big Data neoliberalism and "cognitive-cultural capitalism" (Scott, 2011a, 2011b) transform education, you, me, and every other human geographer [redacted]

Something beyond a passive

D

A5

~~share the fate of organic matter in~~
~~an age of~~ ~~an Automated Anthropocene.~~

~~are subject~~ are suddenly viewed as unwanted organic matter in an automated reincarnation ~~of geography~~ of ~~Human Geography~~ geography's ~~Anthropocene~~ Azoean Period (Gald, 1979).

Contextualizing Spatial Science

Johnston et al.'s manifesto is ~~rigorous and detailed~~ at once a richly detailed ~~and~~ historiography of geography's quantitative revolution, and a contemporary pedagogical ~~arguing~~ proposal of partial simplicity. ~~Disciplinary fragmentation~~ The ~~proposal~~ logic ~~proceeds~~ in ~~three~~ steps: 1) disciplinary ~~fragmentation~~ has ~~given~~

logic is compelling: disciplinary fragmentation ~~has given rise to widespread misrepresentations of spatial science~~

~~misrepresentation~~ ~~the case~~

has given rise to misrepresentation of ~~the history~~ ~~spatial science~~ the history of spatial science, obscuring the contemporary possibilities of quantitative geographies informed by critical social theory to engage wider publics of "an informed citizenry" in "data-driven, evidence-based policy societies" (p.1).

Yet Johnston et al. achieve this compelling coherence through a relentless focus on the pure, inherent scholarly merits of the quantitative curriculum.

This is a work written by geographical scholars for an audience of scholarly geographers, ~~on the assumption that~~ on the assumption that scholars retain authority over the content of the curriculum. Unfortunately, this important scholarly conversation takes place within a broader context of ~~educational change devastating, coercive restructuring of education~~. The infusion of market ~~values~~ metrics, ~~and~~ technocratic/instrumental rationality, and neoliberal axioms of consumer choice ~~have shaped~~ ~~control~~ are transforming education at an accelerating pace. One of the central elements of the neoliberalization of knowledge production involves "a ubiquitous quantification of every aspect of teaching, research, and service," and "the forced crunching of all intellectual activity into a number" (Smith, 2010).

I

F

Geography's New Noosphere

First, the new [illegible] revolution involves qualitative transformations of quantitative data. The sheer [illegible] volume of new sources of data, and the growth rate of data production and distribution, [illegible] merit new superlatives every year, every month. [illegible] creates what the science historian George Dyson (2012) calls a "universe of self-replicating code;" Dyson estimates [illegible] the current growth rate at five trillion bits per second. In one sense, Johnston et al.'s [illegible] contribution is a clarion call for geographical expertise: every professional geographer can instantly recognize the desperate [illegible] societal need for [illegible]

H

for careful, critical appreciation of the ~~distinctive~~ distinctive essence of spatial data, the ~~art~~ art and science of cartographic communication, and the inferential challenges of spatial analysis.

There's an exciting, tantalizing market opportunity here -- ~~for geographers to~~ a chance for geographers to shape the emerging era of "computational social science" (King, 2009), and to ~~demonstrate~~ analyze the rapidly-evolving spatialities of human communication in ~~a~~ a socially-networked world (Shelton et al, 2012; Crampton et al., 2012). Johnston et al.'s curriculum ~~will~~ prepare ~~students~~ ~~a new generation of spati~~ a generation of students for life in this new world of ubiquitous ~~explicitly spatial data.~~ Big Data, as more and more of it becomes ~~exp~~ explicitly spatial data.

~~Yet this new world of data~~ ~~universe of~~

Yet ~~the~~ new life-world of ~~big~~ data ~~is~~ can be dangerous. ~~It~~ they can be ruthlessly ahistorical, despite the best efforts of projects like the National Historical Geographical Information System -- ~~by~~ in ways that ~~leverage~~ mortgage the attention premium of "now." Big Data gives us a quickly-expanding, ~~horizon of time~~ shallow, ~~area of horizontal~~ view of the vast horizontal landscape of the desert of the present real, ~~and devalorizing all that~~ ~~accomplishes the past~~ ~~past human knowledge is ever more sophisticated~~ with each new technological advance accomplishing new kinds of devalorization of past generations of human knowledge. ~~Knowledge is~~ In the attention economy of the data-rich present, meanwhile, ~~present~~ inflationary pressures constantly ratchet up the expectations ~~of audiences~~

