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**Towards a computational cultural policy studies: examining infrastructures of taste and participation.**

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## **Abstract**

Like other disciplines within the humanities and social sciences, cultural policy studies has had to respond to the influence of computing technologies. Researchers have explored the changes wrought to the management of cultural organisations, to the models of the creative industries and to new forms of access to culture and the arts. This paper suggests that these emphases might miss how computing technologies are re-shaping the project of cultural policy in a more fundamental direction. The paper draws on the work concerned with the cultural values of computing technologies and their influence on contemporary modes of government. These values, of instrumental reason, categorisation and calculation underpin a range of technologies, which are increasingly present in and important to the management of everyday life. Reflecting on how cultural taste and participation are being re-shaped by computing technologies, the paper argues these infrastructures are informed by specific visions of the kinds of people who live with and through them and how such people can be governed. The longstanding focus of cultural policy studies - about how states are concerned with the cultural formation of their citizens- are keenly present in the strategic ambitions and imperatives associated with computation.

## **Keywords**

Computation, implicit cultural policy, taste, participation

## **Introduction**

Every Saturday morning for the last four years in the East Midlands UK town where I live, between 130 and 300 people have congregated in a city-centre park to participate in an organised 5 kilometre run. Participants are drawn mostly from the local community, but each week also includes runners who habitually take part in similar events close to their homes,

who are visitors to the city for work or pleasure. Runners are made up of men and women, old and young with an ethnic mix that reflects the city as a whole, inasmuch as such publicly organised form of athletic display might be expected to. The event is free to enter, there is no check on ability or expectation in relation to fitness or performance and the course is measured and marshalled by volunteers. Upon completion of the course, runners are issued with a token which is scanned alongside a dedicated, individual barcode which participants receive, through e-mail, upon registering on-line for this event. Provided they have registered and received a barcode – the only semi-formal barrier to entry into the event – runners will then receive, within a couple of hours, an e-mail containing their time, position and a breakdown of their performance according to gender, age and in relation to official world record times for their respective age categories. Runners returning for more than one event will receive an e-mail each time a run is completed, and consequently be able to monitor, their performance over time against all these variables. The event, *parkrun*, is one of 147 such events that take place at a similar time across the UK, attracting some three and a half thousand runners. It is part of a network of events which began in 2004 in Richmond Park in London but has subsequently spread around the country and the world, including to Australia, the US, Singapore and South Africa. The network is currently (as of summer 2017) supported by sponsors including those directly related to sporting technology (the US, San Francisco wearable tech company *FitBit*) the sportswear company *Intersport*, and the life insurance company *Vitality*. It is an event that is open, participatory and inclusive in its orientation - explicitly geared towards encouraging individual well-being, health and self-improvement through exercise. It is also an initiative that is enabled by the rise and spread of data-generating information technologies and in particular by their rise and spread into the management of everyday life and conduct, and it is this aspect which connects the event with the concerns of cultural policy studies.

Academic disciplines across the social sciences and humanities have realised the need to settle accounts with the transformative power of computing technologies. A range of pessimistic and optimistic stories have emerged over the last couple of decades to accomplish this. Optimists credit these technologies with the ability to re-shape social and political life in an inclusive direction, challenging entrenched forms of institutional power, even bringing down dictators. Pessimists echo anxieties about earlier technologies with cautionary concerns for the cultural, social and psychological consequences of their widespread use, especially amongst the young. To the extent that cultural policy studies itself has focussed its interest on these technologies it has been in relation to their influence on access to or management of the arts and media or in relation to issues of intellectual property within the changing models of the creative industries. This claim is substantiated below. With these provisos this paper argues that, as yet, cultural policy studies has not yet wholly grasped the *cultural* significance of these technologies but also to suggest a focus on them as *policy* technologies can be fruitful and revealing of how the project of cultural policy is being re-shaped.

In doing so the paper draws on the insights from David Golumbia (2009) about ‘computationalism’, the beliefs associated with the rising influence of computers in managing social and cultural life since the mid-twentieth century. The use of the label computation here has a dual function. First it acts as a ‘catch-all’ term which allows us to focus upon a whole series of technological developments which are imagined to be definitively contemporary. These might include the rise of the internet, the shift to digital modes of production and consumption within the cultural industries and the rise and spread of data generating devices in the management and conduct of everyday life. All of these developments variously reflect the rise and spread of computing technologies, and so the label of computation can be

understood to contain them. Second, applying this generic term also allows us to focus in on the essential characteristics of these various technologies. As Golumbia describes it, the power of computers partly stems from a widespread but often unexamined set of beliefs about their operation. As he describes, ‘computation – as metaphor, method and organizing frame – occupies a privileged and under-analysed role in our culture’ (Golumbia, 2009: 1) In contrast to claims about the novelty of computation, Golumbia’s account emphasises its roots in an old belief system, ‘that something like rational calculation might account for every part of the material world, and especially the social and mental worlds’ (Golumbia, 2009:1) It is a belief system that forms the basis of a vision of the kinds of people who live with and through computing technologies, the kinds of problem such technologies can solve for them, and the institutions and structures which govern them. These concerns resonate with the broader purview of cultural policy studies – especially in its ‘implicit’ (Ahearne, 2009) manifestation – in which culture and cultural values are communicated through channels that are ‘extra’ to the arts or media, and through institutions beyond the dedicated cultural or educational ministries of the state. The paper proceeds with a brief thematic analysis of the various ways in which debates about computing technologies have been articulated in key journals and resources in the field of cultural policy. It then offers a fuller account of computationalism and how the cultural values embedded in computing technologies are relevant to revealing and understanding some key tensions in contemporary cultural life. It concludes by exploring some manifestations of these tensions in the ‘infrastructures’ of cultural taste and participation, as two key problems that cultural policy has sought to solve.

