

The ethical underpinnings of Smart City governance: Decision-making in the Smart Cambridge programme, UK

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Abstract

As Smart Cities have become more widespread, so too have concerns about their associated ethical issues. However, ethical debates in the current Smart City literature have tended to focus on issues related to the collection, processing, usage, storage and sharing of data. This paper argues that ethical debates should be extended to capture crucial decisions taken as part of Smart City governance, and the ethical references which underpin them. Using the Smart Cambridge programme as a case study, this paper draws empirical data from interviews with experts and actors involved in the programme, and highlights the ethical nature of decisions taken in key aspects of Smart City governance. The paper reveals that city officials and programme managers demonstrate acute consciousness of legal regulations, which they employ in decision-making, and are less cognisant of governance principles based on norms and values which are also drawn upon. This paper argues that there is nonetheless ethical content which can be traced in decision-making, regardless of whether ethical concerns are explicitly recognised as such.

Keywords

ethics, governance, Smart Cambridge, Smart Cities

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摘要

随着智慧城市变得越来越普遍，对其相关伦理问题的担忧也越来越多。然而，当前智慧城市文献中的伦理争论往往集中在与数据的收集、处理、使用、存储和共享相关的问题上。本文认为，伦理辩论应该加以扩展，以涵盖作为智慧城市治理一部分的关键决策，以及支撑这些决策的伦理参考。本文以智慧剑桥计划 (Smart Cambridge) 作为案例研究，从参与该计划的专家和参与者的访谈中提取经验数据，并强调智慧城市治理关键方面决策的伦理性质。本文表明，城市官员和项目计划管理者对他们在决策中使用的法律法规表现出敏锐的意识，但对于基于规范和价值观（同样也被借鉴）的治理原则的意识则不是那么敏锐。本文认为，无论道德问题是否被明确意识到，在决策过程中仍然存在可以追溯的道德内容。

关键词

伦理、治理、智慧剑桥 (Smart Cambridge)、智慧城市

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Introduction

As part of the neoliberal tide which has swept urban governance over several decades, Smart Cities are imagined both as a way to boost competitiveness in cities in order to attract investment (Taylor Buck and While, 2017) and as a means of enhancing efficiency (Silva et al., 2018), particularly in the context of continually diminishing local authority budgets amidst austerity (Hastings et al., 2015). While the definition of Smart Cities is contested, they are generally viewed as cities which use digital technologies and the collection of large amounts of data to draw in different kinds of human, social and entrepreneurial capital, as well as new infrastructures to manage complex urban issues (Kitchin, 2016; Ruhlandt, 2018).

As the collection, processing, storage, use and sharing of data in urban spaces has proliferated, attention to their ethical implications has grown (c.f. Ryan and Gregory, 2019). For example, Kitchin (2016) highlights how a shift to data-driven urbanism, in which the data not only informs decision-making, but shapes how city infrastructures operate, could have implications for privacy, surveillance, predictive-policing, anonymisation and informed

consent. Given the seismic shift in the collection, storage and use of data in urban governance, much of the literature is focused on the ethical considerations tied up with data itself. This paper departs from this focus, by asking what ‘smart’ governance involves in the context of neoliberal imperatives to craft a competitive urban image, and specifically, what this says about ethics of urban governance.

Taking Smart Cambridge – a Smart City programme in Cambridgeshire, UK – as its empirical focus, this paper contributes to and advances understandings of ethics in Smart Cities by moving beyond the ethics of data collection, processing, storage and use, and the sharing of data in decision-making. Our intention here is not to cast judgement on whether the decision-making in the governance of Smart Cambridge is ethically good or bad. Indeed, proponents of moral relativism would argue that there is no decision which is ethically good in and of itself; a decision is only ethically good when based on reference to a system of ethics which positions that decision as good in accordance with a set of values (see Levy, 2002). Instead, this paper examines decisions taken in Smart City governance which have ‘ethical content’ (see Hunt and Vitell, 1986), and asks what

ethical references actors involved in Smart City governance draw upon to validate or justify their decision-making. It reveals that the ethics of decision-making often has its roots in legal frameworks, and in neoliberal ideology which positions market-led technical solutions and efficiency savings as ethically responsible. The paper draws attention to some key ethical concerns which arise from governance in Smart Cities, including the epistemological challenges which arise from the knowledge-gap between local authority decision-makers and technology experts delivering Smart 'solutions' to urban problems. A key contribution of this paper to the scholarship on Smart Cities is that it extends the ethical debates around Smart Cities beyond questions of data collection, processing, usage and sharing and use of technology, to shed light on ethical issues that arise in Smart City governance, which are often unrecognised by decision-makers.

The next section of the paper presents a review of literature, which outlines the meaning of ethics, current ethical debates in Smart Cities and the need to incorporate the concept of governance into these debates. Next, the case study and methodology for this research are explained. We then present the findings and analysis before concluding.