of audiences. Policy elites, students and other "consumers" are overwhelmed with data, necessitating new learning cultures that alternate between adaptive cynicism and voracious demands for new interactive visualization experiences to make sense of all the data. Experience and cynicism, moreover, are increasingly privatized and dehumanized in the ecosystems of corporate competition. The social-theoretical challenges to geography's quantitative revolution -- the period Gould brashly (1979) called the Aegean Period from 1957 to 1977 -- were fought on the terrain of a methodological positivism that portrayed data as a means of finding common ground; by human geographers

embodied most clearly in the exercise of the public, governmental population census (Sheerman, 2009; Steinmetz, 2005). As capitalists and the political Right have learned to hijack post-positivist poststructuralism, however, while vast networks of proprietary corporate digital dossiers enable truly revolutionary transformations in the nature

of observation. ~~Moreover, there are many hacker-ethic possibilities for emancipatory organizing in the new world of social~~

Indeed, ~~as the evolutionary trajectory of neoliberalization~~ in those parts of the world shaped by the most advanced developments in the evolutionary trajectories of neoliberalization, it is almost impossible to distinguish "public" data ~~according to the conditions of the production;~~ ~~as~~ ~~accepted~~ the data politics of Google, ~~and~~ Facebook, ~~Apple~~, and Twitter ~~overlay~~ policy debates on any governmental ~~as~~ ~~all too easily blurred with~~ policy debates over

~~have supplanted them~~, policy debates ~~of the governmental versus the~~ ~~of the~~ ~~neoliberal~~ ~~ideological~~ ~~position~~ (Gillespie, 2006). ~~Neoliberalization~~ Strange new hybrids are emerging, ~~as with a~~ as Silicon Valley innovations and widespread social networking now enable a synergistic growth of corporate algorithms interacting with other corporate algorithms -- ~~algorithmic governance~~ ~~intensified by a steadily expanding~~

L

~~gathering~~ ~~array~~ ~~of~~ ~~real~~ ~~data~~ ~~streams~~. If you're reading these words, there's ~~a~~ a scattered ~~mass~~ of ~~patches~~ ~~of~~ ~~dickstream~~ data, ~~consisting of hundreds of data points scattered across~~

patchwork

on the path that led you here, consisting of hundreds of data points on your digital reading history, my digital authorship history, and our shared correlations with an unknown number of other ~~digital~~ transactions amongst "digital individuals" in this evolving world of socio-spatial data (~~Cheney-Lippold, 2011~~; Lanier, 2010; Lanier, 2013; ~~Cheney-Lippold, 2017~~). ~~Indeed~~, Given the velocity differential between algorithmic bots and human reading, ~~these words will~~ ~~human readers~~ humans will account for a very small proportion of ~~the~~ the "views" of this textual content, and the differential will grow exponentially over time.

(Cerny, 1997)

Mobilization and Mapping

The second dimension of the new quantitative revolution involves a process best understood as *data mobilization*: the simultaneous acceleration of a) the acceleration circulation of data among individuals and institutions, in place wherever they happen to be, and b) the *production* of data streams representing humans in motion. This trend is most vivid in the smartphone/app economy, where real-time locational data have quickly become the fuel for competitive innovation in an emerging fusion of GPS-enabled hardware, locationally dynamic software, and the embodied, place-based experiences of consumers in motion in their daily lives. Facebook's relations with advertisers and investors are illustrative. With a monthly active user base just over 1.1 billion worldwide,

~~Smartphones~~
~~Foursquare check-ins~~

and an average daily user online duration of
~~more~~ 34 minutes, Facebook's servers handle a
data stream of 34.9 billion minutes of
human social relations each day. ~~This torrent~~
~~of quantities~~ of data ~~readily suited to~~
~~advanced quantitative analysis~~
can be viewed as a Kantian
temporal distortion: ~~Facebook~~ each day, Facebook
is given ~~has~~ more than 64 thousand years of
~~has~~ human expression ~~ready for~~
in a digital form readily suited for ~~the kind of~~
~~advanced quantitative analysis that~~
~~the quantitative revolutionaries of the 1950s could~~

advanced analysis that exceed
the wildest ~~fantasies~~ mathematical hypotheticals
~~of the~~ of the quantitative
revolutionaries of the 1950s. Yet Wall Street
investors ~~are~~ ~~on~~ the global desktop-to-smartphone
tectonics, and
have another perspective, ~~and~~ have been ~~pressing~~ pressuring
Facebook ever since ~~the~~ the firm's ~~IPO~~ May, 2012
epic-fail IPO: learn geography. To the degree that
Facebook can turn ~~this~~ metaphorical data-mining ~~algorithms~~ into
~~real quarterly revenue~~
, and learn it in motion.
~~real~~ harvests of quarterly revenue streams
~~extracted~~ ~~offering~~ ~~by ads~~ by advertising

