

Global Governance through the Pairing of List and Algorithm

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Abstract

The work of global governance – including the governance of illicit activities – increasingly entails some pairing of list and algorithm. Across sectors as diverse as environmental conservation, migration, nuclear non-proliferation, humanitarian aid, counter-terrorism and more, the list-plus-algorithm is, it seems, displacing rival juridical forms on the global scale. This article probes some implications of the proliferation of this conjunctive form of ‘law’. Beginning with a typology of some types of governance work that the list-plus-algorithm is called to do on the global plane, this article tracks movements of knowledge from the arcane form of the list into an algorithmic mode, and back again. It considers, too, some difficulties with which these configurations of lawful authority may be associated and the repertoire of techniques that international lawyers typically use to address these. Among these, the endless championing of transparency will be the focus of particular critique. Precisely as the prospect of seeing definitively through these governance devices seems, for a range of reasons, almost impossible to achieve, preoccupations with transparency have intensified. But what else might making the governance work of these list-plus-algorithm configurations ‘public’ entail? This article takes up this question by focusing attention on how lists-plus-algorithms bring peoples, places and things into lawful relation.

Keywords: Lists, algorithms, big data analytics, global governance, international law, technology, law and society

Introduction

The conjunction of two distinct knowledge forms – the list and the algorithm – seems increasingly apparent in the exercise of legal authority globally today. Whether in immigration or national security, customs regulation or financial governance, endangered

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species preservation or shipping control, climate policy or humanitarian relief, disaster management or the foreign policy assessment of popular uprisings, pandemic control or the ranking of populations' vulnerability or developmental status, alliances of lists and algorithms are, roughly speaking, everywhere. This article examines the operations and dynamics of this conjunction in some fields of global governance. It explores what is made of the world in and with the list-plus-algorithm, lawfully speaking. In particular, it examines the list-plus-algorithm's articulation, or inarticulability, with prevailing expectations of transparency.

It is with the most widely understood sense of the list that this article is concerned, especially legal versions of that form: that is, as a "catalogue or roll consisting of a row or series of names, figures, words, or the like" (OED). At the other end of this article's central pairing, the algorithm is a "procedure or set of rules used in calculation and problem-solving", or a "precisely defined set of mathematical or logical operations for the performance of a particular task" (OED). Elsewhere, the algorithm has been defined "informally" as "any well-defined computational procedure that takes some value, or set of values, as input and produces some value, or set of values, as output... thus a sequence of computational steps that transform the input into the output" (Cormen et al, 2009, 5). Machine learning algorithms are those with capacity to modify their processing operations autonomously on the basis of newly acquired information (Witten, Frank et al, 2011).

The algorithm enjoys no natural or necessary association with the list, yet the two are frequently related. Data with which algorithms are mobilized to deal sometimes assume listed form, as do algorithmic outputs (Adam, 2008). Algorithmic processes are often "list-shaped" in inscription (Vismann, 2008, 7). Both forms also stand apart from the rationality of causation; the list's gathering of elements is coincidental (the outcome of parallel processes

of listing) and the algorithm's correlative (such that change in one element is statistically associated with change in another); neither puts forward a causal account of relations between their elements.

Despite their frequent co-occurrence, there are important distinctions between the list and the algorithm: whereas the logic of the list is sequential or ordinal, the logic of the algorithm is recursive (that is, each step will be defined in terms of previous steps' results) and probabilistic (although some algorithms are also serial, in that their data dependencies require them to follow a sequence). Algorithmic functions are commonly automated – performed by computers – whereas many listing functions are not. Data analytics – a generic descriptor for practices that frequently entail deployment of lists-plus-algorithms – refers to “tools and methodologies that can transform massive quantities of raw data into ‘data about the data’ for analytical purposes” (UN Global Pulse, 2013).

Before examining further some contemporary operations of the list-plus-algorithm, let us enliven these first with a first person account of the experience of having one's legal competences redistributed through the mediation of these techniques. Sara Ahmed describes what it feels like to become momentarily aware of one's placement or recomposition in a governance operation involving listing and algorithmic analysis (alongside physical obstruction, interviewing, document review and verbal instruction):

I arrive in New York, clutching my British passport. I hand it over. He looks at me, and then looks at my passport. I know what questions will follow. “Where are you from?” My passport indicates my place of birth. “Britain”, I say. I feel like adding, “can't you read. I was born in Salford”, but I stop myself. He looks down at my passport, not at me. “Where is your father from?” It was the same last time I arrived

in New York. It is the question I get asked now, which seems to locate what is suspect not in my body, but as that which has been passed down the family line, almost like a bad inheritance. “Pakistan”, I say, slowly. “Do you have a Pakistani passport.” No, I say. Eventually, he lets me through. The name “Ahmed”, a Muslim name, slows me down. It blocks my passage, even if only temporarily. I get stuck, and then move on. When I fly out of New York later that week, I am held up again. This time it is a friendlier encounter. I find out I am now on the “no fly list”, and they have to ring to get permission to let me through. It takes time, of course. “Don’t worry”, he says, “my mother is on it too”. I feel some strange comradeship with his mother. I know what he is saying: he means “anyone” could be on this list, almost as if to say “even my mother”, whose innocence of course would be beyond doubt. I know it’s a way of saying, “it’s not about you. Don’t take it personally”. It isn’t about me of course. And yet it involves me. My name names me after all. It might not be personal, but nor is it about “anyone” (Ahmed, 2007, 162).

The list here is a trigger to intervention; it is, in this instance, that which arrests ordinary border control procedures and puts in motion another set: Ahmed “get[s] stuck”. The list both personalizes – it names and creates “strange comradeship” – and depersonalizes (“it’s not about you”). The list is definite, if only for the time being, and thus actionable, yet endlessly amendable. The algorithm feeds and cleanses the list; it is the list’s carer. It is the background to the list’s foreground; the engineering to its interface; the murmur to its shout. Initially, Ahmed confronts speculative human suspicion, from someone presumably acting on guidelines or training. Later, she is on the “no fly list”. In between these two points lies the work of one or more algorithm(s).

Guidelines and values attributed to data will have been re-expressed, in between these two stages, as a set of computational procedures of which Ahmed's name is an output: not a prediction or a profile, just a marker for mathematical correlation with data recorded from some past event. An algorithm will have generated and quantified that correlation, while the list will have procured the "swapping of properties" between the correlation coefficient and the subject Sara Ahmed, through the medium of a name (Latour, 1994, 794). The algorithm both expands upon a guideline model of supported decision (automated account can be taken of countless inputs and datasets) and contracts it (the algorithm generates outputs from whichever "seed(s)" or "training set(s)" it is given; its outputs follow no apparent rationale: "'anyone' could be on this list").

Their functions are distinct, but in their expansive shallowness, their amenability to continual sorting and resorting, and their concurrent and co-dependent deployment in many settings, the list and the algorithm are allied. In effect, they are often hybridized, as well as contributing to a further "proliferation of hybrids" such as that which Ahmed's account of the mathematical re-combination of letters (names), lives and laws evokes (Latour, 1993, 14).