Literature review

Theorising ethics

Ethics relates to codes of conduct used to distinguish between right and wrong (Chang, 2021). Bianchini and Avila (2014) explain that 'the role of ethics is to establish limits using codes, ordinances, rules and laws that express social values and guide decisions' (p. 38). What counts as an ethically right or wrong action, however, varies across Kantian, utilitarian, social contract and virtue theoretical standpoints (Herschel and Miori, 2017).

Reflecting on ethics from these four standpoints, Herschel and Miori (2017) observe that, from a Kantian standpoint, an action is ethically right as far as it is done following a universal rule (Hunt and Vitell, 1986). Thus, behaviour outcomes do not matter as much as the rules behind the actions. Under utilitarianism, an ethically right action is one that produces the greatest happiness for a group of people, while a wrong action decreases society's overall happiness. Thus, from a utilitarian perspective, the maximum achievable well-being is the premise for judging how ethical an action is (Herschel and Miori, 2017). Meanwhile, social contract theory posits that a person's moral or political obligation depends upon the contract they have overtly or covertly reached with the society they live in. Here, submissiveness to a governing system reached through consensus-building, as well as co-operation and adherence to agreed rules, are extolled and this in turn guarantees benefits and privileges associated with social living (Herschel and Miori, 2017). Finally, virtue ethicists emphasise moral character over duties, rules or the consequences of an action. For them, virtues are regarded as character traits or dispositions that are firmly rooted in a person, and that steer them towards morally good actions (Herschel and Miori, 2017). These virtues include fairness, honesty, justice, and commitment. Virtue ethicists also maintain that individuals with high moral character behave in a consistent manner (Hunt and Vitell, 2006) and this consistency brings them happiness and thus becomes reinforcing (Herschel and Miori, 2017).

However, for these ethical perspectives to emerge, a choice that has ethical content must be faced by a decision-maker (Hunt and Vitell, 1986). Hunt and Vitell (1986) identify two forms of evaluation – deontological and teleological evaluations. In deontological evaluations, an individual examines the inherent rightness or wrongness of their

behaviour by comparing it with predetermined norms which range from personal beliefs about things like honesty, stealing and treating people fairly, to domain-specific norms such as confidentiality of data, and respondent anonymity. Teleological evaluations, however, are informed by the perceived consequences of each alternative decision one faces, the probability of occurrence of each consequence, the desirability of each consequence and the importance of social groups who will be affected by a decision. Following this, they conclude that an individual's judgement about whether an action is ethical or not will be a function of both their deontological and teleological evaluations.

Ethical debates in Smart Cities

In the Smart City literature, ethical debate is gaining momentum. The focus of many authors to date has been on ethics pertaining to data collection, processing, use, storage and sharing. For instance, Floridi and Taddeo (2016) indicate that data ethics evaluates moral problems related to data, and point out that key ethical issues with data include concerns about possible re-identification of individuals through data-mining, linking, merging and re-using of large datasets, and risk to group privacy. Kitchin (2016) classifies ethical concerns in Smart Cities and data science into two categories. The first is 'datafication and privacy', which encapsulates concerns around data-veillance and geosurveillance (concepts relating to data with locational references), inferencing and predictive privacy harms, re-identification of data, reduced control (of data and algorithms) and absence of notice and consent. The second is 'data use, sharing and repurposing', in which Kitchin (2016) draws attention to the incongruity between the data minimisation principle and the rationale of 'big data and data markets',

arguing that the latter thrives on the generation and hoarding of large volumes of data to extract profits. Importantly, Kitchin extends the ethical debate by highlighting the inherent politics of urban science, which he argues does not reflect the world but frames and produces it.

Bianchini and Avila (2014) note that although 'technology neutrality' is often presumed when discussing the benefits of Smart Cities, technology relates to political decisions and it can be used to manipulate reality and favour certain social classes. They add that technology systems that lack human supervision could leak classified information and deny access to some sections of society, particularly people from minority backgrounds. They also call into question the assumption that decisions made by Smart City managers are based on open and socially-accepted information and suggest that an ethical system in Smart Cities should be founded on principles such as human dignity, individual autonomy, democracy, true altruism, justice and fairness. Relatedly, Ryan and Gregory (2019) found that ethical issues including data collection and use, privacy, conflict of interest, data bias, economic pressures and inequalities (as widely reported in the literature) were of concern to local authority officers in European cities running Smart Information Systems. From these and similar studies (c.f. Morley et al., 2020; Tsamados et al., 2021), it is evident that the dominant ethical concerns in the literature are informed by a conception of ethics which focuses on whether decision-making regarding data collection, processing, storage, sharing and use of technology in decision-making is ethical or unethical.