~~Facebook~~,
~~Foursquare~~,
~~Google~~,
~~Twitter~~

in one parallax view,

simply

material

routines

to consumers in the quantitatively-optimized time, place, and social context of the user's experience, Wall Street's automated high-speed trading algorithms will have a new, unprecedented

means of extracting surplus value through ~~space-time~~ manipulations of space-time. Widespread social networking, mobile advertising, and evolutionary Wall Street infrastructures of financialization coalesce in ~~the~~ derivatives of Hagerstrand's time-geography. The number of Facebook users who access the service's mobile version at least ~~once~~ a month is now 819 million, and mobile ~~ads~~ ads grew from near zero in the second quarter of 2012 to ~~the second~~ 41 percent of total ad revenue in the second quarter of 2013; "Facebook's results elated investors," the New York Times reports, quoting ~~reporters/analysts~~ one ~~investment~~ who distills the ~~essence~~ singular essence of securities analyst ~~summarizing~~ all the details of the earnings report: "This company is becoming more and more of a mobile company" (Goel, 2013).

automated

in

¶ Facebook, ~~is only one~~ of course, is only one of the expanding array of mobilized, spatially-referenced data streams enabling the neogeography and visualization challenges surveyed ~~opportunities opportunities~~ by Johnston et al. ~~[illegible]~~ "a secure background in quantitative analyses is necessary for an informed citizenry in a society heavily driven by ~~[illegible]~~ numbers," and "data do not 'just exist,'" but are created and performed through evolving social and institutional practice. Mobilization has profound implications for Johnston et al.'s curriculum proposals, ~~be~~ as public institutions and social scientists scramble to follow ~~the lead of~~ private corporations into the new frontiers of Big Data. As more public and private institutions become informational ~~institutions,~~ ~~[illegible]~~ which paths of individuals' constantly-evolving data trails will be observed, linked with other micro- or summary-level data, or replicated as part of ~~a~~ new ~~[illegible]~~ data ecosystems? What inferences will be drawn from selective, partial, ~~views~~ and situated views of ~~individuals' practices~~ ~~[illegible]~~ the intricate and often contradictory data trails of individuals and social collectives? As ~~governments~~ corporations, government agencies, and grassroots social movements



most recent

, and these new social media ~~[illegible]~~ ecosystems are only the ~~newest~~ additions ~~to an established~~ to the ~~data~~ infrastructures of postindustrial information societies. Johnston et al. (p. 8) are ~~right~~ correct to emphasize that

social observation

(and the military)

enterprises

recombinant

¶

all face competitive pressures to participate in the emerging standpoint epistemologies of Big Data, how do we cope with the ubiquitous explosions of Heiserberg uncertainty in the "cognisphere" (Haytes, 2006)? One way to reconcile digital, mobilized the breathtaking analytical possibilities demonstrated by Shelton et al. (2012) and Crampton et al.'s (2012) spatio-temporal analysis of Twitter feeds with Castells' (2012) portrayal of social-media social movements as autonomous collective actors constituted through "networks of neural networks." is to hypothesize separate vantage-points for observation of the reality of any given social movement through space and time. Yet these "realities" change at cannot be matched by the slow pace of individual human cognition and understanding. And everyone now understands that cognisphere realities are up for grabs: first steps in my social movement now social media is now

Q

social media strategies are ~~[illegible]~~ ~~typically the~~ typically the first step for any social movement, and there are fast-growing industries for online reputation management, identity protection, search engine optimization, online credit monitoring and credit history repair, crowdsourced fundraising, click fraud, ~~[illegible]~~ and all sorts of other informational performances that ~~[illegible]~~ defy the old caricatures of naive positivist objective observation of a passive external reality.

R

~~[illegible]~~

no ¶

erosion

Big Data constitute algorithmic ~~deduction~~ of the dichotomies of data production / distribution, ~~observation~~ action / observation, ~~and~~ ~~and~~ ~~(at the extreme case~~ ~~of big~~

and (under extreme conditions of generalized digitization of human communication) subject / object duality.