This hybridization proves troubling in and of global law and policy; the global turn towards the list-plus-algorithm as a technique of governance, of which this article will provide a series of examples, seems to be provoking unease. Lists-plus-algorithms are envisaged doing many useful things: prompting redirection of resources towards areas of greatest need, for instance. Yet, for many, lists-plus-algorithms dissemble as much as they disclose, perturb as much as they excite. Even as they are identified with enhanced capacities of prediction and pre-emption, these practices also evoke a sense of diminished capacity, as examples cited below will make plain. The use of the list-plus-algorithm for

global governance seems, at once, an apotheosis of rationalism and a condition of reason's demise.

Many have an intuitive sense of the list-plus-algorithm encoding structural bias: its *langue* constraining any *parole* that particular instantiations might generate, with significant material effects (Saussure, 1966, 9-13). Literature on surveillance is especially attuned to the "technopolitics" of "biased code" (Introna and Wood, 2004). Yet practices employing the list-plus-algorithm seem to do more, in prevailing public imaginaries, than install bias. In many instances, they mark an actual or potential breakdown in relations between those imagined as governed and those cast as governing. Governments', multinational corporations' and international institutions' data collection practices and uses of data analytics to map, monitor, plan and target are widely regarded with suspicion, in part because of these mechanisms' indifference to knowing participation (e.g. Lohr, 2013; FTC 2014). In 2013, a panel of intelligence and legal experts advised the Obama Administration that "the current storage by the [US] government of bulk metadata creates potential risks to public trust" (New York Times, 2013).

Where public trust breaks down around a list-plus-algorithm or threatens to do so, recourse is commonly had to transparency. Demands for more transparency; promises of more transparency; both are ubiquitous in international law and global affairs, perhaps nowhere more so than in the vicinity of lists and algorithms (Bianchi and Peters, 2013). Yet, could we perhaps be misplaced in our collective preoccupation with looking through, behind or beyond the list-plus-algorithm? This is among the intuitions that this article pursues.

Pursuit of this intuition begins in the following section with a brief typology of some uses to which the list-plus-algorithm is being put in contemporary governance on a global scale. Attention will rest, for a time, on the movement of knowledge between and around

lists and algorithms in particular instances, with an emphasis on rhythms and routings inscribed thereby. With these patterns in view, this article will elaborate on some difficulties associated with recourse to the list-plus-algorithm in law and policymaking, including stalemates confronted when one seeks to allay these difficulties through transparency. Finally, the article foreshadows a different sort of approach to the list-plus-algorithm in global governance: one focused on thinking *with* this form in juridical terms, rather than trying to think against, or look behind it.

For some readers, the prospect of following intuition, in the way that I have just outlined, may sound too conjectural or non-systematic to warrant the commitment of reading (especially so, given what is manifestly at stake in operations such as those which Ahmed described above). So, somewhat more stridently, let me sketch telegraphically what this article seeks to contribute to, or where it departs from, the various bodies of scholarship that it touches (albeit, for the most part, obliquely).

First, in relation to law and technology or cyberlaw literature, this article draws attention to a range of techno-legal practices and challenges that cannot be well thought through, in my view, in the register of openness versus closure with which that literature has long been captivated (or, as Jonathan Zittrain would prefer, “generativity” versus “tetheredness”) (Zittrain, 2008). This article is similarly disinclined to conceive of the techno-legal practices with which it is concerned in terms of communication or speech and the legal protection thereof (cf Benjamin, 2013; Wu 2013). My interest here is not in tracing the operations of governance described to the will or voice of one community, agent or another, any more than arraying them as a spontaneous, unplanned market order or “catallaxy” about which some cyberlaw scholars wax lyrical (Hayek, 2013, 267-290; Benkler, 2006). In these respects, this article bespeaks the limits of prevailing modes of analysis and debate

in law and technology scholarship, while implicitly acknowledging that scholarship's important contributions as well.

This article's attention to an ancient knowledge form – the list – in combination with the algorithm signals a further departure from law and technology scholarship (on the history of the list, see Goody 1977, 74-112; Eco, 2009). A focus on the list encourages relinquishment of the fixation on technical new fanglery and “keeping up” by which much scholarship in this field is marked (Moses, 2007, 240-243). Not all in the realm of data analytics for law and policy proceeds at measureless speed on an unfathomable scale; so the list reminds us.

Also enacted in this article is an argument for techno-legal work in modes other than expounding the laws *on*, or developing policy proposals *for* or *against*, some yet-to-be-taken-into-account phenomenon. Legal writing and practice have long offered ways of thinking beyond the prospect of service on some normative assembly line, cranking out ever-more-efficient policy responses to conditions made elsewhere, confident in the untrammelled flow of causal and legal efficacy. This article draws upon a range of nondirective, performative traditions with a view to re-assembling an understanding of list-plus-algorithms in law, starting from a position that these are always already (at least partly) juridical in composition and effects.

Second, in contrast to some versions of sociolegal studies, or law and society scholarship, this article argues against the substitution of the abstract agents of formal doctrinal analysis with some version of “system, organisation, community[,]...culture”, society or technology, the latter invested with more or less equivalent degrees of coherence, determinative force and knowability as the autonomous legal persons of the former world (Johns, 2013, 125-127). The story told here is not one of law or legal relations,

on one hand, and lists-plus-algorithms or the socio-technical, on the other, acting upon one another, actually or prospectively; rather, the techno-legality described here is non-severable (Latour, 1994; compare the “one level standpoint” of Latour et al, 2012). It is in this sense that the list-plus-algorithm is posited as governing globally, about which more will be said below.

Third, in so far as it is addressed to work in human rights law and policy preoccupied with burgeoning encroachments upon privacy and practices of surveillance, this article rejects the morality tales in which that literature has tended to trade. It does not cast one or other hidden ruler (or order of rule), public or private, into battle against an array of digitized individuals, the latter dispensing or withholding consent in a switchlike fashion, and occasionally dispatching salvoes of hactivism, whistleblowing, cyber-attack, or “netizen action” (MacKinnon, 2012). The literature on privacy, surveillance and human rights in digital settings has, of course, much more of value and importance to offer than a line-up of characters so imagined. Nonetheless, it does tend to coalesce around set pieces of domination and resistance, complacency and heroism, setting individuals against an array of public or private antagonists. By tracking juridical practices, this article tries to resist the allure of these story structures, while trying out some myths or fictions of its own in its final pages (cf Latour, 1994; Johns, 2013, 31).

Fourth, this article began by naming the list-plus-algorithm as a device of global governance, without explanation, and proceeding to describe some of its operations (on dispensing with explanation, see Latour, 2005, 136-150). To cast the work of the list-plus-algorithm as a matter of global governance in this way is not to put forward “an architectural project” nor advance “a programme of moral and political regeneration” on a global scale (Koskenniemi, 2007, 18). This article stands apart, too, from scholarly dreams of “global

constitutionalism” and against argument framed in those terms, in pursuit of enhanced “legitimacy” for global order (e.g., Peters, 2009). Furthermore, global governance is not envisaged here as one among several stratified “layers of governance” (Mayer-Schönberger, 2002-2003, 630). Rather, global governance here implies associated and “articulated subprograms of action which are spreading in space and time” (Latour, 1994, 803; see also Riles, 2000). Some of these seem to have greatest purchase amid national institutions, constituencies and debates; others do so internationally, subnationally, in some cubicle of the “private”, or otherwise. The “global” here signals not the transcendent or universal quality of the practices and norms in question as much as their uncontainable mobility, interpenetration, and the outlooks and mandates of those people and institutions invested in their promotion and operation. “Governance” implies the regularization and authoritative patterning of conduct, knowledge and sense.