This raises questions over why there is so much emphasis on the ethics of data when legislation and regulations such as the General Data Protection Regulation (GDPR) prescribe accepted modes of conduct regarding data. An answer is implicit in

Floridi's (2016) suggestion that, 'compliance (with rules and regulations) is insufficient to steer society in the right direction because digital regulation indicates what are legal and illegal, but says nothing about what the good and best moves could be' (p. 4). This is particularly the case given that legality and justice do not always coincide, their discourses are embedded in the existing institutions and meaning can vary (Moroni, 2020). Thus, if the existing rules and regulations governing data and how it is used are insufficient, then there is a need to extend ethical debates about Smart Cities beyond issues regarding how data and technology themselves affect the city.

We argue that the ethical debates surrounding Smart Cities will be deepened by centring governance in the Smart Cities ethics debate. It is useful to draw analytical insights on Smart City governance from established social science disciplines such as planning, economics and politics (Obeng-Odoom, 2017; Pierre, 1999) that allow examination of the relationship between state, market and society, and between land, labour and capital and the channels for keeping those in positions of power in check (Obeng-Odoom, 2017) and ensuring spatial justice (Moroni, 2020). This broad conception of Smart City governance would extend the ethical debates beyond data and technology to include other critical aspects of Smart Cities, such as decision-making, where 'ethical problem situations' (Hunt and Vitell, 1986) could emerge.

Governance as a concept encapsulates the process of decision-making regarding which development strategy to pursue and the selection of partner networks to help realise those development strategies (Pierre, 1999). When this decision-making process and the outcomes respectively take place and are felt at the city level or in an urban setting, then the concept of urban governance can be

invoked (Obeng-Odoom, 2012). Smit (2018: 57) observes that 'urban governance recognises that power exists inside and outside formal state institutions and decisions can be made by several actors with different priorities, in a complex relationship'. For Obeng-Odoom (2012), urban governance entails: (1) decentralisation of decision-making powers often from central governments to devolved authorities and other non-state actors like business, civil society, community groups and charities; (2) the adoption of an entrepreneurial style of city management where leaders with business acumen, good networking, lobbying and partnership skills lead urban governance; and (3) democratisation, where people can use various media such as their voice, the ballot box or even protests to register their grievances and influence policy-making.

Bringing urban governance insights into Smart City discourse, scholars emphasise that Smart City governance is characterised by interconnected issues such as: devolution of power or decision-making from municipal governments to technology companies (Castelnuova, 2019; Wilhelm and Ruhlandt, 2018), collaborations and the formation of partnerships between city authorities, businesses and universities to explore funding opportunities, leverage of knowledge and technical expertise in solving city challenges (Deakin, 2014); mobilisation of citizens and their engagement in identifying city problems and finding solutions (Cardullo and Kitchin, 2019a); and the enactment of new working relationships, decision-making protocols and governance frameworks (Kourtiti et al., 2017).

Linking the urban governance of Smart Cities with the criteria for evaluating actions with 'ethical content' (Hunt and Vitell, 1986), in this paper, we disaggregate Smart City governance into the following elements: the framing of the Smart City programme

and the governance structures created, the geography of smart initiative deployment, the kinds of partnerships formed, the funding sources drawn upon and the nature of citizen engagement conducted.

Case study context

The Smart Cambridge programme offers opportunities to examine ethical issues associated with Smart City governance owing to the region's complex governance structure, and its internationally-renowned technology industry hub, known as 'Silicon Fen'.

Below the UK national level in the governance structure, there are three layers of authorities in the wider Cambridge region: city/district, county and metropolitan (Nochta et al., 2019). The programme sits within Cambridgeshire County Council and is a work-stream of the Greater Cambridge Partnership (GCP), which is the local delivery body of the City Deal – a 30-year programme to support investment in critical city infrastructure like transportation, housing and apprenticeships in fast growth areas (Greater Cambridge Partnership, 2019). The GCP's executive board is made up of representatives of Cambridge City Council, Cambridgeshire County Council and South Cambridgeshire District Council, all of whom vote on decisions, as well as representatives from the University of Cambridge and local businesses, who take advisory roles. The executive board deliberates ideas, before officers put together recommendations to inform the board's decisions. The process is continuous, so that elected councillors have continued oversight.

The local context makes Smart Cambridge an instructive case for studying Smart City governance and ethics. Located in the East of England, Cambridgeshire comprises five district councils. Its population (currently 708,000 in 2021) is projected

to hit 803,200 by 2036 (Cambridgeshire Research Group, n.d.). The Cambridge region is an economic and urban growth area with strong involvement of two universities in urban life and the presence of numerous technological, bioscience and consultancy companies. It comprises 21 small and medium-sized towns, including the city of Cambridge. The county's thriving technology sector includes giant technology firms such as Microsoft Research Labs (CPIER, 2018). This makes the region attractive to highly-skilled workers. Also, the Cambridgeshire and Peterborough Combined Authority is nationally recognised as a strategic partner in realising developmental aspirations of the Oxford–Cambridge Arc (Cambridgeshire & Peterborough Combined Authority, 2019). That said, the region, however, faces pressing urban challenges and it has been recognised to have transportation challenges with high levels of congestion, widening inequalities and unaffordable housing (CPIER, 2018).