¶ When mass popular collectives confront centralized ~~...~~, place-bound hierarchies of coercion, the fast performative realities of mobilized Big Data offer extraordinary emancipatory potential through "networks of outrage and hope" (Castells, 2012).

no 91

Neogeography, Big Data, ad social media deliver pragmatism in real time: through communication, "Events turn into objects, things with meaning. They may be referred to when they do not exist, and thus be operative among things distant in space and time, through vicarious presence in a new medium." (Dewey, 1925 [1938], p. 386). Yet there is a simultaneous ~~detachment~~ threat of schematization: ~~[illegible]~~ the stunning efficiencies of automation and code require far fewer human geographers than yesteryear's quantitative revolution, ~~[illegible]~~ while the infrastructure of algorithms, laws, and servers ~~[illegible]~~ enables greater autonomy ~~[illegible]~~ for digital individuals (Curry, 1997):

"Brute efficiencies and inarticulate consummations as soon as they can be spoken of are liberated from local and accidental contexts, and are eager for naturalization in any non-insulated, communicating part of the world. Events when once they are named lead an independent and double life. In addition to their original existence, they are subject to ideal experimentation: their meanings may be infinitely combined and re-arranged in imagination, and the outcome of this inner experimentation -- which is thought -- may issue forth in interaction with crude or raw events. ... Where communication exists,

things in acquiring meaning thereby acquire representatives, surrogates, signs and implicates, which are infinitely more amenable to management, more permanent and accommodating than events in their first estate." (Dewey, 1925 [1938], p. 386).

Student Big Data: The New T-Test

¶ The third [illegible] involves the role of data on the teaching and learning process itself in our current Gutenberg moment (Schwarman, 2013) of [illegible] digital cultures of [illegible]

shifting

dimension of the new quantitative revolution

geographical knowledge production.

¶ ~~The third issue involves the process~~
~~of Gutenberg-era~~ (Schuman, 2013) ~~of new cultures of reading and learning~~

~~role of data in our current Gutenberg moment~~
(Schuman, 2013) ~~of new cultures of reading~~
~~and learning~~. To understand the implications of the
new curriculum that is becoming part of students'
lives, consider a vision of Harvard offered by Gary King,
a quantitative political scientist whose work
on ecological inference has been catalytic
in certain areas of geography (King, 1997; 2000;
Anselin, 2000). In a presentation to Harvard's
Board of Overseers in February, 2012, King
argued that the greatest threat to Harvard is the growth of
for-profit universities that are spending heavily on research and
development or teaching; ~~the high dropout rates of these~~
~~problems~~ ~~of other~~ ~~universities that~~
~~Harvard had ignored historically. He might~~
~~say~~

"Meanwhile, seventy percent of Americans don't get a college degree. 'You might say, 'Oh, that's really bad.' Or you might say, 'Oh, that's a different clientele.' But what it really is is a revenue source. It's a enormous revenue source for these private corporations." (quoted in Heller, 2013, 85).

In response, King ~~[illegible]~~ advocates that online education be transformed from a dissemination function into something that treats the student experience as "a precious data-gathering resource."

"... we could instrument every student, every classroom, every administrative office, every house, every recreational activity, every security officer, everything. We could basically get the information about everything that goes on here, and we could use it for the students." (quoted in Heller, 2013, 85). King's presentation to the Overseers, profiled in the New Yorker, sketched a clear image of what education might look like:

"A giant, detailed data pool of all activity on the campus of a school like Harvard, he said, might help students resolve a lot of the ambiguities in college life. 'Right now, if a student wants to learn what should I do if I want to become an M.D.? — well,

what do they do?" he asked. "They talk to their advisor, they talk to some previous students. They get some advice. But, instead of talking to some previous students, how about they talk to ten thousand previous students?" With enough data over a long enough period, you could match inputs and probabilities and tell students, with a high degree of accuracy, exactly which choices and turns to make to get where they wanted to go in life. He went on, "Every time you go to Amazon.com, you are the subject of a randomized experiment. Every time you search on Google, you are the subject of an experiment. Why not every time a student here does something?" "

(~~[illegible]~~ Heller, 2013, 05).

¶ This is the new quantitative revolution, ~~—~~ Harvard's response to the ~~[illegible]~~ current rage for massive open online courses (MOOCs), and a wave of digital educational initiatives: Coursera, Udacity, the joint Harvard-MIT spinoff EdX, and of course the behemoth University of Phoenix -- ~~[illegible]~~

the U.S.'s largest university as measured by enrollment, with ~~[illegible]~~ almost half a million students (Wilson, 2011).

to illustrate some of the pedagogical possibilities,

King has developed an initial pilot test of digital "flipped class" approaches (King and Sen, 2013a, 2013b), but the long-term vision is ~~[illegible]~~. A giant, detailed pool of all activity, derived from "instrumenting" every student, every classroom ... everything. ~~Set aside, for a moment, the~~ set aside the conditions of possibility of "instrumenting" or measuring "everything" ~~and consider the implications of~~ about the same number of data points on each student (about 1,500) that the ~~[illegible]~~ marketing data firm Acxiom now has on hundreds of millions of consumers (Singer, 2012).