**Computation and cultural policy studies: Presence and absence.**

It is a well-worn trick of scholarly analysis within a field to identify a perceived gap and write contributions that help to fill it. To avoid accusations of wilful engagement in this practice, this section presents a brief thematic overview of how and in what ways the field of cultural policy studies has engaged with computation, to set the scene for a fuller and more specific engagement with the ways in which it has not. In approaching this task, outputs from three significant journals within the field – the *International Journal of Cultural Policy*, *Cultural Trends* and the *Journal of Arts Management, Law and Society*- were examined. These journals have the advantage of being available digitally through the Taylor and Francis platform and, therefore, easily searchable using a consistent search facility. The journal archives were searched, with the arbitrary selection of a date of the 1<sup>st</sup> January 2000 until the present day, for journal articles, rather than commentaries or book reviews, which included in their keywords ‘technology/technologies’, ‘digital’, and ‘internet’. Such keywords, which can be considered the marginalia of contemporary academic writing in the digital landscape, are a key function of a *computationally* organised informational infrastructure, enabling and shaping what David Beer (2015: 41) refers to as the ‘classificatory imagination’. For now it is worth commenting that, of other potential keywords that were explored, ‘computer’ and ‘computing’ provided no returns at all from any of these journals. This absence is not a basis for a meaningful critique of the field, but it is revealing of a broader point that, while the manifestations and applications of computation have been brought to bear on the analysis of cultural policies, the technologies themselves remain rather taken-for-granted examples of what Latour would describe as ‘black boxes’ – made invisible through their success (Latour, 1999). As a result, the cultural consequences of computation have not been, in general, the *object* of the analysis within the field, and the possibility of the computing technologies themselves reflecting and shaping cultural values and practices in ways which are in keeping with the general project of cultural policy remains unexamined.

These searches were refined by closer examination of abstracts and the articles themselves to determine the extent of the focus on computation. This process led to the establishment of a general sample of forty seven articles in total (the titles are listed in full in Appendix 1). Exclusions included three articles exploring the thought of specific figures in the field for whom questions of technology were significant (Douglas Smith's (2010) reflection on the development of Andre Malraux's thoughts on culture, Charles Acland's (2006) re-consideration of Harold Innis' significance for the field of cultural policy and Graham Murdock's (2006) assessment of the contribution of Herbert Shiller to cultural and media policy debates in the US). Further exclusions included Bruce Johnson's (2013) analysis of the relations between music policy and noise pollution legislation. With these few exceptions, then, a closer examination of the articles suggests that the 'imaginary' of the field of cultural policy studies' relation to questions of computation, as it is represented by the content of these journals, can be structured by three themes, albeit that there is some overlap between them.

First, computation is understood as contributing to transformations to cultural trade, primarily, although not exclusively, through the implications of digitalisation of cultural goods for existing regimes of intellectual property. We see evidence of this theme in Healey's (2002) review of the field in the context of the 'new economy', Frankel's (2010) reflection on the processes underpinning the building of a knowledge economy in New Zealand and Feigenbaum's (2007) analysis of the implications of digitalisation for national quota systems for cultural goods.

**Figure 1 here**



The title of this latter article, ‘Is technology the enemy of culture?’ encapsulates one anxiety of this theme, that the forces of computation have disruptive potential for established regimes of intellectual property and cultural trade – an anxiety also captured in Kawashima’s (2010) reflection on the consequences of computer enabled ‘user creativity’. Another contribution to this theme, in keeping with the optimistic/pessimistic tone of general scholarly debates about technology, Rone (2013) on digital piracy in Bulgaria, reflects on the ambiguities of the challenge wrought by digitalisation to restrictive practices of copyright and the possibility of more inclusive modes of cultural production and distribution emerging from the digital context.

The second theme relates to the consequences for cultural sector for the application of computation to the management and organisation of individual institutions or industries within the field of cultural production. Thus Bakhshi and Throsby (2011) examine how cultural institutions can use new technologies to improve efficiencies, while Peacock (2010) indicates the parameters that frame research into the relations between the worldwide web and organisational life in the heritage sector. Included within this theme are articles about broader infrastructural shifts in technology with significance for established modes of cultural organisation, including Moe’s (2011) reflections on how the development of internet platforms by public service broadcasters challenges our understanding of regulatory framework of this sector, Moore’s (2016) exploration of the place of ‘big data’ in arts administration and management or Jochumsen et al’s (2017) research on the transformative potential of computation to the meaning of the library space, in which users – young users in particular - are empowered by new technologies, and require the institutions with which they engage to reflect this. Contributions in this theme work with a broader palette than those in the previous theme, and reflect that the social and structural changes instigated by

computation go beyond the immediate concerns of the cultural sector but that such organisations must adjust to them.