In this context, the Smart Cambridge programme emerged to explore 'how data, emerging technology and digital connectivity can be used to transform the way people live, work and travel in the Greater Cambridge area and beyond' (Smart Cambridge, 2019: 2). So far, the first phase of the programme has seen the trial of innovative transportation solutions such as: the city as a platform (iCP), which collates and processes real-time data from a city-wide sensor network; the Smart mobility platform, which supports visualisation and analytics of real-time data on traffic flow across the city; autonomous vehicle trials to support mobility during out of regular service hours, and a digital twin prototype on journeys-to-work in Cambridge. In a 2017 Smart City ranking, Cambridge was classified as one of the 12 'contenders' in a list of 20 UK Smart Cities compiled by Huawei (Huawei, 2017). This recognition coupled with the geographical

context of the programme and its objectives makes Smart Cambridge instructive to study.

Methodology

The study adopted a qualitative methodology involving purposive sampling of people who had privileged information about the Smart Cambridge programme from both strategic and operational levels. Thirteen in-depth interviews were conducted with local authority representatives (including council officers, and elected members), individuals working on the Smart Cambridge programme, programme partners (from the University of Cambridge and the technology sector) and academics and legal experts with a knowledge of Smart City governance and digital ethics. The interviews explored possible ethical issues that arise in Smart City governance, including how the focus of initiatives was chosen, how partnerships have been formed and what sources of funding are drawn upon. The interviews were conducted between December 2020 and February 2021 and lasted between 45 and 60 minutes. They were recorded and transcribed with the consent of the participants.

We analysed the transcripts by first organising the insights under the key aspects of Smart City governance identified. Next, building on the critical literature on Smart City governance and ethics, we identified activities and decisions that had ethical content. This was based on both deontological and teleological evaluations following the Hunt and Vitell (2006) model of ethical decision-making. Interview participants are anonymised using the following abbreviations: CO – Council Officers, EC – elected councillors, SCP – officials from Smart Cambridge programme, GCP – Officials from Greater Cambridge Partnership, UA – University Academics, and TC – Partner from a Technology Company.

Findings and discussion

Framing and governance of Smart Cities

In the context of austerity, and a corresponding drive towards efficiency and desire to attract private investment to facilitate local economic growth (Hastings et al., 2015), the values which shape the norms of decision-making at the local authority level are worth considering. The framing of Smart Cambridge positions it as a means of enhancing efficiency of resource allocation and for stimulating local economic growth. As one council officer suggested:

It's taking advantage of utilising the potential of technology and data to improve outcomes, particularly by ensuring ... more efficient and effective allocation of resources ... There's been a conscious attempt to support the growth of the Smart City sector in the Cambridge economy ... If you could solve the city's problems, whilst also developing the city's economy, you're having a double hit. (CO)

Delivering a Smart City is considered within the local authority to be ethically favourable, since doing so enables fulfilment of a duty to the urban citizenry to improve efficiency of services (amidst financial constraints which necessitate this), and attraction of investment, which is also viewed as an imperative. However, this drive towards efficiency, and the ethics of decision-making in Smart Cities – and in urban governance more generally – cannot be abstracted from the political context in which it occurs. Austerity urbanism is characteristic of 'roll-back' neoliberalism in which public spending on services is reduced while market forces and the pursuit of profit take precedence in urban space (Davies and Blanco, 2017; Meegan et al., 2014). While experiences of austerity in different cities vary due to local circumstances and policy landscapes, given the high degree of influence which central government in the UK

has over local service provision, austerity policies imposed at national level are of significance for local governance (Meegan et al., 2014).

The suggestion that the implementation of Smart initiatives is intended to enhance efficiency of resource allocation therefore appears to be not only a response to financial restraints caused by central government cuts to local authority budgets, but also is likely to be embedded in a broader neoliberal ideology. Given that Smart initiatives are largely delivered in partnership with private firms, it is impossible to avoid the implication that this move towards Smart urbanism is rooted in a key ideological tenet of neoliberalism which has it that market-logics can overcome supposed inefficiencies of the state. This political move therefore appears to be rooted in a neoliberal ideology which views reducing public spending on public services while facilitating the permeation of market-logic into the regulation of urban space as the ethical thing to do given that such ‘representations of market rule present an idealized neoliberal “Utopia” ’ (Brenner and Theodore, 2005: 106).