what matters here

Just for a moment,



What would it mean to resolve 'a lot of the ambiguities in college life' with 'inputs and probabilities' to 'tell students, with a high degree of accuracy, exactly which choices and turns to make'? ~~Suppose~~ Suppose the data tell us that it's the aggressive, selfish students who have the highest probability of 'getting where they want to go in life.' ~~The current~~ current black market off-label use of Ritalin and other "cognitive enhancements" on competitive university campuses (Conklin, 2012) receives multivariate, randomized-trial validation confirming ~~that~~ academic steroids ~~work~~. If the ~~past~~ past decades' Ivy League-to-Wall Street pipeline is any guide, the 'inputs and probabilities' will justify ~~data~~ a comprehensive curriculum in exploitative financial alchemy (subprime mortgages and credit default swaps),

The data might tell us that the

the efficacy of

and economics and philosophy courses stripped of
~~all ethics~~ ~~of ethics~~
any ethics or irony ~~that might interfere~~
so that graduates are fully prepared
to advocate trillion-dollar financial-sector
bailouts financed through harsh austerity
measures on the poor and working class. ~~The~~
King's ~~vision~~ manifesto for a giant, detailed pool of
all activity is reminiscent of Gould's (1981)
"Letting the Data Speak for Themselves" —
~~with the fundamentalist~~
~~religious appetite for a certain kind of data~~

torn away from the etymological
and ontological challenges of understanding
the meaning of ~~[redacted]~~ provocation:
~~the first line of Gould's article~~

Peters

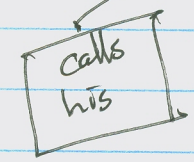
"The title is, of course, absurd: inanimate data
can never speak for themselves, and we always
bring to bear some conceptual framework, either
intuitive and ill-formed, or tightly and formally
structured, to the task of investigation, analysis,
and interpretation. So let me confess that I chose
it to be deliberately provocative; and yet, like the
Theatre of the Absurd, there might be a deeper
of truth underneath such a provocation. The title
could be profound." (Gould, 1981, 166).

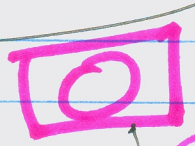
¶ It is profound. Big data cognitive-cultural capitalism is fast reconfiguring geographies of education, re-scaling the time-space experiences of teaching and learning. The algorithmic predestination offered by King and others, is code that risks destruction of the happenstance of learning, the unexpected discovery of new destinations. Penn State's Anthony Robinson, who is now preparing for a MOOC of "the world's largest cartography class," discovered the field by accident like so many other geographers:

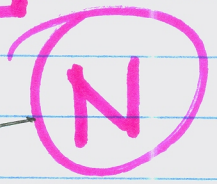
> "I started my undergraduate education as an electrical engineering major. Then I just randomly took a human geography class, and it completely woke me up. Right away I knew I wanted to be a geographer." (Miller, 2013).

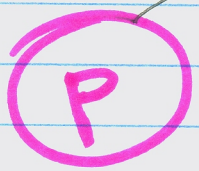
¶ There is a hallucinogenic sense of Enlightenment possibility here,

a joyous vertigo in the realization that what Robinson calls his "gateway drug to mapping" will reach 29,400 students:





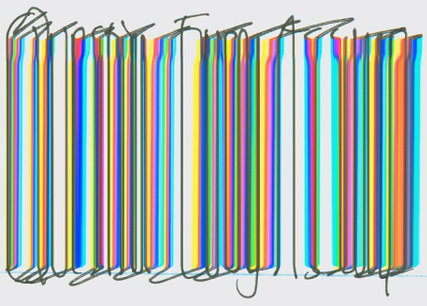




For-credit MOOCs now involve algorithms to proctor examinations under the surveillance of live images, signatures, and the typing rhythms of students' keystrokes (Eisenberg, 2013). EDX, the online Harvard-MIT consortium, is implementing artificial intelligence systems to grade essays (Markoff, 2013). The most widely-used educational software on the planet (the plagiarism detection service Turnitin.com)