Finally there is a theme reflecting the role of computation in either extending traditional or enabling new forms of cultural engagement or participation, both in a restricted sense pertaining directly to questions of audiences and in a broader sense implying the relations between technology and new forms of civic participation and citizenship. This theme reflects wider, and more optimistic accounts, of the potential role of computation, especially in its ‘web 2.0’ idiom (a term explicitly evoked by Valtysson’s (2010) contribution) in which the interactive and participatory aspects of various technological platforms are identified as rendering cultural forms accessible, but also to encourage new forms of access. We see this in King’s (2016) recent analysis of the live-streaming of theatre events to cinemas in the UK as a means of broadening out the geographical reach of the audience for the subsidised arts, for example, or in Nawa and Sirayi’s (2014) account of the role of digital technologies in promoting heritage sites in South Africa. Here the powerful rhetorics of contemporary version of computation, common across industries in the early 21<sup>st</sup> century, are translated into the cultural sector, such that arts organisations and museums are encouraged to ‘catch up’ with and take advantage of the opportunities afforded by technological change to broaden and develop their audiences.

The aim in laying out this work in this way is not to critique it *per se* – such research has clearly made valuable contributions to debates within cultural policy studies and, in keeping with its position as both a pragmatic and theoretical field, has provided policy-makers and organisations within the sector with useful insight into the principles and pitfalls of incorporating, or failing to incorporate, computation, in its various manifestations, into their

practices. They seem to share, though, a conceptualisation of *technology* and *culture* as essentially separate, with one sphere being, in keeping with the broader concerns of the field, bound to the arts and creative industries and the other understood largely as an external, somewhat neutral, category which can be brought to bear in various ways to help solve the problems of culture – be they commercial, organisational or relating to participation – which that sphere of policy has traditionally acted upon. So what is missed, through these kinds of foci, in our understanding of the cultural consequences of computation, and their specific consequences for cultural policy?

The conceptual language of ‘implicit’ cultural policy is helpful in articulating an answer here. In his clarification and elaboration of this term, Ahearne (2009) suggests that the interests within the field of cultural policy are with specific objects or institutions (the practices of culture ministries, their support or otherwise for particular kinds of cultural goods’) but also with constituting a ‘lens’ which ‘brings into focus actions directed at art and culture by agencies looking to modify the behaviour of populations’ (Ahearne, 2009:142). Such actions cannot, given the mechanisms for organisation of political life in complex societies, be limited to the practices of dedicated ministries concerned with the funding of or strategic investment in particular forms of cultural products or practices. Instead this lens can take in other institutions – including non-state actors - and allow us to reflect on how they are involved in the strategic, cultural shaping of citizens. Intriguingly Ahearne also focusses some attention on computation as a source of implicit cultural policies. He speculates that,

‘Microsoft has its educational programmes and Google has its programme to digitalise the works of the world’s heritage. But these are not the courses of action that will do most to prescribe and shape cultural practices over the coming decades, which revolve instead around hidden software codes, recording of web usage and the exploitation of the knowledge thereby acquired within large economies of scale’ (Ahearne, 2009: 145)

Critical attention to these aspects of contemporary computation— their unexamined or inaccessible ‘codes’, their role in the production and circulation of specific forms of information or data and the subsequent application of these forms to the ways in which cultural practices are organised seems important to understanding how contemporary populations are shaped and how contemporary citizens are made and made governable. The following section will consider where such attention could be focussed through a fuller discussion of what is at stake in ‘computationalism’ for cultural policy studies.

### **The cultural values of computation**

It might be unreasonable to expect a field of study so wedded to and informed by the critical traditions of the humanities and social sciences to have placed computation front and centre, but its role in the practice of contemporary government suggest a focus on the values of computation is now merited. Golumbia gives us some helpful language through which to begin to reflect on these cultural values. For him, more significant than the machines themselves are the beliefs about what computers can do and their existence as metaphors of, and frames through which, we can organise more general human capacities and forms of action. In its essence, computationalism is

‘the view that, not just human minds are computers but that the mind itself must be a computer – that our notion of intellect is, at bottom, identical with abstract computation, and that in discovering the principles of algorithmic computation via the Turing Machine, human beings have, in fact, discovered the essence not just of human thought in practice but all thought in principle’ (Golumbia, 2009: 7)

While the extent of this belief and its specific consequences for cultural policy studies will be explored below, it is worth noting two significant points in identifying underlying cultural values or assumptions.

The first is that, while the rhetoric of the computing age is one of individual *empowerment* through dispersed technologies, such technologies are also produced through and enabled by centralised forms of state power. As Williams (1990) described in his account of what he termed ‘symptomatic technologies’, technologies which are assumed to change or shape social life in fundamental ways (he was reflecting on television), emerge from a range of possibilities and through specific choices and priorities of investment and research to solve particular kinds of problem. These include policy problems relating to how complex societies can and should be managed. Historians of the mid twentieth century development of contemporary computation such Markoff (2005) in the US and Dyson (2012) in the UK reflect on the role of state and military forms of research funding in underpinning both the commercial and public development of computers as we now know them in the university research laboratories of California and Manchester. This research is undertaken by scientists many of whom had hopeful and utopian visions of what computation was able to do for future societies, alongside pragmatic problems to solve. There are significant relations between the ways in which technologies are imagined as shaping the future, by those who work on their development and the values and priorities of the present. Technologies are produced through and by people working in institutions, including those institutions which represent established and entrenched forms of power. The case of computation suggests that, for all the idealism of those involved in the early development of computing cultures, these technologies, in their contemporary manifestations, might also reflect such interests.

The second substantive point about the cultural values of computation relates to the strong association, for all their apparent contemporaneity, with what Golumbia (2009) refers to as a rather old conception of human societies in which the problems that they face can be resolved exclusively through the application of abstract forms of rationality and instrumental forms of reason. The possession and the correct application of these forms of reason is not simply a means of defining what separates human beings from other living creatures, but also of discerning between human beings in regard to who gets to apply or be subject to them. As much as computation is a product of human ingenuity, computing technologies are also reflective of a particular vision of the human itself about how people are *made* and how they might be *managed*. This role in the process of re-imagining the human brings such technologies under the remit of a cultural policy studies concerned with the production of citizens.