Finally, in relation to the theme of transparency, this article both affirms its longstanding centrality to “democratic civil epistemology” globally and calls that centrality into question to some degree (Ezrahi, 1992). While the legal and political norms of international order maintain reliance on the “attestive-visual gaze”, elements of legal and political action described here seem to take place in a rather different sensory or epistemological register (Ezrahi, 1992, 374). This article will later draw attention to a number of ways in which the governance operations of the list-plus-algorithm are non-responsive to the discipline of “assertive citizen-witnesses” (Ezrahi, 1992, 367). In light of this, and when one has regard to the tempos at which the list-plus-algorithm is iteratively assembled and deployed (highlighted below), hearing might seem more significant than sight as a way of sensing dynamic relations between governed and governing under contemporary global conditions, however faintly. Alternatively, it may be to the kinesthetic

sense of proprioception (by which the relative positioning of body parts and the level of effort expended in movement may be sensed) that recourse might be had to try to begin regenerating some experience of the list-plus-algorithm as “real” for political purposes (Ezrahi, 1992, 369-375). I will return to these speculative suggestions in the final pages of this article.

In relation to all five of these points of contention, however, this article will be, from this point onwards, less a work of telling than a work of doing – more specifically, a doing of description. Far from engaging in description as a prelude to critique, I share with others the conviction that description as such can be tremendously productive, as well as inordinately difficult (Orford, 2012). Certainly, description need not imply apology, for to describe is to transform – “to present *again* – the social [or in this instance, the legal] to all its participants, to *perform* it, to give it a form”. Less us return, then, to “sticking with description” and following hunches (Latour, 2005, 137).

Juridical Formulations of the List-plus-Algorithm

To some extent, techniques of list-making and algorithmic analysis articulate quite well with traditional enactments of law and legal process on the global plane. Legal decision-making elsewhere depends upon list-like structures (exclusionary rules and multi-part tests, for instance) and “algorithms for judgment” (Stern, 2014; Westbrook, 1993, 825). Lists-plus-algorithms thus nest quite snugly within international legal processes, sometimes without attracting much attention at all. Non-exhaustively speaking, there are three recurring ways in which the list-plus-algorithm operates globally as a form of law. (As explained below, these may be interchangeable; the characterisation of a list-plus-algorithm as one of these “types” need not preclude its re-characterization in terms of another.)

First, the list-plus-algorithm sometimes appears as a delivery mechanism for lawful authority, or as a conduit between legal orders or sites of legal decision. The list-plus-algorithm's juridical force, in such accounts, is derived from a pre-existing legal instrument or agreement and the prospect of its later duplication in smaller scale or more particularised legal forms. Let us call this juridical form of the list-plus-algorithm as conduit or messenger "LPA 1".

The lists of species in the three Appendices to CITES – the Convention on International Trade in Endangered Species of Wild Fauna and Flora, to which there were 180 parties as of 25 March 2014 – correspond to this juridical form. These lists actualize governments' treaty commitment to ensure that the global trade in specimens of wild animals and plants does not threaten their survival (CITES, 1973). More precisely, listing gives content and specificity to states parties' CITES undertaking to "take appropriate measures to enforce [its] provisions" (CITES, 1973, Article VIII). Lists also offer a way of evaluating, in a box-checking mode, the measures that states parties adopt in their own national laws to give effect to this commitment. States parties' CITES obligation to penalize trade in or possession of certain specimens, and to provide for their confiscation or return, would have no real meaning without the lists set out in the CITES Appendices. Yet, the list itself is afforded no independent juridical status, in this setting, beyond that of *modus operandi*.

In the case of Appendices I and II to CITES (associated with differing levels of treaty protection for animal and plant species threatened with extinction, or which may become so threatened, respectively), listing is the outcome of a process of decision taken by the Conference of Parties every two years, with input from state representatives, expert committees and the CITES Secretariat (Gehring and Ruffing, 2008). The unspecified

“qualitative and quantitative information” called for in a listing or de-listing proposal often includes outputs of species distribution modelling (SDM) using software implementing one among a number of possible presence/absence algorithms (CITES, 2013; Austin, 2007). The types of information included in listing proposals, or in expert evaluations for CITES purposes, vary enormously, but distributional data is almost always included and workshops convened under the CITES rubric have emphasised the importance of expert modelling of species distribution (Smith, Benítez-Díaz et al, 2011; CITES, 2010). It is, therefore, as an input into listing or de-listing decisions – and as a vehicle for the movement of insights from one field of expertise to another – that algorithms come to bear in this context.

Lists-plus-algorithms operating in the mode of LPA 1 are often identified with the refinement or targeting of generically expressed commitments and with a perceived movement from ideal to action. The Millennium Development Goals (MDG), for example, have deployed an LPA 1 approach to the realization of United Nations policy concerning extreme poverty. The MDG brought together a list of eight goals and a commitment to the quantitative analysis of large-scale datasets to evaluate progress towards their attainment, the latter triggering a “quest for increasingly elaborate estimation processes” integrating statistics and modeling (Sachs and McArthur, 2005; Byass and Graham, 2011). Criticism of the MDG – of which there is plenty – has highlighted their problematic dimensions (e.g., Ilcan and Phillips, 2010). Nevertheless, this criticism has broadly endorsed the notion of the list-plus-algorithm as conduit, transmissive of pre-existing priorities or rationalities.

A second and related version of the list-plus-algorithm is as a juridical shortcut or work-around implanted within a legal regime. The list-plus-algorithm in this mode optimizes legal operations by maximizing efficiencies and directing resources to areas of greatest

need, at least from some vantage points. From others, it introduces bugs in the legal system, undermining rights and circumventing lines of accountability. Let us call this mode of the list-plus-algorithm – as embedded juridical shortcut – “LPA 2”.

Consider, by way of an illustration of LPA 2, the interaction of so-called safe country of origin lists (“SCO Lists”) and “smart border” technologies. SCO Lists enumerate countries from which refugees protected under the 1951 Convention and 1967 Protocol relating to the Status of Refugees are presumed not to emanate; listed states are assumed, in other words, not to be jurisdictions in which a well-founded fear of persecution could legitimately be held. Under many states’ migration laws, asylum applications emanating from listed countries, or from those who have traveled via a listed country, are presumed to lack foundation and, on that basis, processed under truncated mechanisms with limited rights of appeal. Asylum seekers from places on SCO Lists are frequently subject to return or transfer (Van Selm, 2001).

SCO Lists interact with algorithmic analysis via an array of “smart border” or “e-border” technologies continuously arranging data streams associated with the movement of people and things into patterns for analytical purposes (Amoore, 2013, 2011; Bennett, 2013; Dijstelbloem and Meijer, 2011). In Europe, these include the Eurodac fingerprint system, in which the finger prints of asylum seekers crossing the European Union’s external frontier “irregularly”, and those of “irregular border-crossers” found within the territory of the European Union, are stored and analyzed using data-matching algorithms (Brouwer, 2002; Jacobsen, 2012). It is through the use of technologies such as these that asylum-seekers are attributed to a particular country of origin, triggering their re-routing when traced to a listed country.