evaluates students' writing against an ever-expanding database of billions of documents, using algorithms originally designed "to detect regularities in large databases of brainwaves" (Barrie, 2008, p. 18). Turnitin.com's parent company iParadigms, LLC, also markets a similar service for ~~graduate students,~~ ~~postdoctoral researchers~~ institutions needing to verify ~~the originality~~ the originality of work by graduate students, postdoctoral researchers, & college and university faculty, or any other human content provider meriting digitized guilty-until-proven-innocent treatment. Several court decisions rejecting students' challenges ~~to~~ to iParadigms' practices have ~~made~~ established clear precedents for the emerging laws of this new quantitative revolution. If geography's ~~heritage as a history~~ heritage of scientific exploration (Harvey, 1969) ~~was~~ is retrospectively understood as a search for the laws of spatial organization (Abler et al., 1971) in the spirit of social physics, the new era of automated ~~geography~~ postpositivism is ~~automatically governed~~ governed by laws of a different sort. The new contingent geographies of MOOCs and ~~social media~~ ubiquitous social media ~~are governed~~

[redacted] are rescaling Hagerstrand's time-geographic constraints and Tobler's infamous first law of geography into a [redacted] [redacted] [redacted]



Opening Scene of the Revolution: 'Question Every Assumption'

¶ In a personal/intellectual history of geography's quantitative revolution, Susan Hanson (1994)

This re-placement entails ~~an engagement with the history of the Revolution~~

~~a re-evaluation of the history of the Revolution~~

a re-evaluation of the place occupied by the revolution in the discipline's history, and the correct position of the revolution's methods in higher education curricula.

a reconsideration of

A

"Every time you go to Amazon.com, you are the subject of a randomized experiment. Every time you search on Google, you are the subject of an experiment. Why not every time a student here does something?"

Gary King (quoted in Heller, 2013, 85).



"The structure, the geometry, of the intellectual space called geography has changed and sharply increased in multidimensionality."

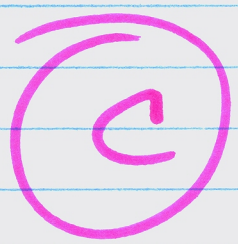
(Gould, 1979, 145)

"~~Hypothesis~~

"The ferment of ideas was fierce; hypotheses were tested, paradigms traded, models proposed, theories suggested, explanations offered, systems simulated, and laws sorely sought after. ... reality was researched in search of theory

(Smith, 1979, 356).

"We could do this at Harvard," King explained, in a way that could measure the educational experience in place in unprecedented detail:



~~I do agree~~

~~Agreement also risks~~

(simple)

Moreover, agreement runs the risk of reinforcing the very quantitative/qualitative divide Johnston et al. rightly question: "In the all-administrative university (Ginsberg, 2011) ~~where every moral~~ ~~or where every educational activity~~

D1

~~or where accounting~~

~~where every educational activity must appear in accountancy modes to survive an accountancy~~

~~where educational activities are not constrained by the cost~~ ~~others designed to~~

~~where an audit culture designed to measure~~ ~~education does~~

and content creator

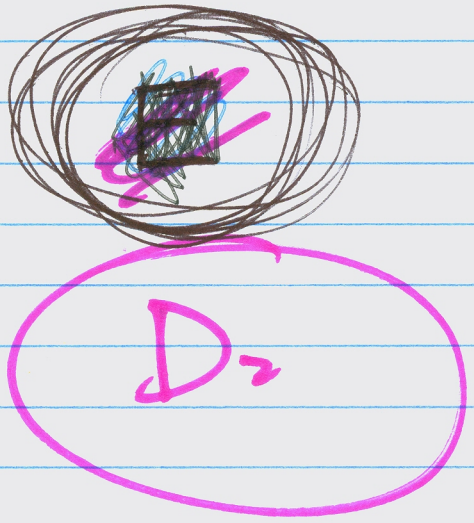
where an audit culture promoted as measurement now functions as structural constraint, the opportunity costs of time and attention mean that any endorsement of quantitative methods, spatial science, and GIScience will be perceived ~~understood~~ as denigration or disinvestment from other methodological others ~~quantitative, humanistic, literary, ethnographic~~

as core components "of all undergraduate degree curricula" (Johnston et al., 18)

-- the kaleidoscope of humanistic, literary, interpretive, ethnographic, and other qualitative ~~methodologies. Human geography~~ approaches.

you are too

I am torn apart by such choices, and if you're reading these words ~~[illegible]~~ -- because ~~[illegible]~~ the essence of ~~my~~ dialogue in human geography is a pluralist ~~[illegible]~~ spirit of "both/and" engagement that avoids the contentious battles of "either/or" (Barnes, 2009).