One contribution which helps develop this attention is provided by Rindzeviciute's (2005) reflection on the relation between cybernetics and cultural policy in Soviet Lithuania.

Drawing on Foucauldian accounts of culture as governance (Rose 1999) as well as those from science and technology studies (Latour, 1999) this account reminds us that the problem of cultural policy is one that is 'both political (fulfilling the rationales of a prevailing political regime) and technological (influenced by available scientific achievements)' (Rindzeviciute, 2005: 4). The techniques of cybernetics – imported to the Soviet Union from the proto-computer and system-engineering initiatives of the mid-twentieth century US -provided the mechanisms through which the Soviet state attempted to manage political problems – including the problems of the production, circulation and management of culture - through the systematic gathering and analysis of numerical data that provided the feedback to inform planned systems of control. This example reminds us that the production and circulation of

numerical data is a primary strategy of the modern state and that calculation, and the management of numerical data, is the primary purpose of computation. Numerical forms of evidence have been at the heart of significant debates within cultural policy studies, most often in relation to the relative value of such evidence for underpinning the more ‘unquantifiable’, aesthetic, aspects of cultural life (see Phiddian et. al. (2017) for a recent elaboration of these debates). The relative ability of numbers to adequately capture the value of culture is less important to the argument of this paper than the cultural values of numbers themselves, as revealed through historical and philosophical accounts, such as Hacking (1982), Poovey (1998), and more recently, Bouk (2015). This latter account in particular emphasises the role of numerical data and the rise of statistical forms of knowledge not just as part of the armoury of the state but also with regard to the construction of ‘the individual’ who is subject to the state, understood as a culmination of the data held about them in various categories. The growth of the commercial institution of life insurance, for example, becomes, in the late nineteenth and early twentieth century bound up with epistemological assumptions about what people are and how they can be known, based around a categorisation of their identity (in terms of gender, age and, importantly in this early history ethnicity), and a numerical assessment of the relative risk of their morbidity based in part on assessment of their health, habits and profession – the triple categories of ‘capacity, character and capital’ (Bouk, 2015: 66) Such practices effectively and deliberately transformed people into *statistical* individuals and, in this specific instance, into risks which could be differentially valued and traded. Given the spread of evermore sophisticated modes of the production and circulation of numerical data, facilitated by computation, including into the management and control of everyday life (e.g. in the workplace, healthcare, travel and consumption practices) their significance for the production of contemporary individuals seems likely to have increased.

This tendency of computation, in its re-imagining of the human and its production of data about the everyday lives of populations, resonates with Barry's (2001) conception of the modes of government of the 'technological society'. Such a society, he argues, has two important dimensions. The first is the importance of technology to creating the 'space of government', formed not through territorial boundaries over which the purview of legitimated institutions extend but through zones, 'formed through the circulation of technical practices and devices' (Barry, 2001: 3). Second is the rise of the political concern with the 'technical skills, capacities and knowledge of the individual citizen', including the skills and capacities to take responsibility for one's own life, whether in relation to the problems of health (awareness of the risks of certain behaviours or practices) or in relation to the kinds of self-discipline and self-management required for success in the contemporary economy. Barry uses an example that should be familiar to cultural policy scholars to illustrate the influence of technology, the emergence of the 'interactive' museum exhibit. The creation of conditions for participation and interaction has been another of the positive rhetorical contributions of computation, as recognised by some of the contributions to journals within the field of cultural policy studies outlined above. For Barry, though, the key feature of such developments is that 'interactivity is expected to turn the visitor into an experimental self. Self-experimentation becomes part of the solution to the anxiety of government.' (Barry, 2001: 130).

While technology itself is central to both the understanding and conception of state and citizen in this kind of society, this position is, paradoxically, achieved through a conception of the technologies as focussed upon the practical, pragmatic engineering or calculating of solutions to specific forms of problem. The application of technical or scientific apparatus to



the resolution of problems is conceptualised as apolitical and, even, a ‘way of avoiding the noise and irrationality of political conflict’ (Barry, 2001: 8) with the patina of objective neutrality provided through numerical data. This separation between the social world of politics and the material world of science and engineering has powerful impacts, especially in the contemporary context where data-generating and analysing devices are dispersed throughout a population and so bound up with everyday forms of self-monitoring and management. The following section expands on these possible consequences and reflects on two areas to which a computational cultural policy studies could direct its focus.

### ***A new infrastructure of taste and participation***

If cultural policy studies has been historically concerned with the role of culture in the processes through which citizens are produced and rendered governable then, the argument so far has suggested, particular attention to the role of computation in producing and managing cultural life is merited. Identifying a particular object of analysis in relation to computational cultural policy is difficult given the spread of computation, and its accompanying values, into ever more modes of contemporary life in complex societies. This reflects the insight from Bowker and Star about infrastructural systems of information management and their relative visibility. ‘Good, usable systems’, they suggest, ‘disappear almost by definition. The easier they are to use, the harder they are to see.’ (Bowker and Star: 2000:33) The following sections identify how computational culture might be shaping two fundamental concerns of cultural policy studies in relation to the management of the populations of complex societies – participation and, first, taste.