Importantly, Keil (2009) introduces the concept of ‘roll-with-it’ neoliberalism to show that neoliberal practices and conduct have become normalised both in policy and everyday life, such that decision-makers have largely accepted neoliberal values as natural, and act ‘often unquestioningly’ in ways which maintain neoliberal conditions. When married with questions of ethical decision-making, it is evident that these neoliberal norms shape the frames of reference against which decisions are judged to be ethical by the actors making them. As Hunt and Vitell (2006) suggest, the informal norms and values embedded within an organisation – such as a local authority – are part of the socialisation of the individuals who make up the organisation, and as such, it

makes sense that ‘sets of informal [organisational] norms would play prominent roles in influencing which deontological norms an individual would consider as governing moral reasoning in specific decision contexts’ (p. 147). Bianchini and Avila (2014) show that ethical systems, in which decisions are positioned as some degree of morally good or bad, are constituted by hierarchised values – in which the most highly prioritised values take precedence over less fundamental values should these create a conflict in a particular situation – and by norms. These norms are themselves led by the application of values in decision-making in practice, and create a set of accepted grounds for decision-making which enable deontological decisions to be taken to fulfil organisational duties (Bianchini and Avila, 2014). As such, Bianchini and Avila (2014) state that ‘an action motivated by duty regardless of particular interests or inclinations will then be considered morally good’ (p. 39). As such, the values and norms of an organisation are imperative in shaping the ethical references which individuals draw upon in decision-making.

In a context in which established neoliberal norms position attracting investment and facilitating market-led service provision as essential for the good of the city, it follows that actions which are motivated by this drive to attract investment will likely be considered ethically right by decision-makers. As Zanotto (2020) shows, shared neoliberal ideology filters into a shared understanding of ‘common-sense’ ideas, such that particular discourses are carried forward into policy, while others which do not fit the dominant ideology are quashed.

This is not to say that other ethical concerns do not arise here. Within Smart Cambridge, there are concerns over the level of understanding that decision-makers have of complex technological information. As a

result, elected politicians who are accountable to their constituents often have to rely on simplified information provided by council officers (if officers have the expertise to provide this), and by external consultants or technology companies. While there is a precedent for relying on officers and consultants within multiple domains of local urban governance (c.f. Nochta et al., 2021), the ethical challenges that come with Smart City implementation are a less traversed terrain than planning, for example, and this creates concerns within the local authority:

When the technology that you're dealing with is much more complex ... you can explain it simply, but that doesn't mean that you can do proper due diligence ... I don't think there is anybody in the local authority who is probably properly qualified to do that [with artificial intelligence]. You need a really good working relationship with the company that you're working with. And actually, that's where some of the expertise in the University comes in quite handy, because they do understand AI. (CO)

Principally, the ethical issues recognised by the interviewed council officers relate to how the simplification of complex technical information affects decision-making, and the due-diligence process. The intricacies of the implications for privacy, security and equality of using a particular technology in the city are not completely understood by elected councillors and they need to trust the simplified information they are presented with (from interview with EC).

In this vein, there are two clear concerns. The first relates to the epistemological problem local authorities face in relying on the so-called simplified technical information provided by technology solution providers. Kornberger (2012) suggests that while urban planning as a discipline has over the years developed principles, language, approaches and toolkits which were originally grounded in scientific rationality, they still had to be

refined to align them with contemporary exigencies. However, the strategies, ontologies, language and toolkit marketed by technology service providers and big tech giants are less understood and hence cannot be expected to be accorded with same level of legitimacy as established modes of urban decision-making. Thus, an epistemological problem is raised by the simplification of complex technical information. Ethical questions emerge regarding what detail or information is left out in the simplification process, why that detail was left out, what assumptions were made by users of the simplified information, and how users of information judge the quality and reliability of the simplified information.

It therefore is challenging for decision-makers to ascertain what is lost in the selective representation of information, and what agendas such information may have been presented in support of. As Sennett (2018) argues, Smart Cities can have a 'stupefying' effect if decisions are geared towards efficiency at the expense of expanding knowledge and understanding of experiences of the city. When efficiency is prioritised over experience, and only the information needed for delivering a service in the most efficient way possible is consulted, this can preclude inquiry into how urban *life* can be made better, as opposed to improving urban systems (Sennett, 2018). The epistemological problem, therefore, is also fundamentally an ethical one.

Secondly, the simplification process also raises issues around transparency and accountability where decision-makers do not themselves have all the information which could affect a decision. In a system of governance based on trust in information provided by parties whose interests (and corresponding ethical norms and values) are not necessarily aligned with those of the local authority or the GCP, these concerns are even more pronounced. Attempts are

made to mitigate risk on some of these issues using the local authority's relationship with the University of Cambridge by drawing on academics' expertise in these areas (which, in turn, raises concerns for cities which cannot access the expertise of a local university in this way). The University is evidently a trusted partner here, and this poses questions over who is regarded as a trusted partner, and to what extent such trusted partners shape decisions in urban governance.