Other examples of lists-plus-algorithms in the LPA 2 mode include the United States' Secure Flight passenger pre-screening system and its global counterparts, described by Ahmed above. Secure Flight integrates two categories of watch list (the "no-fly" list, enumerating those precluded from flying, and the "selectee list", identifying those subject to additional, pre-travel security measures) with smart border technologies. The latter algorithmically evaluate traces of data regarding each person holding a ticket for a flight, to assess the risk they may pose to others on board (Majeske and Lauer, 2012). According to Bennett (2013), the US Department of Homeland Security collects thirty-four separate elements of advance passenger information on each passenger arriving in the United States, via a range of collection routes. Where mathematical association between these traces and information gleaned from historical events is of sufficient strength to cross certain encoded trip-wires, "actionable insights" may be generated for immigration, customs and security personnel (Hellerstein, Ma and Perng, 2002; Amooore, 2013). The ramifications of being so "flagged" for the persons or things concerned will vary, depending on a range of factors, but further inquiry or inspection will usually be triggered (Zarsky, 2013, 1516-1517). As in the SCO List scenario, the effect of this list-plus-algorithm is to re-route certain persons and things through a tailored set of procedures, the premise of which is their having been written into a risk pattern assembled from disparate sources.

Third, and finally for the time being, one encounters the list-plus-algorithm operating as an object or intended output of legal work in its own right, rather than a mechanism for the actualization, transmission or bypassing of lawful authority elsewhere created. In this mode, the list-plus-algorithm operates as a structuring or background-conditioning device for an array of regulatory initiatives and legal interactions. With reference to Foucault's notion of security, lists-plus-algorithms serve to "plan a milieu" by working on probabilities

associated with “a series of possible elements”, curtailing some elements and enabling optimal circulation for others (Foucault, 2007, 19-20). Let us call this version of the list-plus-algorithm – conditioning for security – “LPA 3”.

In international legal domains concerned with existential risk, one finds lists-plus-algorithms at work in an LPA 3 mode everywhere. Maintaining and deploying catalogues of persons, entities and things invested with risk absorbs a tremendous amount of regulatory energy worldwide. One widely used instrument for this purpose – combining properties of list and algorithm – is the WorldCheck database of Politically Exposed Persons (PEPs) and Heightened Risk Individuals and Organisations used “by more than 2,000 institutions and 200 government agencies in more than 120 countries” (Gilligan, 2009, 139). WorldCheck reportedly updates its database twice daily, accommodating a continuous in-flow of open source data mined algorithmically (De Goede, 2012, 179-182).

For all the energy and trust they absorb, the purposes served by WorldCheck’s databases and associated analytical practices are difficult to pin down. They express a lumpy array of regulatory rationales and goals; WorldCheck’s database purports to cover “[politically exposed persons], money launderers, fraudsters, terrorists and UN sanctioned entities...plus individuals and businesses from over a dozen other categories” (Solomon, 2006, 8). The spectrum of potential wrongdoing towards which WorldCheck is directed remains elastic, defying any cohering logic; it is the convergence of analytical technique that brings this motley array of activities and persons together, as well as concern for the “manage[ment] [of] regulatory, financial and reputational risk”, wherever discernible (WorldCheck, 2014). This alignment constitutes “a field of intervention” across which “[w]hat one tries to reach...is precisely the conjunction of a series of events produced by...individuals, populations, and groups, and quasi natural events which occur around

them” (Foucault, 2007, 21). It is this “field” that is their primary output, irrespective of the particular “interventions” which may or may not be initiated across it.

Lists-plus-algorithms operate in an LPA 3 mode also in the nuclear non-proliferation setting. Since the 1970s, a major feature of the global non-proliferation regime has been a ‘trigger list’ of equipment, technology, and materials any export of which prompts the application of safeguards overseen by the International Atomic Energy Agency (IAEA) (Schmidt, 2000). Such a list now comprises Annex II to the IAEA’s Model Additional Protocol for the application of comprehensive safeguards agreements under the Nuclear Non-Proliferation Treaty (IAEA, 1997). Algorithmic accompaniment here arises from increasing recourse to data analytics in nuclear safeguards monitoring and counter-proliferation intelligence activities, via geospatial image mining algorithms for instance (Vatsavai, Bhaduri et al, 2010). In this context, the list-plus-algorithm is path-setting and market-curating: it “close[s] off the easier roads to proliferation” and directs proliferators towards “more difficult and time-consuming paths” (Burr, 2014, 20).

These three juridical formulations of the list-plus-algorithm – LPA 1, LPA 2 and LPA 3 – are not mutually exclusive. One could, for instance, equally regard the WorldCheck and nuclear non-proliferation examples (characterized above as LPA 3) as conduits and/or optimization devices. That is, they could be construed as mechanisms to deliver on preexisting policy prescriptions (LPA 1) by, among other things, establishing risk-tailored routes through existing legal processes (LPA 2). Nonetheless, as explained, much of the work that these lists-plus-algorithms do entails conditioning or reconditioning populations to which they are addressed, irrespective of the particular outcomes that they may or may not deliver. People are encouraged by the mere continuation of these practices to experience themselves as secure and insecure in particular ways; it is in this sense that they operate in

an LPA 3 mode. While it remains possible to describe any one of the aforementioned lists-plus-algorithms in terms of LPA 1, LPA 2 or LPA 3, the typology serves to bring distinct governance effects of the list-plus-algorithm into the foreground.

It might seem odd – hyper-formalistic, even – to group these various instances of international legal work together solely on the basis of the formal prevalence of the list-plus-algorithm. The matters of substantive concern, operative political debates, and types of lawful authority at play in each of these settings are quite diverse. The peoples, places and things these lists-plus-algorithms bring into relation, and the implications of their doing so, vary enormously. Nonetheless, their redescription in terms of shared juridical practice casts the list-plus-algorithm as a recurrent juridical arrangement; a distinct regulatory and political configuration; a way of bringing people, places and things into lawful relation. This encourages suspension of the idea of list-making and algorithmic analysis as instrumentalities that law and lawyers must incessantly strive to look *behind*. This might, in turn, help direct us some way beyond the sorts of stalemates that an orientation around transparency often evokes, of which more will be said below. Before we confront those stalemates directly, though, let us linger a little longer amid the dynamics of this hybrid form and some imprints it leaves in legal and policy thought.

Rhythms of Rule and Patterns of Practice

It is a routine preoccupation of international lawyers that global norms should be as orderly, stable and predictable as possible (e.g., Charney, 1993, 532). The list-plus-algorithm responds unreliably to these imperatives. Data moves between accessible and inaccessible forms within it, subject to different rates of turnover, and with disparate pathways of input and output. Attending closely to the form, one discerns, in the vicinity of the list-plus-algorithm, no “*andante* of development” (Nietzsche, 2001, 36). The regulatory rhythms put in play by lists-plus-algorithms tend to be those of “brief habits” rather than “long compulsion”, although lists often linger longer than algorithmic calculations (Nietzsche, 2001, 167; Nietzsche, 2000, 290-291). This section records certain metrics and cadences with which the list-plus-algorithm is associated in legal writing and practice. In so doing, it draws attention to some dilemmas that may arise when the list-plus-algorithm is deployed for global governance.