### *Taste and computation*

The cultivation and management of taste has been one fundamental aim of cultural policy. While this is less explicitly stated in 21<sup>st</sup> century policy discourse than it was by 19<sup>th</sup> century policymakers (Bennett, 1995), questions of taste remain significant to a general understanding of how behaviours within populations can be encouraged and the consequences of this for general human flourishing and well-being or for the effective and smooth running of the complex political and economic processes through which contemporary societies are managed. One associated story that can be told about scholarly approaches to taste – including those informed by policy imperatives to know the behaviours of populations - is of a general struggle to render tastes – as things which occur and are developed within the body - visible and measurable. This move is controversial but it underpins how taste has been understood as a social phenomenon, mostly forcefully within Bourdieu (1984), as well as how tastes have been brought under the remit of policy. It is a move which transforms taste from a concept relating to embodied aesthetic experience into one concerned with abstract, calculable data relating to preferences and practices which can be analysed and acted upon (see Wright, 2015 for fuller exploration of this move). Stuart Jeffries recent biography of the Frankfurt School includes one significant critique of this shift, emerging from Adorno's research into radio audiences with Paul Lazarsfeld in the 1940s. Responding to the attempts by Lazarsfeld and his team to empirically identify people's preferences through the design of a machine called 'the programme analyser' which invited people to register their preferences for the music they heard on the radio by pressing a button, Adorno offers the following critique in a letter to Lazarsfeld

‘You may be able to measure in percentage terms how many listeners like classical music...But if you wish to include the reasons they give for their preferences, it would most likely turn out to be incapable of quantification’ (Adorno, quoted in Jeffries (2016): 204)

We can detect see in this proto-audience research an emerging social scientific imaginary of how what people *like* can be known and what might be done with such knowledge. Adorno was suspicious of a project to render tastes visible and calculable as mediated through technology, seeing in it an incursion of instrumental reason into another form of life. He reflected later that, ‘culture was simply the condition that precluded a mentality that tried to measure it’ (Adorno quoted in Jeffries, 2016: 204). We can perhaps speculate as to what he would make of a landscape in which the identification, measurement and circulation of data about tastes, still identified through the pressing of buttons, has been turbo-charged by the application of contemporary computation. Two manifestations of this are significant, both relating to the role of data about taste in shaping economic and political life.

The first relates to those aspects of technological infrastructure which are dedicated to the gathering and circulation of preferences. Mundane exemplars of this infrastructure would be the ‘like’ button on social media and the automated algorithmic recommendation in online retail spaces. The former is part of a distinct business model – what Gerlitz and Helmond (2013) refer to as the ‘like economy’- in which ‘likes’ for specific products or pages are translated into targeted advertisements for similar products and the expression of sentiment is captured, aggregated and given value. The latter is one way such data can be made practically useful, as the culmination of data about ‘likes’ or about sales of products can be repurposed in relation to data about genres and demography into predictions about future preferences. This development has certainly been disruptive of models of marketing and audience research in the contemporary cultural industries (Napoli, 2011) as traditional mediating roles are replaced by automated processes. Algorithmic forms of operation are at the heart of beliefs of computationalism as pragmatic and logical solutions to the problems of managing data, but

they are also the result of human values and the performance of expert knowledge as to the best solutions to identified problems based within a specific imaginary which can have unintended consequences in the cultural setting. The power of how to rank and present the results of algorithmic calculations and what to include or not in algorithmic formulas becomes an invisible arbiter over what gets seen or recommended at all. As well as the now quite well established consequence of ‘filter bubbles’ (Parisier, 2011) in which our own tastes are repeatedly fed back to us as recommendations, algorithms cement the place of data-generation and management as powerful influences in the re-imagining of cultural value and authority. Moreover, in increasingly established models of streaming technologies (such as Netflix or Amazon Prime) the data generation of consumption – i.e. the analysis of patterns of individual preference – are fed into future plans for production. Computation here can be implicated in a process of re-imagining what taste and its acquisition might be *for*, for consumers and producers, with established, more abstract forms of cultural expertise either reinforced or undermined by data.

The prescient, or surveillant consequences of such abilities are one source of anxiety, but as an extension of the ‘capacity, capital and character.’ model of the construction of the statistical individual, the incorporation of data about lifestyle, tastes and habits into rankings has further real world implications, including in relation to policy. Computing-enabled tools such as YouGov’s profiler, which draws down data from some 275,000 panellists about their preferences for over 190,000 products, including cultural items (such as actors, artists, films, novelists brands), or ACORN’s consumer classification system which provides finely grained data about the kinds of preferences held by people within specific neighbourhood’s in the UK, classifying them into some 18 sub-groups according to their relative affluence and preference for specific types of cultural practice, become powerful tools for both commercial

organisations and policymakers in ‘knowing’ their populations. Computation allows for these forms of fine-grained data, geodemographic to be gathered, organised, circulated and made visible and useful, including to cultural policy makers. Arts Council England, for example, has developed its own ‘cultural segmentation’<sup>1</sup> tool, combining the MOSAIC tool of consumer classification developed by the credit check company *Experian* with its *Taking Part* survey of cultural participation to generate 10 distinct sub-groups of the UK population, distinguished through their practices and assumed associated attitudes and behaviours.

Through these kinds of example the computational management of tastes can be seen as a key element of the 21st century iteration of the use of the techniques and technologies of social science in the practices of government, re-imagining the subject of the state as the culmination of their data. The following section describes a second manifestation of this re-imagining.