~~As an alternative to the agree/disagree binary~~

As an alternative, therefore, I'll offer a cautionary note based on the broader context of the curricular principles advanced by Johnston et al. ~~Powerful institutions are mobilized~~ Contemporary political economy, and the mobilization of powerful institutions seeking to transform the role of education in society, are driving ~~a~~ new Quantitative Revolution.

important

D3

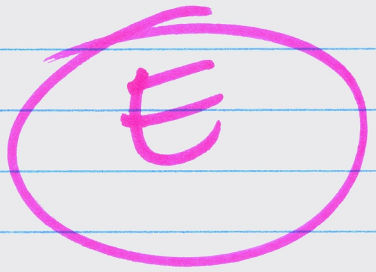
The revolution is advancing most rapidly in ~~evidence-based policy societies~~ those political circumstances where ~~regimes~~ defensive elites have managed to disguise infrastructures of policy-based evidence manufacturing ~~behind~~ behind a facade of "evidence-based policy" (Slater, 2009). ~~Under conditions of~~ After generations of neoliberalization and commodification, this ~~co-option~~ co-optation is now entering a phase of consolidated automation.

~~as negotiated through critical~~

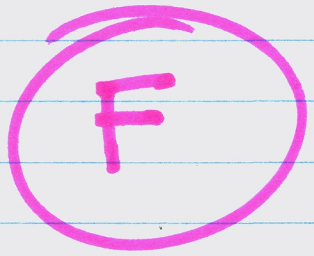
~~[illegible]~~

~~[illegible]~~

-- put into a critical, constructive engagement with half a century of innovation in critical social theory.



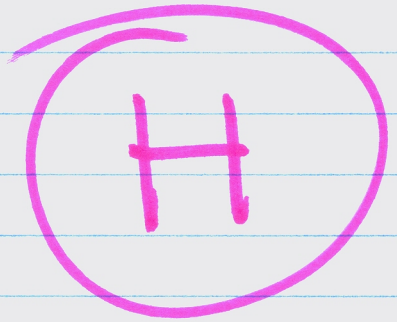
Geography has become means and ends in this curricular creative destruction, constituting a new quantitative revolution. Three dimensions of this revolution merit caution as we consider how to put Johnston et al.'s recommendations into practice. The first aspect is the magnitude of new data worlds; the second is the rise of mobile data; the third involves the ~~effects of~~ intensified deployment of ~~quantification on the~~ quantification on the enterprise of geographic education itself.



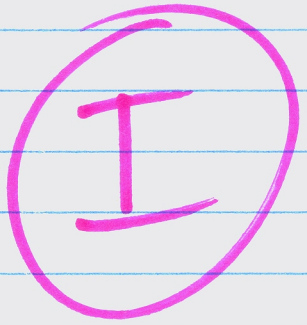
, and ~~look past the~~
forgive King for the preposterous presumption
that "where you want to go in life" is an
exogenous variable; for a moment, just
consider the implications a few years from now
when Harvard ~~has~~ might have



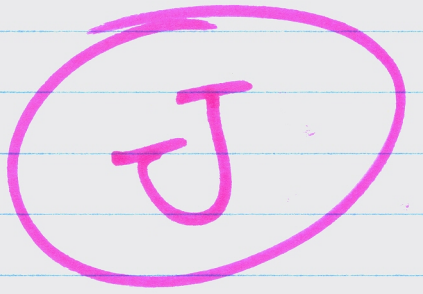
~~AGH~~ Accelerating velocity has begotten simultaneous shifts in the production relations of data, as an evolving galaxy of corporations and ~~bots~~ screen-scraping bots



devastating, coercive restructuring of education ~~to serve the needs~~ ~~to serve the needs~~ to conform to the imperatives of ~~an increasingly unstable, short-term~~ short-term, unstable waves of ~~innovation~~ innovative commodification in contemporary cognitive-cultural capitalism (Scott, 2016a, 2016b).

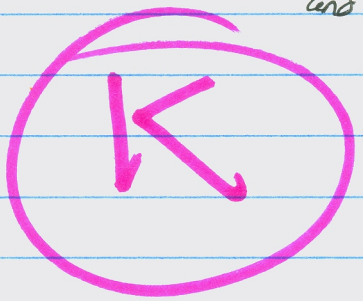


the non-military public-sector data systems refined in the ~~created as part of Keynesian~~ era of the Keynesian welfare state are being destroyed,



~~to provide the vast treasures of newly geocoded economic activities~~

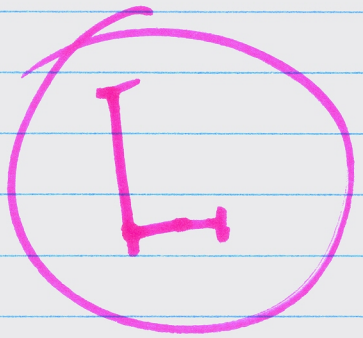
to map the imaginative and performative landscapes of "hacker cartography" (McCandless, 2013), and newly-geocoded ~~economic~~ social and economic landscapes (Walker, 2013).