Indisputable wholes

One difficulty attending law and policy decision-making by recourse to the list-plus-algorithm is that of inscrutability. Computer scientist Donald Knuth has observed: “I don’t know any way to define any particular algorithm except in programming language” (Knuth, 1996, 1). The algorithm makes many elements “act as one” as “an automaton, a machine”, an “unbreakable whole”, often invested with “indisputable” facticity (Latour, 1987, 131-132).

Against this, the list sometimes appears as the public face of an algorithmic “black box”; the list may interpose a sense of momentary magnification, even penetration. In CITES, for example, disputed processes of political trade-off and SDM analysis conducted mostly out of public sight are made reviewable (partially) in the Convention’s appended

lists, where those processes' outcomes are rendered as objects (biological taxa), immovable for the time being, and the list itself takes on properties of a "durable whole" (Latour, 1987, 131). The same is the case, to a lesser extent, in the security and immigration context, where appearance on one of the aforementioned lists, and legal avenues for contesting that listing (to the extent available), may offer points of access to otherwise impenetrable and shifting data structures (Christy, 2012; Sullivan and de Goede, 2013; cf Daskal 2014, 368-369).

Yet, for all their relative straightforwardness, and their efficacy in "lumping and splitting, grouping and dividing the world about us", lists themselves remain stubbornly unforthcoming (Bellknap, 2004, xii). Lists tend to be unsystematic and unprincipled as knowledge forms, confounding reasoned synthesis or explanation (Valverde, 2003, 159-163; 173-179). As Liam Cole Young has suggested, "the only 'meaning' we may be able to attribute to [lists] is their operativity and indexicality", with "operativity" only ever assessable for the time being (Young, 2013, 501). The cunning of the list is to make plain without explaining.

Elsewhere, moreover, the list is not so much plain speaking or public facing in presentation as lodged deep in the engine-room of the sorts of practices outlined. Consider, for instance, the role of certificate revocation lists in the authentication of network communications or the many kinds of lists used to maintain the interoperability of internet architecture (Rivest, 1998). In such contexts, the slowing of pace that sometimes seems synonymous with translation from algorithmic model into list (in CITES, for example, where lists are reviewed every two years) may not be apparent at all. Rather, any one version of these lists is likely to become rapidly out-dated. In the list-plus-algorithm pairing, the list

often *seems* the more durable and decipherable of the two, but listing, lastingness and legibility frequently do not align.

The power of shallow claims

Perhaps in recognition of its imperviousness and non-translatability, the list-plus-algorithm deployed for governance often coincides with a ratcheting down of public knowledge claims or a scaling back of policymakers' overt confidence in expertise – paradoxically so, given the hyperbole surrounding powers of analysis associated with “big data” (Bollier and Firestone, 2010). This is the sense of diminished capacity to which I referred in the introduction, often associated with the list-plus-algorithm.

Consider, for example, how the United States' White House Press Office summarised a White House Review of intelligence failure surrounding the unsuccessful attempt by Umar Farouk Abdulmutallab to detonate an explosive device aboard a flight from Amsterdam to Detroit in December 2009: “The information that was available to analysts”, the Press Office reported, “was fragmentary and embedded in a large volume of other data” and “America's counterterrorism...community” had in this instance “failed to connect the dots” (White House, 2010). Lists were at issue here because the Review focused, in large part, on the failure to include Umar Farouk on the United States government central counter-terrorist watch-list known as the Terrorist Screening Database (TSDB) even though he was recorded in another, related database known as the Terrorist Identities Datamart Environment (TIDE) (Lipton, Schmitt et al, 2010). Algorithms were evoked also by the Review's reference to the processing of “a large volume of...data”, presumably mined and analysed using algorithms (see generally Slobogin, 2008).

Here, the White House's evocation of the list-plus-algorithm seemed to indicate at once an ongoing preoccupation with data collection on a vast scale, and an abandonment of much by way of a claim to, or expectation of, its mastery. The shortfall that led to Umar Farouk boarding a plane after relatively little scrutiny was not the result of a want of power, data or willingness to share information, the Review concluded. Rather a "series of human errors occurred" for which there was no ready fix. All that the Review could offer was a suggestion that another list be drawn up: this time, a list of "legacy standards and protocols" the "ongoing suitability" of which might be subject to review (White House, 2010).

We see these shoulder-shrugging gestures from other institutions seen as exerting great power over global affairs, in contexts in which large-scale data sets and analytics are at issue. Commenting in 2010 on the International Monetary Fund's failure to foresee the most significant global financial crisis since its creation, then-Managing Director, Dominique Strauss-Kahn said plaintively: "We need to learn more about that, and to learn about it, we need more data..." (Schneider, 2010). Even if more data were to come to hand, the list-plus-algorithm may not decode it into bases for strategic decision; that "correlations are inherently limited as predictors" is widely acknowledged (Bollier and Firestone, 2010, 17).

Among contemporary public policy-makers, open avowals of uncertainty and incapacity, in relation to analytical processes surrounding the list-plus-algorithm, are at least as common as assurances of expert insight. Data collection continues apace, but today's global policymakers do not seem to hold out much hope of being able to "connect...dots" in any reliable way. Surrounding the list-plus-algorithm in legal and policy settings, one may discern widening eddies of doubt amid rising oceans of data. No longer, it seems, does the power to govern globally rely on one or other consummation of the sorts of "calculating

apparatus” on which it has long depended (Mitchell, 2002, 117). Hypothetical calculability contingent on future data has become exceedingly cogent.

It may be that the work of the list-plus-algorithm is signaling a shift in the register of expert knowledge deployed in public policy discourse: away from persuading people that what experts say is knowable and true (in modes that Timothy Mitchell describes, for instance) toward affirmations of both the potency and the impenetrability of available data, and the necessity of acting on that unresolved basis (cf Mitchell, 2005, 297). Perhaps less emphasis is now placed on the public presentation of “facts which ‘speak for themselves’” than on the harboring of vast, quiescent, yet endlessly suggestive datasets as the preferred underpinning for law and policy decision (cf Ezrahi, 1992, 370).

Awkwardness of fit

The list-plus-algorithm signals the scant efficacy of contemporary global governance in other ways as well. Conventional anxieties about over- and under-inclusiveness that attend any rule often seem heightened in the context of lists-plus-algorithms (see generally Schauer, 1989, 72-73). Worries about the ways that lists are put together and algorithms utilised, for governance and policing purposes, have been well aired by human rights scholars and other legal commentators (e.g., Cameron, 2003). Legal scholars continually place emphasis on the wrongful inclusion of “innocent” individuals in regimes in which lists-plus-algorithms are axiomatic (e.g., Keats Citron, 2008). Under-inclusiveness is similarly a source of anxiety: consider, for example, concern surrounding the finding that the details of one of the Boston bombing suspects were incorrectly entered in the Terrorist Identities Datamart Environment, or TIDE database, thereby preventing any flight list security alert being triggered by his 2012 travel to Dagestan and Chechnya (Schmitt and Schmidt, 2013).

The prospect of errors being made in data-entry, copying and transcription only compounds these anxieties (e.g., Zarsky, 2011, 298).