### ***Participation and computation***

Despite the relative absence of any formal relationship with the policy-making armoury of the contemporary state, parkrun, the running event which began this paper, can be conceptualised as a model for a particular kind of contemporary policy initiative. Moreover I want to argue that it represents a particular kind of cultural policy initiative, re-imagined and given particular impetus by computation and its associated values. The *parkrun* organisation is explicit in its commitment to achieving policy goals in encouraging exercise. It makes the data emerging from these runs available for research purposes in relation to exercise and public health (e.g. Stevinson and Hickson, 2014) and encourages support for medical charities, including Alzheimer Research in the UK. At the same time *parkrun* is emblematic

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<sup>1</sup> See <http://www.artscouncil.org.uk/participating-and-attending/culture-based-segmentation> (accessed 24th November 2017)

of a more implicit form of policy, focussed on the modifying of the behaviour of a population, and putting the technologies and associated values of computation to work in doing so. This interpretation places *parkrun* closer to what Banks (2009) refers to as ‘instrumental leisure’ – the kinds of leisure activities which are bound-up with narratives of self-improvement and self-management. Banks associates these kinds of leisure with the creative classes, but re-imagining them in relation to the history of cultural policy also connects them with older, nineteenth century perspectives on the place of sport and exercise in making a population fit for a fulfilling – and productive – life, the ‘establishment of a better and sounder physical type for the future to work with’, as Matthew Arnold describes (Arnold, 1993: 72). Contemporary exercise cultures, again underpinned by computation, enrich and enable this desire for self-improvement with the ready provision of the mechanisms through which to chart and illustrate it. They are, in examples such as *parkrun* and the innumerable devices and apps – of which *Fitbit* may be an exemplar - which allow self-focussed data gathering, tracking and performance analysis, shaped and enabled by an infrastructure which, as with tastes, has numerical data, produced and managed through computation at its core. As Grief writes ‘the only truly essential pieces of equipment in modern exercise are numbers’ (Grief, 2016: 6). Moreover, he suggests that exercising or not, when supported and recorded by computational technologies makes individuals ‘part of different aggregate categories that die with less frequency at successive ages’ (Grief, 2016:8).

Here we see a direct link with ‘capacity, capital and character’ conceptions of a statistically constructed individual, made more complex and visible through everyday forms of data generation and collection – a characteristic which perhaps explains both the ready utility of *parkrun* data for medical research and the attraction of such an event to its sponsors. As Walker-Rettberg explores, there are already developing relationships between technology

providers like *fitbit* and insurers such as *Vitality*, with the latter offering reduced rates for coverage for customers prepared to wear and use the technologies provided by the former to track their activities, with rewards for meeting targets in relation to recommended levels of exercise (Walker-Rettberg, 2014) that reflect participants movement between different categories of risk. The generation of numbers here is part of the logic of participation. It provides evidence of participation itself, as well as how that participation can be indicative of self-discipline, self-management and self-improvement. The ‘quantified-self’ (Lupton, 2016) movement and its accompanying devices (portable smart-phone or wearable versions of computing technologies) reflects the apogee of the spread of computational beliefs into everyday life– and the accompanying power of numerical data to reveal things about oneself about which one was hitherto unaware and to change one’s behaviour accordingly. Activities relating to health, diet, financial management, driving habits, sleep patterns, parenting, romantic love, workplace productivity, can be tracked and mapped for the purposes of self-knowledge – but also to generate data for third parties to monitor or trade. As with tastes, this is a process of re-imagining the person as the culmination of their available data made visible and manageable through computation. Both the designers of such systems and events, their participants and commercial and state users of data appear to share a belief that computation can make and re-make individuals and populations in positive ways.

Bowker and Starr (2000) construct a helpful typology of contemporary informational infrastructures as ‘embedded’ in existing social or institutional arrangements, ‘transparent’ in performing their tasks and ‘learned’ in relation in relation to membership of particular communities of practice. We can think of our *parkrun*-ners in this light– using established public city spaces, through very open and accessible means of entry and generating a collective identity that initiates newcomers into its procedures (register, run, scan, read

results). The infrastructure required for this relatively basic event (a run around a park) includes, though, the means to produce and disseminate readable barcodes and connect these to established databases, the means to produce accurate time and distance data for individual runners, the means to rank and order runners in relation to age and gender and to store this data over time, the mean to display and distribute this data to its runners and to do so in a timely, semi-automated manner within a few hours of the completion of the event. These layers of informational, computational, infrastructure, themselves dependent on the broader spread of devices, software and technical literacies throughout a population, fall away in the experience of the event itself but are crucial to its operation.

## **Conclusion**

As an increasing number of forms of cultural practice – reading, listening to music, watching television or films, exercising – are mediated through data-generating and managing technologies, computation plays a part in how cultural life itself is distributed and circulated. The data generated through practices of buying, liking and sharing cultural recommendations through such devices feed not just into the business models of tech giants (but also inform new modes of imagining, governing and managing the individual. As the above discussion has illustrated, cultural policy studies as a field of scholarship has not been wholly blind to the rise of computation as it is manifest in a range of contemporary technologies. It has, though, brought such technologies under its focus in ways which have not adequately reflected that computation also reflects cultural values which, potentially, have profound influences on the processes through which citizens are made and governed. Incorporating reflection on the consequences of computation adds important new perspectives to cultural policy studies in both its explicit and implicit modes.