Importantly, however, the decision has nonetheless been taken to proceed with the Smart City despite these ethical concerns. Evidently, there has been recognition of ethical issues related to how the incorporation of smart technologies into urban governance affects the ethical pillars of transparency and accountability in local governance itself. However, it seems that the ethical implications of *not* proceeding with the Smart City are viewed to be less palatable than the ethical implications of proceeding. Returning to the hierarchy of values in ethical decision-making highlighted above (Bianchini and Avila, 2014), evidently, in a context in which attracting investment and improving service efficiency are positioned as essential, the values and norms which underpin decision-making to these ends sit higher in the hierarchy than values and norms which the other ethical concerns raised by Smart City governance draw upon. As such, the ethical decision-making here, from a deontological perspective, views a course of action which stands to make the city more economically competitive as the right one, in line with organisational duty. While from a teleological perspective, mitigating the ethical implications of such a course of action (through reliance on the expertise of trusted partners) is viewed as more palatable than the consequences of not taking the course of action in the first instance.

Geographies of smart initiatives

There are ethical implications in the relationship between the scales at which governance is embedded and the scales at which smart initiatives are deployed. Smart Cambridge is led by Cambridgeshire County Council, and is a workstream of the GCP, which covers the whole county of Cambridgeshire. However, many of the Smart Cambridge initiatives so far have been concentrated in Cambridge city itself. Nochtal et al. (2021) highlight how the complexity of the various levels of governance in the county, across which various responsibilities are split, means that decision-making is often fragmented and strategic plans made at one level do not always transfer easily to another level. In fact, while many Smart Cambridge initiatives target Cambridge City, city councillors are not always fully cognisant of the programme's activities. One city councillor lamented that he had not thought about Smart Cambridge 'for months' before being contacted for this study:

It's really not something the city council is engaged with ... Projects like Smart Cambridge and, in general, Smart City initiatives just aren't publicised because we don't [collaborate across the organisational structure] ... It's not on a city council decision-making level. It's probably not something that [city councillors] regularly discuss. (EC)

As indicated, decision-makers at the local level where many smart initiatives are deployed may not give much consideration to Smart Cambridge, since it is not within their remit. This dislocation between the geographies of decision-making and the geographies of deployment raises ethical considerations, with implications for accountability and representative democracy, since residents' elected councillors may have little say or engagement in the smart initiatives

delivered in the local area. However, as Hunt and Vitell (2006) argue, ethical decision-making requires that a decision be perceived by the people making them as having ethical content, and the decision made is to some extent shaped by the perceived alternatives. Choosing not to discuss Smart Cambridge or to engage with it could be considered an ethical decision on the part of city councillors, but it appears not to be perceived as such (rather, it is viewed simply as an inevitable outcome of the governance structure) and as such, no alternatives are perceived. Clearly, the way in which Smart Cambridge must fit into existing governance structures raises ethical concerns which are not always recognised because of the structures themselves.

Geographies are also important in the sense of where smart initiatives are deployed. One interviewee indicated that: ‘The decisions on the [locations of] projects are largely data-led in the sense of where the problems are’ (SCP). This data-led approach to decision-making could result in situations where areas not contributing data to the Smart City miss out on the benefits of smart initiatives, thereby reproducing inequalities in cities, where areas which are already underserved are constantly left behind. The suggestion that data ‘tells you where the transport projects need to be [deployed]’ (SCP) forecloses perceived alternatives (Hunt and Vitell, 2006), as thinking up alternatives would contradict this ‘need’. As such, data-led decision-making in this way may risk leading to decision-making in which the ethical component – beyond the privacy and security concerns implicit in the collection, processing storage and use of data itself – is not always recognised.

Formation of Smart City partnerships

The scale of urban challenges, the expertise and the funding required to tackle them

often go beyond the capabilities of city governments (Heaphy and Petercsak, 2019). Hence partnerships involving city authorities and other non-state actors, including businesses, universities and civil society, have become a common vehicle in Smart City governance (Kourtiti et al., 2014), including in Smart Cambridge. Again, this policy to procure through public–private partnerships is part and parcel of the neoliberal ideology which underpins decision-making, viewing market-delivery as a superior alternative to public delivery. Yet there are further ethical dimensions to this decision, which are outlined here.

Formation of partnerships is a strategic decision involving a clear articulation of the basis for the partnership, commitments required, agreement over benefits and risk sharing and avenues for mutual accountability (Arnstein, 1969; Galati, 2018). Interviewed officials indicated that the factors considered before entering formal partnerships included: (1) the ability of the company to deliver the required product or service, (2) a company’s track-record in delivering similar projects, (3) achieving value for money, and (4) opportunities for long-term relationship building. With the exception of the fourth consideration, these considerations are typically rooted in procurement rules.