It is, moreover, often difficult to envisage resizing the list-plus-algorithm to correct for this under- or over-inclusiveness. Effective resizing would require capacity for line drawing in algorithmic design to reside with those to whom operational over- or under-inclusiveness will become apparent and a matter of concern. Conversely, it would require proclivity for impact assessment and the imperative of ongoing policy justification to attach to those with relevant line drawing capacity. Such coordination of capacities seems improbable, given the technical specialisations involved and their organizational dispersal (Curtis, Krasner et al, 1988, 1271). The prospect of resizing lists-plus-algorithms to fit their rationales also presumes an overarching commonality of outlook little in evidence; whether or not to add or delete a step in an algorithm may depend as frequently on whether it looks “pretty” on the screen (to those attuned to the aesthetics of code) as on normative considerations of fit between analytics and rationale (Amoore, 2013, 130). From the perspective of a software designer, contracted to deliver on a brief or perhaps only some portion of a brief, it may not be all that consequential whether the software in question is designed to recommend products to a consumer, or to re-route airline passengers for intensive screening. All may be reduced to service delivery optimization, and often is so reduced in industry parlance (e.g., Manyika, Chui et al, 2011).

Troubled transmission

Contributing to these difficulties is the unpredictability with which knowledge moves between listed and algorithmic forms, and articulates with other legal and policy knowledge. Algorithmic analysis always requires the cleaning and shedding of data, creating quandaries about what to eliminate (Rahm and Do, 2000). Translation of analytical outputs

into the further-reduced form of a list only intensifies these dilemmas. And movement the other way – from a list of requirements to programming for data analytics – is often just as tendentious. Curtis, Krasner and Iscoe's widely cited study, from the 1980s, of the software design process for large systems highlighted the degree to which "project personnel ha[ve] to negotiate among them[selves] to clarify requirements", especially when classified, proprietary or other contextual information is not shared with them. They drew attention, too, to the risk of information loss or distortion when inputs are received in a form that does not correspond to the "software tools environment" (Curtis, Krasner et al, 1988, 1282-1283). Translation from a brief of problems to be solved, or a list of elements to be included, into an algorithmic design, and the development of code to implement and/or distribute that design across different processors, will occasion negotiation and improvisation; in other words, politics. Yet this politics of translation surrounding lists-plus-algorithms is not, for the most part, conducted through clean or explicit delegations of authority to which familiar international legal norms might attach (cf Bradley and Kelley, 2008).

Transmissive clunkiness – between the list and the algorithm, in the first instance, and between the list-plus-algorithm and other knowledge forms – creates risks of policy derailing, of which participants are often painfully aware. The translation of reports of trigger list items' movement into intelligence mandates, in pursuit of nuclear non-proliferation objectives, is one example of a route along which such risks arise. Reliance is commonly placed on remote sensing data analytics to gather and analyse data on military forces' activities and movements for intelligence purposes (Sossai 2013, 404-406). Yet dual-use items and technologies – appropriate for both peaceful civilian use and for weaponization – embody a perennial source of difficulty in this context, as does the prevalence of "deep and abiding uncertainty about the basic data" (Sagan, 2011, 226). The deployment of list-plus-

algorithms does not create these difficulties, but may exacerbate them in view of the ungainliness of data movement in and around them.

Instances of transmissive breakdown are manifest too outside the politically sensitive arena of arms control. In the context of CITES, for example, difficulties of communication are less incidents of secrecy or remoteness than consequences of technological and professional specialization. As Lucas Joppa and co-authors have reported, the practice of SDM, for CITES purposes and otherwise, entails deployment of software the intricacies of which are not grasped by many scientist-modellers engaged in that practice. There are “many in the SDM domain unable to interpret the original algorithms, much less understand how they were implemented in the distributed code” (Joppa, McInerney et al, 2013, 815). If many SDM modellers do not understand the algorithms with which they work, one wonders what CITES decision-makers to whom modelling outcomes are delivered make of this data.

Policy entropy

Together, these factors seem often to engender a sense of vertigo-inducing unknowability in global policy-making utilising the list-plus-algorithm: unknowability, that is, that runs all the way down, beyond the diminished claims-to-mastery on which I earlier remarked. The labyrinthine workings of modern administrative states have long been seen as elusive and distributions of authority within them difficult to map (e.g., Cairns, 1990, 320). Shifts to the global plane augment these difficulties: “[g]lobal governance remains a mystery because so much about global society itself eludes our grasp” (Kennedy, 2008, 827). This prevailing sense of global legal authority’s inscrutability seems only to have intensified with its encoding in data.

Even those perceived as on the inside of relevant technologies frequently disavow comprehensive knowledge of them. Computer programmer Ellen Ullman has remarked, for example, on a phenomenon “not often talked about: we computer experts barely know what we are doing. We’re good at fussing and figuring out. We function in a sea of unknowns...Over the years, the horrifying knowledge of ignorant expertise became normal, a kind of background level of anxiety” (Ullman, 1997, 110). In less alarmist fashion, Kate Crawford notes software developers’ routine expectation of unpredictability: “[a]lgorithms do not always behave in predictable ways, and extensive randomized testing – called A/B testing – is used with search algorithms just to observe how they actually function with large datasets” (Crawford, 2013, np). In these ways and others, a sense of entropy, or unavailable or inaccessible energy, surrounds the list-plus-algorithm.

Movement compounds this sense of entropy. For lists-plus-algorithms, and the norms and assumptions to which they give expression, tend to be mobile, albeit at different rates. Machine learning algorithms adapt through experience or exposure to new data. Data no longer delineate norm from anomaly; rather, the algorithm functions through “a mobile norm” (Amoore, 2013, 17, 51). In a list, the pace of this mobility may be more stately than in algorithms. Some of those lists mentioned above are modified relatively infrequently. And most lists do purport to single out anomalies, especially in relation to the unlisted. Nonetheless, listing creates an impression of equivalence or fungibility among listable elements that departs, to some degree, from the register of norm/exception.

Public reason displaced (or reimagined)

In light of these effects, legal writers have often identified the list-plus-algorithm with lawful authority and decision-making having been displaced away from some historical locus or rightful repository. This sense of displacement overlaps, sometimes, with concerns

about public-to-private transfers of power and contracting out. Automated analysis associated with a list-plus-algorithm (often conducted by private contractors, or engaging commercial service providers) signal, for many scholars, the emergence of power “removed from traditional mechanisms for resistance” and review (Cheney-Lippold, 2011, 177). Lawful reliance on the list-plus-algorithm manifests, in many accounts, movement away from qualitative, publicly reasoned, case-specific analysis. This is so even as lists-plus-algorithms may be understood to enact a mode of public reason more or less in their own right on the global plane: that is, “encod[ing] and reinforc[ing] particular conceptions of what a nation[,] [the ‘international community’, or some segment thereof] stands for” (Jasanoff and Kim, 2009, 120).

Among the conceptions of the international evoked by the list-plus-algorithm in law and policy is a sense that it is a problem amenable to techno-legal resolution, the latter forever about-to-arrive. For all the aforementioned worries, much legal scholarly writing concerning the list-plus-algorithm sounds a resolutely upbeat note. Techno-legal safeguards against harm that may flow from the use of “big data” will, Crawford and Shultz maintain, “ultimately succeed” provided that they are “both fair and reasonable” (Crawford and Shultz, 2014, 128). Defects or difficulties in and around governance operations utilising the list-plus-algorithm can, it seems, often be fixed in legal scholars’ accounts. Add someone. Delete something. Modify parameters or procedures for use. Change the inputs. Increase the strength of association required for patterns to be deemed actionable. Reassign design responsibility. Insert some complaint or review capacity. Extend the reach of existing public law doctrines.