The ‘general cultural orientation’ of the computational mind-set’ (Golumbia, 2009: 212) is to categorise, calculate and striate. The complex data sets procured about preferences, habits and behaviours and other forms of computer mediated practices create new forms of, often proprietary, knowledge about individuals and the groups in which they are categorised. Data about cultural tastes and participation already feed into these calculations with other consequences. As in the past, life insurance policies can be offered and evaluated on the basis of richer, individually generated, data about exercise and diet– and marketed as material rewards for doing the right things. They are powerful exemplars of a potential future direction for technological modes of government. Such data also create relative scores of creditworthiness which, already, allow decisions to be taken about denial of service, or employment of individuals on the basis of a particular construction of their accumulated categorical variables, with little access to the means by which the categories into which one is placed are constructed and with little recourse to traditional authority or rights in challenging one’s position in them (Pasquale, 2015). At the macro-level, they may provide the evidential basis for what has been described as ‘networked authoritarianism’ (Mackinnon, 2012), in which the boon that computation provides to centralised forms of state power is incorporated explicitly into techniques of persuasion, management and control of populations. This may appear to be the stuff of dystopian science fiction – and one abiding theme of technological development is the ability of people to break, hack and re-shape technologies in ways which are unanticipated and unintended. Accounts of the development of a social credit system in China based on a combination of online behaviours, and enabled through close liaison between that country’s tech giants, social media platforms and the state (Creemers, 2015; Hodson, 2015) suggest concern about such developments is not wholly without plausible foundation. In any case, there is a direct epistemological link between the inventors of the

leger, the index card, the spread sheet and the kinds of wearable fitness device which sponsor events such as *parkrun*, or the engineers behind the design and implementation of algorithmic monitoring of cultural tastes and practices or the sophisticated construction of individual ‘types’ that emerge from commercial tools like MOSAIC, ACORN or YouGov. Such computational tools, and their equivalents, are and have been eminently useful in solving problems for a range of arts and cultural organisations. This usefulness should not obscure the extent to which they also represent progressively more sophisticated means to render the statistically constructed individual visible to and manageable by the technologies of instrumental reason. Such possibilities are pertinent to debates within cultural policy studies about the role of cultural policy in the management of populations. If, following the critical interventions of scholars within the cultural policy tradition, contemporary cultural policy makers themselves are often concerned about being seen explicitly to make or shape their populations, there are other actors in the field of culture, inspired by pragmatic approaches to the problems of human behaviour and empowered by computing technologies, who are less anxious about that accusation. The recognition of such suggests that the computing laboratories of Manchester, Silicon Valley or MIT are significant, if rather unexamined, junctions in development of the problem of culture as it has been conceptualised by policymakers, if not yet wholly by critical scholars of policy within the field of culture.

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## Appendix 1

Table grouping articles used in keyword and thematic analysis of *Journal of Arts Management, Law and Society*, *Cultural Trends* and *International Journal of Cultural Policy*, 2000-2017

Author(s) & Year	Journal	Article Title	Theme
Healy, K, 2002	<i>JAMLS</i>	<i>What's New for Culture in the New Economy</i>	Intellectual Property/Cultural Trade (IP/CT), Management & Organisation (M&O)
Grefe, X, 2004	<i>JAMLS</i>	<i>Artistic Jobs in the Digital Age</i>	M&O
Galligan, A, 2008	<i>JAMLS</i>	<i>Introduction: The Expanding Boundaries of Art and Culture</i>	M&O
Rotter, J,M 2008	<i>JAMLS</i>	<i>Law, Economics, Technology and the Social Construction of Art</i>	IP/CT
Huong Lee, 2008	<i>JAMLS</i>	<i>Economic Reforms, Cultural Policy: Opportunities and Challenges to the Arts and Culture in Vietnam in the Age of Globalization</i>	M&O
Quesenberry, L & Sykes, B., 2008	<i>JAMLS</i>	<i>Leveraging the Internet to Promote Fine Art: Perspectives of Art</i>	M&O, C/P

		<i>Patrons</i>	
Frankel, S. 2010	<i>JAMLS</i>	<i>Digital Copyright and Culture</i>	IP/CT
Peacock, D., 2010	<i>JAMLS</i>	<i>Weaving the Web into Organizational Life: Organizational Change and the World Wide Web in Cultural Heritage Organizations</i>	M&O
Burri, M., 2011	<i>JAMLS</i>	<i>Reconciling Trade and Culture: A Global Law Perspective</i>	IP/CT
Durrer, V., 2011	<i>JAMLS</i>	<i>Rethinking Local Government Support for Youth Arts: The Case of NOISE South Dublin</i>	C/P
Hawkins, J., 2012	<i>JAMLS</i>	<i>Leveraging the Power of Individuals for Arts Advocacy</i>	M&O, C/P
Navarrete, T, 2014	<i>JAMLS</i>	<i>Becoming Digital: A Dutch Heritage Perspective</i>	M&O
Nawa, LL & Sirayi, M, 2014	<i>JAMLS</i>	<i>Digital Technology and Cultural Heritage Sites in the City of Tshwane</i>	M&O, C/P
Lois Foreman-Wernet, Brenda Dervin & Clayton Funk., 2014	<i>JAMLS</i>	<i>Standing in Two Worlds Looking at an Art Exhibition: Sense-Making in the Millennial Generation</i>	C/P
Wang, S 2016	<i>JAMLS</i>	<i>Turning Right/Turning Left? A Neoclassical Socioeconomic Query of the Arts Signaled by Museum and Branding in Finland</i>	M&O & Consumption/Participation (C/P)
Slatten, L., Hollier, B, Stevens, D.P, Austin,W. Carson, P. 2016	<i>JAMLS</i>	<i>Web-Based Accountability in the Nonprofit Sector: A Closer Look at Arts, Culture, and</i>	M&O