These procurement rules are part of the gamut of legal frameworks and regulations which shape the delivery of smart initiatives. Indeed, procurement rules, GDPR and Data Protection Act (DPA) compliance were often cited by officials as ethical safeguarding tools:

We are reliant on the procurement in that sense and also on the contract specification. It’ll go into the contract, saying this is anonymised data, it needs to remain anonymised data. And if they don’t, they’re in breach of their contract. (SCP)

However, interviewed experts expressed doubt about the reliance on procurement provisions as ethical safeguards, given that they are often static and do not go far enough. Also, Floridi (2016) suggests, strictly adhering to GDPR and legal provisions does not make an action ethical because the law only stipulates what should or should not be done, and not how best to do it. We also add that the deference of ethics to law may lead to ethical considerations being disregarded if the chosen action complies with legal codes. Indeed, one representative from a technology partner said that his company operates under data privacy principles that go beyond GDPR and DPA, however:

Occasionally, a client will turn around to us and say, we want [more detailed data than your standard principles provide]. So, we might have to relax some of our internal rules. We're not breaking GDPR by doing that, but we are relaxing some of our internal checks and balances to enable that. (TC)

As such, legal compliance leaves room for flexibility on ethical principles. Nonetheless, legal references were often made by interviewees when discussing the ethics of decision-making. Law and regulation therefore appear to serve as deontological evaluations in ethical decision-making, in which compliance is a determinant of whether a choice is understood as ethical.

Ethical considerations may arise in two crucial areas in relation to formal partnership formation. Firstly, questions arise over how the benefits and risks associated with the partnerships are distributed between the local authority and the project partners. Indeed, there are growing concerns regarding technological lock-ins, corporate control of local governance and potential cyber-risks following the networking and interoperability of assets in different city domains (Kitchin and Dodge, 2019; Shelton and

Lodato, 2019). Deferring to procurement rules to guide decision-making raises issues, as concepts such as value for money, which underline most procurement processes, are difficult to deconstruct and rarely explained in policy-making (Barton et al., 2019). Even when expressed in quantifiable units, the choice of indicators used in defining economy, efficiency and effectiveness are all subjective and impose normative values regarding what constitutes value, whose value is being considered and when value should be measured (Glendinning, 1988). This therefore means there is still scope for ethical considerations to emerge even when procurement rules are strictly adhered to.

Secondly, at face value, it may appear innocuous for officials running the programme to tap into the technical expertise and quality assurance protocols of project partners, notably private technology solution providers. However, as Kitchin (2014, 2016, 2017) has maintained, data, technology or protocols are not developed in a vacuum. They are historically, geographically and politically situated and often imbued with values and notions such as objectification, reductionism, profiteering and exploitation, which often run counter to social contract ethical principles such as inclusivity and human rights (Herschel and Miori, 2017). Thus, a clash of values may be immanent in some of these decisions. Hence, it is important that city officials pay attention to such ethical considerations.

Funding and citizen engagement

The sources and extent of funding available to implement smart initiatives can similarly raise ethical concerns. Funding sources shape the scope of projects and power relations in decision-making (Cardullo and Kitchin, 2019b). Against a backdrop of austerity, funding available to local authorities is limited (Hastings et al., 2015), and the

experimental nature of smart initiatives often necessitates external funding (Heaphy and Petercsak, 2019). Hence, it is common practice to combine several sources of funding, including competition/challenge-based funding, state government, community level and private funding streams to support the trial and deployment of smart initiatives (Galati, 2018). Funders often push a pre-determined agenda through technical specifications of how funding proposals should be prepared, who can make inputs and which key indicators ensure eligibility for funding (Cardullo and Kitchin, 2019b). This raises ethical concerns as it could potentially undermine the autonomy of local authorities seeking funding.

The core funding for Smart Cambridge comes from the City Deal. Annually, the GCP allocates about £3.5 million to fund administrative expenses and projects run by the programme (SCP). Additionally, further funding is sought from external sources, including EU Horizon 2020, Innovate UK, the Department of Transport and private technology companies. Two rationales underscore the current funding model. Firstly, seeking funding externally is a cost-saving strategy enabling local authorities to proceed with smart initiatives without drawing on their own limited resources. Secondly, external funding allows the programme to experiment with emerging technologies and fund specific projects not covered by the City Deal.

However, this funding flexibility comes with considerations of power relations between funders. As suggested by a GCP official, the key funders are in a position of power to influence the programme:

The City Deal is the core funding and the staff that are employed in the Smart Cambridge programme are funded by us ... So, we do sort of hold the power and influence over the programme, but one of the things that the elected

members wanted to do was to say that, in addition to the City Deal funding, can you go and bring in other funding to help with some specific projects? (GCP)

Bringing in external funding could be seen as a decision with ethical content as it could determine how much control city leaders retain over the programme, in terms of defining local priorities, key performance indicators and the quality of stakeholder engagement. Some officers acknowledged this possibility, especially when the priorities of external funders do not closely align with local priorities:

I think there is a temptation, sometimes to go for that funding stream because it's a means of delivering something into the area. But it might not be a very good match for exactly what's needed. And one of the things we decided very early on was that we were not going to go for funding streams unless it was a really close match. Because what we didn't want to do is to compromise on what we were delivering simply because we are following (external) funding. (SCP)

In the quote above, the ethical reference drawn upon is the idea of a 'very good match' between challenges in the local area and the focus of external funding. While officials imply that assessing the closeness between funders' priorities and local priorities is de-politicised, and value neutral, we argue that it is far more complex. Indeed, it embodies hierarchised values, norms and assumptions regarding (1) What is 'a close match'? (2) What is it being compared with? (3) Who determines what is 'a close match'? (4) Through what process? Without answering these questions, the decisions to seek funding externally cannot be abstracted from ethical considerations.

There are clear challenges here around who sets the priorities for the city's smart strategy. Citizen participation is therefore an

important consideration, given that it is understood to be crucial for delivering successful projects as it provides opportunities for democratic debates, and for local people to shape projects in a way which addresses their concerns. Hence, there is a consensus that successful Smart Cities are those that co-create Smart City solutions with city stakeholders, including citizens (Bolz, 2018; Levenda et al., 2020). However, in practice, citizen engagement in Smart Cities is often found to be technology-driven and tokenistic (e.g. Mohseni, 2020; Wolff et al., 2019). Indeed, while there have been significant efforts to engage with citizens in Smart Cambridge, including through hackathons, the extent to which citizens are given a say in determining the focus of projects is an ethical concern which is to some extent shaped by the requirements of funders. Indeed, although at face value the hackathons may appear to foster a sense of inclusivity in finding solutions to city problems, they are sometimes imbued with predetermined outcomes which run counter to established democratic principles of urban governance (Obeng-Odoom, 2012).

Conclusion

To date, much of the debate on Smart City ethics has focused on data collection, processing, use, storage and sharing and on the ethical implications of using data in decision-making. This paper has adopted a broader view of Smart City governance as comprising actions and decisions embedded in governance frameworks, partnership formation, project funding and citizen engagement, and has drawn analytical insights from the Hunt and Vitell (1986) evaluation of ethical decision-making. In doing so, this paper has drawn attention to how ethical content emerges and is navigated in decision-making in Smart Cambridge,

thereby advancing debates on Smart City ethics and governance.

We found evidence of hierarchised values and norms embedded in decisions made by programme officers regarding the framing and governance of the Smart City programme, which shaped decision-making. Further, we have highlighted that over-emphasis on data in geographical allocation of smart initiatives risks exacerbating existing urban inequalities. Also, we have shown that while partnerships may bring mutual benefits to city officials and private (technology) partners, ethical concerns arise over how the benefits and risks of the partnership are distributed. We have also drawn attention to how a goal to support more experimentation of innovative solutions with external funding can result in city authorities potentially losing control of setting local priorities. The nudging effects embedded in the current co-creative forms of citizen engagement were similarly highlighted.

Furthermore, a key observation running through our analysis is that city authorities and programme officers seem acutely aware of legal frameworks as ethical references and draw on them to justify their decision-making. However, as Floridi (2016) observes, legal frameworks are insufficient as ethical references, as law and ethics are not equivalent. Decision-makers exhibit less awareness about subjective governance principles such as implicit organisational values and norms and close alignment between priorities of external funders and local priorities, which are also drawn upon in decision-making. This is important because when key actors involved in Smart City governance have drawn on ethical references rooted in governance principles, these principles may be imbued with epistemologies, assumptions and values about several issues, including but not limited to how life should be organised in cities (Luque-Ayala and Marvin, 2015), what constitutes a city problem

(Cardullo and Kitchin, 2019b), who is a citizen and whose voice should matter (Shelton and Lodato, 2019) and what ‘close alignment’ between the priorities of external funders and local authorities means.


The foregoing thus make ethical considerations in Smart City governance such a crucial matter, as they are often insidious. Evidently, ethical content spans across the range of decision-making in Smart Cities and often is unrecognised by decision-makers. Our intention here has not been to cast moral judgement on these decisions, but to highlight the implicit ethical dimension to Smart City governance, which risks being overlooked. As such, the paper has not provided a comprehensive outline of every aspect of ethics in decision-making, and there is a need for further empirical studies into other aspects of Smart City governance where ethical issues may arise, in order to provide a fuller picture of the range of decisions in Smart City governance with ethical components, and which ethical references guide decision-making. We also call for further studies that explore in detail the nuanced relationship between ethics, policy and politics, especially within elected representative systems of local governance where (non-partisan) officers regularly interface with elected politicians over Smart City governance decision-making. That said, we maintain that all aspects of Smart City governance are characterised by ethical decision-making and there should be conscious efforts by those developing and running Smart Cities to identify these aspects and put in place measures that will mitigate against ethical problems.


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