Because of the ready revisability it carries on its face, these sorts of remediation strategies always seem available in relation to a list. This is less the case, perhaps, in

relation to an algorithm, yet commentators still gain reassurance from algorithms' apparent instrumentalism, from the supernal adaptability of law, and from the burgeoning power of digital technologies. In view of the "exhilarating" opportunities identified with big data, "[t]he stage is now set for a distinctive law of 'health information' to emerge", writes legal scholar Frank Pasquale, with confidence (Pasquale, 2013, 684, 687). "[H]igh-tech wizards" can, after all, "come up with a patch" for almost anything (Brill, 2014). Algorithms can always be made to perform otherwise, in many accounts, given the right dataset. Writing of homeland security training simulations, for example, Titan Corporation's Roger Smith observed that "[m]any simulations are heavily database driven and configured. This means that the location, capabilities, asset identities, and missions described in the simulation can be changed with little or no modification to the simulation software" (Smith, 2003). In contrast, the prospect of revising, say, some qualitative legislative or treaty standard, or overturning some common law precedent, never promises clear deliverance to quite the same degree.

Yet problems and powers attending the list-plus-algorithm are not so easily dispensed with, as many writing about these matters have also recognised. Zarsky cautions: "there is much harm that governmental prediction models could generate...[that] transparency...cannot cure" (Zarsky, 2013, 1568-1569). Legal literature engaging with these difficulties is, accordingly, at once sanguine and defeatist. And, as the next section will explain, that defeatism may be justified with regard to the legal and policy apparatus of transparency.

The Limits of Transparency

As already noted, transparency is widely championed on the international policy plane. In the evaluation of regulatory infrastructure, the World Bank would have us regard it as a "meta-principle" (Brown, Stern et al, 2006, 59-60, 71). And it has long been so among

legal and political thinkers of various stripes, as part of a modern process of seeking “to externalize political power...in the visual field of common perception” (Ezrahi, 1992, 363). Yet transparency is invoked with particular frequency and virulence against the list-plus-algorithm. Loss of transparency is, for many commentators, the nub of the problems afflicting the list-plus-algorithm deployed for governance, and more transparency the answer to those problems.

It is impossible within the confines of this article to do justice to the extensive literature on the “theory of transparency” (Van Den Eede, 2011). Here, a few cautionary notes about the incapacity of transparency to salve aforementioned worries, and the prospect of its declining efficacy or significance more broadly, will have to suffice. As foreshadowed above, the goal of this section is less to displace transparency, as a principle of global law and policy, than to unsettle the efficacy with which it has been presumptively invested.

One difficulty with appeals to transparency, in the context of list-plus-algorithms’ inscrutable governance operations, is how hopeless a hope they offer. As Jodi Dean has highlighted, “a politics of concealment and disclosure...[appear] inadequate” to the decoding tasks at hand. All information is, of course, not equal. More information as such, though, does not seem likely to be corrective of the difficulties highlighted above. “Many of us”, Dean suggests, “are overwhelmed and undermined by an all-pervasive uncertainty” amidst “seemingly bottomless vats of information”. “Having it all”, Dean continues, “bringing every relevant and available [technological] fact into the [legal and policy] conversation”, or vice versa, threatens to “entangle us [still further] in a clouded, occluded nightmare of obfuscation” (Dean, 2000, np). It is far from clear that publishing algorithms or datasets

renders their operations widely or consistently legible, given unresolved controversies and divergent implementations (Kratz and Strasser, 2014; Joppa, McInerney et al, 2013).

Another problem surrounding appeals to transparency, against the unreadability of the list-plus-algorithm, is that of demotic mismatch. This is the problem of labouring to render one form of lawful authority transparent to some delimited demos, only to find it inextricably entangled with authority produced elsewhere. Consider, by way of illustration, the SCO Lists and smart border technologies discussed earlier. Making the exercise of regulatory authority transparent, in this context, might seem fairly straightforward. According to one expert, this is a matter of ensuring that SCO Lists are published, that the decision on any one person's plight, pursuant to a country's listing, is made by a central authority within each state and that such decisions are subject to appeal, in the short term, and to national and international oversight, in the longer term (Van Selm, 2001). The demos in question would, therefore, appear to be those subject to such national laws and/or with access to such appellate jurisdiction, shadowed by institutional representatives of a larger demos: cast as the "international refugee protection community" or simply the "international community".

Upon closer scrutiny, however, a clear line of sight and connection to a corresponding constituency cannot be so readily delineated or sustained. Centralising authority over the generation of the SCO List in any one receiving country, and demanding its publication, would pin down operative lawful authority to some degree. Yet the process of attributing applicants to particular countries on or off that list involves a much larger array of interlocking datasets and analytical processes. Countries' inclusion on SCO Lists entails recourse to a dispersed, constantly changing global dataset of information as to the political conditions and threats of persecution in any one country. This is typically amassed by a

combination of governmental and non-governmental agencies, the mix of which varies from region to region (Gibb and Good, 2013). Determinations of the credibility of a particular individual's claim to be from a certain country will similarly mobilize disparate datasets and data analysis practices surrounding credibility assessment, including those concerned with speech patterns, demeanour and indicators of linguistic affiliation (Kagan, 2003).

The Eurodac fingerprinting system, briefly introduced above, inscribes yet another demotic configuration upon this setting: the demos that might be assembled by and around this system does not correspond to those evoked by any one government's policy-making, public-private human rights fact-finding, or the dispersed expertise of credibility assessment. Moreover, none of these potential locations of operative authority fit neatly into the notion of centralized governance and split-level oversight by which SCO List-related decision-making was supposed to be made transparent, according to Van Selm's recommendations. Yet the workings of SCO Lists cannot be made visible without grappling with these further listing and data analysis practices and their disparate demotic associations.

Difficulty also arises from the expectation – implicit in appeals to transparency – that there will be something substantive, meaningful and determinative to disclose, lying behind the list-plus-algorithm. As the SCO List illustration shows, behind listed data and encoded instructions for analysis one tends to encounter more data and data analysis practices, often stubbornly irreducible to one other. Where comprehensive or penetrative visualization does become momentarily possible, one risks falling victim to “apophenia: seeing patterns were none actually exist, simply because enormous quantities of data [feeding a list-plus-algorithm] can offer connections that radiate in all directions” (Boyd and Crawford, 2012, 668).

Given the difficulties of realising transparency's promise, it may be that widespread appeals to this ideal surrounding the list-plus-algorithm are more concerned with affirming human authority over data in principle, than they are with exposing particular lists-plus-algorithms to effective scrutiny. In aspiring to see through a list-plus-algorithm, and to grasp the scheme(s) and power(s) underlying it, we may aspire to see *ourselves* in the acts of both seeing technology and making its operation visible, thereby returning willful human subjectivity to governmental centre-stage. Transparency may be a name we give to the effort to re-inscribe subject/object distinctions we sense to be globally under threat.