all nourished by ~~[illegible]~~
new streams of ~~[illegible]~~
~~[illegible]~~
~~[illegible]~~
~~[illegible]~~

digitized representations of traditional data, new streams of ~~data~~ data from new kinds of devices and service transactions, and new synthetic representations -- 'data about data,' or metadata. The scholarly communication at the heart of knowledge production in geography and other fields ~~is~~ -- the ~~record~~ textual content of journal articles, the correspondence accumulated through peer review processes, the page views of reading and scholarly citations -- is now also deeply embedded into corporate data systems and algorithmic analysis (Schuurman, 2013).

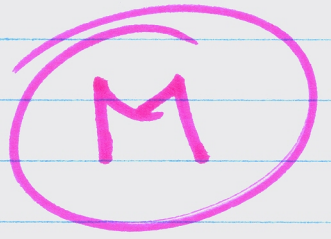
~~[illegible]~~



~~"public" data have~~

according to the public, democratic control of its production and use; ~~[illegible]~~

the data politics of partially automated "Siren Servers" (Lanier, 2013) of Google, Facebook, and Twitter have supplanted the policy debates of the governmental census of Fordist methodological positivism (Steinmetz, 2005).



Yet what can it mean to "take a course" with
29,400 other students? All the new possibilities -- you
can imagine Gould

doing lots of hi-fi locational preference
surveys to create dynamic mental maps
of the collective geographical
imagination of the class

-- will flourish for exactly one generation,

until the emergence of celebrity
singularity. This is the point at which
the vast trove of detailed MOOC data yield unprecedented
precision in the measurement of pedagogy,
student engagement, learning outcomes, and elasticity
of market demand: it will be algorithmically possible
and administratively irresistible to identify the "best cartography
professor," and to dispense with all the other
mediocre wannabes.

single

Such rank-and-yank practices
are already standard procedure in many

competitive enterprises, ~~and the~~ and the new frontier of struggle now involves questions of how to define 'best' in a way that ~~yields a single, unambiguous~~ can be partially automated through existing systems of data surveillance, and in a way that yields a single, unambiguous dimension of rank order.

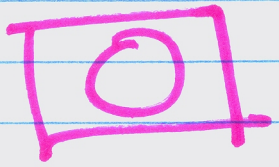
to maximize prestige for the numerator of $\frac{1}{n}$

The neoliberal noosphere of competitive and market metrics is suppressing the material "multidimensionality" (Gould, 1979, p. 145) of being a human geographer even as the multidimensional analytical frontiers of human geographies (many of them now mapped by data-mining routines and bots) continue to expand.

N_2

subject to measures designed to push $n \to \infty$ as far as possible for a particular job opening or other institutional purpose.

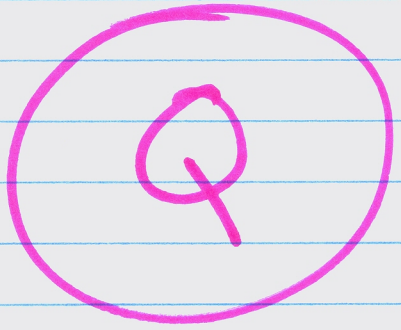
will offer cartographic revelation to
(a current estimate of)



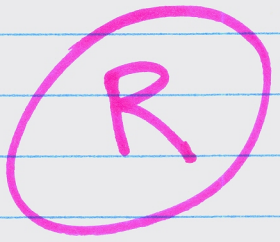
¶ As the new quantitative revolution of post-employment educational automation removes the lower rungs of the job ladders for aspiring scholars of the MOOCetariat, studentized Big Data and ~~dispersed teacher/student geographies~~ non-Euclidian, post-Cartesian teacher/student geographies create new market opportunities in suspicion and surveillance. At MOOC scale, there is only one means of ensuring ~~the only way to ensure~~ that "taking a course" is not subjected to the same radical contingency ~~that Facebook~~ of meaning that Facebook has inflicted on "friend": trust no one, and monitor as much as possible.



velocities mediated by code that quickly and constantly aggregates millions of separate decisions, communications, actions, and reactions; such processing speeds



and there are fast-growing industries for online reputation management (creating demand [redacted] for new kinds of vetting by online private investigation services), identity theft (identity protection services),



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