		<i>Humanities Organizations</i>	
Suzic, B., Karlicek, M and Stritesky, V. 2016	<i>JAMLS</i>	<i>Social Media Engagement of Berlin and Prague Museums</i>	M&O, C/P
Leung, L and Bentley, N 2017	<i>JAMLS</i>	<i>Producing Leisured Laborers: Developing Higher Education Courses for the Digital Creative Industries</i>	M&O
Gibson, C., Chris Brennan-Horley & Andrew Warren, 2010	<i>Cultural Trends</i>	<i>Geographic Information Technologies for cultural research: cultural mapping and the prospects of colliding epistemologies</i>	M&O
White, A., 2011	<i>Cultural Trends</i>	<i>Digital Britain: New Labour's digitisation of the UK's cultural heritage</i>	M&O, C/P
Delfin, M., 2012	<i>Cultural Trends</i>	<i>The promise of cultural networks in Latin America: towards a research framework for the study of region-specific cultural network ecosystems</i>	M&O
Rone, J., 2013	<i>Cultural Trends</i>	<i>Bulgarian pirates: At the world's end</i>	IP/CT
Allington, D, Dueck, B & Jordanous, A. 2015	<i>Cultural Trends</i>	<i>Networks of value in electronic music: SoundCloud, London, and the importance of place</i>	C/P
Phillips, T. 2015	<i>Cultural Trends</i>	<i>Don't clone my indie game, bro": Informal cultures of videogame regulation in the independent sector</i>	IP/CT
Navarette, T and Barowiecki, K.J	<i>Cultural Trends</i>	<i>Changes in cultural consumption:</i>	C/P, M&O



2016		<i>ethnographic collections in Wikipedia</i>	
Huffer, I 2017	<i>Cultural Trends</i>	<i>Social inclusivity, cultural diversity and online film consumption</i>	C/P
Christopherson, S and Van Jaarsveld, D., 2006	<i>IJCP</i>	<i>New media after the Dot.com bust: The persistent influence of political institutions on work in cultural industries</i>	M&O
Feigenbaum, H., 2007	<i>IJCP</i>	<i>Is technology the enemy of culture?</i>	IP/CT
Meredyth, D., Scott Ewing & Julian Thomas, 2007	<i>IJCP</i>	<i>NEIGHBOURHOOD RENEWAL AND GOVERNMENT BY COMMUNITY</i>	C/P
Kawashima, N., 2010	<i>IJCP</i>	<i>The rise of 'user creativity' – Web 2.0 and a new challenge for copyright law and cultural policy</i>	IP/CT, C/P
Valtysson, B. 2010	<i>IJCP</i>	<i>Access culture: Web 2.0 and cultural participation</i>	C/P
Tartoussieh, K., 2011	<i>IJCP</i>	<i>Virtual citizenship: Islam, culture, and politics in the digital age</i>	C/P
Bakhshi, H. & David Throsby 2011	<i>IJCP</i>	<i>New technologies in cultural institutions: theory, evidence and policy implications</i>	C/P
Moe, H., 2011	<i>IJCP</i>	<i>Defining public service beyond broadcasting: the legitimacy of different approaches</i>	M&O, IP/CT
Kerr, A. & Anthony Cawley 2012	<i>IJCP</i>	<i>The spatialisation of the digital games industry: lessons from Ireland</i>	M&O
Turrini, A. Isabella Soscia & Andrea Maulini 2012	<i>IJCP</i>	<i>Web communication can help theaters attract and keep younger audiences</i>	C/P
Gauthier, J. 2014	<i>IJCP</i>	<i>Digital not diversity? Changing Aboriginal media</i>	IP/CT & C/P

		<i>policy at the National Film Board of Canada</i>	
Nolin, J. 2014	<i>IJCP</i>	<i>Cultural policy by proxy: Internet-based Cultural Consumption as a copygray zone</i>	IP/CT, C/P
Parker, R., Stephen Cox & Paul Thompson 2015	<i>IJCP</i>	<i>The dynamics of global visual effects and games development industries: lessons for Australia's creative industries development policy</i>	M&O
Colbjørnsen, T. 2015	<i>IJCP</i>	<i>What is the VAT? The policies and practices of value added tax on ebooks in Europe</i>	IP/CT & C/P
Edarwds, L., Klein, B., Lee, D. Moss, G., Phillip, F., 2015	<i>IJCP</i>	<i>Discourse, justification and critique: towards a legitimate digital copyright regime?</i>	IP/CT
Trinidad, M. García Leiva 2015	<i>IJCP</i>	<i>Cultural diversity and free trade: the case of the EU-Canada agreement</i>	IP/CT
Rico, L.T, Liu, J.S, Mei Hsui Ching Ho, 2016	<i>IJCP</i>	<i>What are the concerns? Looking back on 15 years of research in cultural and creative industries</i>	M&O, C/P, IP/CT
King, T. 2016	<i>IJCP</i>	<i>Streaming from stage to screen: its place in the cultural marketplace and the implication for UK arts policy</i>	C/P
Poort, J. & van Eijk, N., 2017	<i>IJCP</i>	<i>Digital fixation: the law and economics of a fixed e-book price</i>	M&O, IP/CT
Jochumsen, H., Skot-Hansen, D., Rasmussen, C., 2017	<i>IJCP</i>	<i>Towards Culture 3.0 – performative space in the public library</i>	M&O, C/P

Figure 1: Computing technologies in cultural policy studies