Associating with the List-plus-Algorithm

Alongside all the effort that is going into trying to make lists-plus-algorithms and related governance decision-making more transparent, and trying to track the origination and distribution of power within and around those operations (e.g., Coglianese, 2009), it might perhaps be at least as illuminating to try to understand what lists-plus-algorithms make, in a juridical sense, of the elements they assemble. Such an inquiry might cleave closer to the technical operations in which lists-plus-algorithms are often embedded. After all, data analytics are supposedly “mov[ing] [us] away from always trying to understand the deeper reasons behind how the world works to simply learning about an association among phenomena and using that to get things done” (Cukier and Mayer-Schoenberger, 2013, 32). Most data analytics technologies and implementations work on the basis of precisely this sort of shallow, non-causal, pragmatic claim: this assemblage works, for the meantime. What if one were to try to linger immanently in these shallows, to track the alliances and resistances that a list forms on its surface, rather than trying to plumb its political or ethical depths? Might legal scholars and practitioners be at least as well-occupied tracking lists-plus-algorithms’ ramifications *as such*, rather than rushing to look to what might lie *behind* or *underneath* them, or to recover that which they might have displaced? Here, in place of a conclusion, is an intimation of an alternative approach along these lines.

Such an alternative approach might entail reverse engineering lists and algorithmic designs from patterns of conduct, or material effects, albeit perhaps at risk of overestimating particular permutations of the same. Migration advocates have, for example, seemingly worked up unpublished SCO Lists from patterns of asylum applicants’ treatment by immigration authorities. Mårtenson and McCarthy published observations about the

operation of SCO Lists in Austria, Luxembourg and Portugal despite the relevant lists in those countries being “secret” during the period of study (Mårtenson and McCarthy, 1998).

Where data governance cannot be rendered navigable by reverse engineering of this kind, it may be possible to provoke patterns or properties to surface through tactical experiment towards the generation of false positives. In other instances, it might be conceivable to navigate secret or proprietary governance mechanisms, and call them into question, through parallel play. There are many examples of people learning and sharing how proprietary algorithms work through experimental play and mimicry (e.g., Honan, 2014; Madrigal, 2014). Many have maintained that policymakers, even those charged with sensitive security matters, overwhelmingly rely on publicly available information for decision-making purposes (Benes, 2013, 24). Creative use might yet be made use of open source material (‘OSINT’, in business and government intelligence: Fleisher, 2008) to anticipate or reconstruct problematic exercises of governance power.

Such an approach would entail the reading of list-plus-algorithms, and their conditions of possibility, as lawful orders more or less in their own right. It might involve, for example, examining relationships that data-mining association rules routinely instantiate as juridical formations. Cluster analysis algorithms generate groupings iteratively on the strength of associations with a ‘centroid’, ‘seed point’ or ‘training set’. The starting point(s) in question will be continually refined according to ongoing measurement of these associations, reconfiguring groupings based on new inputs (Kaufman and Rousseeuw, 2009). Could associations of this sort – and their juridical extensions – be actualized otherwise on the basis of strategic inputs from those co-patterned within them, somewhat in the mode of “Google bombing” (“attempts to game the search-algorithm of the Google

search engine”: Bollier and Firestone, 2010, 6)? In what circumstances might that be a prospect worth pursuing?

An orientation around such questions, and the associative work that list-plus-algorithms do, would entail horizontal inquiry and organizing, rather than a preoccupation with vertical relationships and tracing claims back to the feet of one or other perceived puppet-master. The work of “co-production” in this mode might be less a matter of generating “information” than questions; less constituting than unraveling (cf Meijer, 2012). Legal scholars might make as much of the juridical relationship *among* those co-placed in a list-borne or algorithmically produced pattern as we currently do of the relationship between the institutional or commercial source of a particular list-plus-algorithm used for governance and its so-called end users or regulatory targets.

Attention to co-placement might support, say, gatherings of people who have experienced some burden or harm as a result of governmental or non-governmental co-patterning, in order to elucidate correlative conditions and organize around these, for so long as their sense of allegiance held. What co-patterners might or might not achieve in this respect will likely vary depending on the nature of the harm that they have experienced, the particular lists-plus-algorithms in which they appear, their access to resources, and other factors. There is, nonetheless, political work to be done in many instances at the level of the listed assemblage or algorithmic pattern – amid their “laws”, broadly understood. Governmental deployment of lists-plus-algorithms and the allied techniques described above does not so much depoliticize as shift the register of politics. Juridical thought needs to enter that register with a view to discerning what might yet be made of “the political” within it, beyond the docility of many versions of “digital prosumption” (Mouffe 2005; Ritzer and Jurgenson, 2010).

These speculative musings do not amount to a program or “fix” to address the worries earlier outlined. Rather, to think of the list-plus-algorithm as a technique of global governance represents a “myth to help us suspend our knowledge” about what law – international law, especially – is and is not, does and does not, and how legal relations are assembled (Latour, 1994, 791). It is, in the sense of Foucault’s writing, fictional (Foucault, 1980, 193; O’Leary, 2009).

Globally, humans and non-humans are associated in law through cross-border contracts; constitutional and legislative borrowing; judicial, academic and other expert dialogue; common consumption and value chains; treaty regimes; international institutions; webs of debt and investment; and creative collaboration, both licit and illicit. They are also lawfully associated in lists, algorithms and their hybrids in ways that intersect all the foregoing modes of legal relation.

Lawyers have a well-developed legal vocabulary surrounding the various mediators to which I just alluded: contracts; legislative instruments; constitutions; peer review and citation; consumer protection, tort and human rights regimes; treaties; banking, finance and investment regulation; labor law; intellectual property law; criminal law. Far less developed is a prevailing legal sense for lists-plus-algorithms doing governance work globally and for ways that humans and non-humans come to be legally related through that work.

In relation to the foregoing mediators, the sense to which it has become customary for law and lawyers to turn is that of sight: by appeal to transparency norms. Perhaps, as was suggested above, imaginative recourse might yet be had to other sensory metaphors. Law and lawyers might become better attuned to operative rhythms, and their distributive effects – developing an “ear” for lists-plus-algorithms doing governance work, where making them transparent is not possible. Effort might also be directed to fostering a more

acute proprioceptive legal sense: an experience of the dynamic distribution of humans and non-humans, relative to one another, in a list or algorithmic pattern, and a sense of how certain movements or interventions might affect that, and with what implications. Existing legal doctrine tends to equip people with a relatively good proprioceptive sense of how they are positioned in time, space and law relative to fellow residents or citizens, fellow employees, fellow consumers, fellow right-holders and so forth, however remote the connection. To date, far less legal attention has been dedicated to nurturing a proprioceptive legal sense among global co-patterners.

Perhaps it is time to suspend, for a time, our appetite for some way for the law to resolve, decisively, the politics of lists-plus-algorithms or to bend the latter to existing doctrine. Rather, the list-plus-algorithm might yet be made a device of global juridical association with which to experiment, if only for a time. Approaching lists-plus-algorithms in this way may not deliver all that one might seek; it would not yield, for instance, any *one* account of the politics or laws of the list. It may, nonetheless, enable renewed reflection upon our own responsibilities and capacities for association – and for the political – under current conditions. It might suggest too a range of ways of living the list-plus-algorithm, and elucidating more fully its demotic implications, without insisting on its definitive decoding as a precondition to action.

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