Debate

Police Drones and the Air: Towards a Volumetric Geopolitics of Security

Francisco Klauser [iD]
Université de Neuchâtel

Abstract: *The paper explores the aerial dimension of policing and surveillance. It does so by drawing upon select results from a large-scale survey conducted in 2017 among professional (public and private) drone users in Switzerland. Focusing in particular on the police, the paper shows that the technology not only generates novel ways of looking down from above, but also of looking up from below, thus instilling a kind of air-mindedness among the police. In making the airspace explicit as an object, and stake of imaginaries, concerns and practices, drones mediate novel ways of relating to the air, understanding it, approaching it and acting in relation to it.*

Zusammenfassung: *Der Artikel untersucht die Bedeutung des Luftraumes in der Polizeiarbeit und Überwachung. Dafür werden ausgewählte Resultate einer gross angelegten Umfrage herangezogen, die 2017 unter professionellen (staatlichen und privaten) Drohnennutzern der Schweiz durchgeführt wurde. Bezugnehmend auf die Polizei im Speziellen wird aufgezeigt, dass Drohnen nicht nur eine neue Art des Blicks nach unten, sondern auch des Blicks nach oben generieren, und damit zu einem Luft-Bewusstsein von Seiten der Polizei führen. Drohnen machen den Luftraum als Gegenstand neuer Vorstellungen, Sorgen und Praktiken explizit und mediatisieren dadurch eine neue Beziehung zur Luft, ein neues Verständnis davon, respektive einen neuen Zugang und eine neue Handlungslogik dazu.*

Résumé: *L'article étudie la dimension aérienne des pratiques policières et de surveillance. Cette analyse se base sur des résultats d'une enquête à large échelle, réalisée en 2017 parmi des usagers professionnels (publics et privés) de drones en Suisse. Focalisant sur la police en particulier, l'article montre que les drones ne génèrent pas seulement un nouveau regard vers le bas, mais aussi vers le haut, instillant ainsi une conscience aérienne au sein de la police. En explicitant l'espace aérien comme objet et enjeux de nouveaux imaginaires, préoccupations et pratiques, les drones créent de nouvelles manières de se positionner vis-à-vis de l'air, de le comprendre, de l'approcher et d'agir en fonction.*

Keywords: Policing, Drones, Switzerland, Airspace, Power

Introduction

Policing and law enforcement are tied up, fundamentally, with the air (Feigenbaum and Kanngieser 2015: 81). Think of tear gas and acoustic weapons, or of the increasing

number of police drones. In Switzerland, more than half of the 26 cantonal police forces are now using unmanned aerial vehicles (UAVs) for the purposes of aerial photography, observation and surveillance (Klauser et al. 2017). The cantonal police of Zurich, for example, use 10 drones of differing types that weigh between 26 g and 3 kg (Wertheimer 2018a).

Here, taking the drone problematic as a starting point, I explore the aerial dimension of policing and surveillance. I do so by drawing upon select results from a large-scale survey conducted in 2017 among professional (public and private) drone users in Switzerland. Focusing in particular on the police, I show that the technology not only generates novel ways of looking down from above, but also of looking up from below, thus instilling a kind of air-mindedness among its users (Adey 2010a: 26). In making the airspace explicit as an object, and stake of imaginaries, concerns and practices, drones mediate novel ways of relating to the air, understanding it, approaching it and acting in relation to it. This study of how the introduction of a novel aerial technology changes existing practices of and approaches to policing connects neatly with Matthias Leese's contribution to this debate (Leese 2021) which focuses on the organisational and practical implications of the introduction of a predictive policing tool into Swiss police forces.

Indeed, the control of populations through 'technologies that are fundamentally predicated on their relationship with air' (Feigenbaum and Kanngieser 2015: 81) has long been a fact of life; take satellites and police helicopters, for example. However, the paper shows that the low cost and simplicity of drone usage today have ensured that the air is becoming ever more important (in terms of both frequency of use and relevance) to the everyday work routine of the police. Thus, if drones are not the first type of technology to have inspired the police to establish a relationship with the air, functionally, they have extended and simplified this. Furthermore, given the concern in relation to drone accidents and terrorist strikes, drones cause the air to become a space of risk in novel ways: 54% of the respondents from a public opinion poll conducted in 2015 (Klauser and Pedrozo 2017) were afraid of accidents with hobby drones; and 64% expressed concern about possible terror attacks using drones. The risk potential that is associated with the technology also affects the police's relationship with the air, as shown below.

In sum, the paper argues that drones are causing the police to rediscover the air in a new way. In so doing, they add a third dimension, that is, 'of the air', to the police's existing operational dimensions of land and sea in which they carry out their professional duties. More specifically, as far as the police are concerned, I show that drones transform the ways in which the aerial realm is lived and conceived of in three different ways: (1) as a context in which policing can take place; as an (2) object of policing; and as a (3) perspective from which policing can be carried out.

This tripartite structure is set as an initial organising framework for a more systematic future engagement with the ways in which technologies of policing are bound up with the air. Thus, fundamentally, the paper is exploratory and agenda-setting in scope and style. Channelled through the prism of the police–drone problematic, it indicates the need to add a novel third dimension to our understanding of the ways in which today's techno-mediated security governance has an effect on everyday life, and of the power issues this raises. Following a small but growing body of work that has in recent years started to think volumetrically about policing and military power (Adey, 2010b; Elden 2013; Graham and Hewitt 2013; Weizman 2004; 2008; Williams 2011; 2013), my discussion opens up the possibility of a properly three-dimensional geopolitics of security. To put it another way, it is the possibility of a volumetric geopolitics of security.

Power and Airspace

Conceptually speaking, the paper is based on two main theoretical strands. On the one hand, I draw upon a Foucauldian understanding of power as, "a way in which certain actions modify others" (Foucault 1982: 788), that is, as a capacity that "is put into action" (Foucault 1982: 788) within social relations, rather than as a substance that exists in itself. Following Foucault, this invites a focus on the techniques through which power is being exercised, and on the discursive regimes that underpin, establish and shape these techniques (Hannah 2007; Laurier and Philo 2004). Thus, more specifically, I approach drones as aero-visual techniques of power that allow specific forms of action on other actions and that are framed discursively in specific ways.

On the other hand, my argument is based on a Lefebvrian understanding of (air-)space, as a desired object in relation to and mediator of social practices, conceptions and imaginaries (Lefebvre 1991 [1974]). As far as Lefebvre is concerned, space results from and incorporates all kinds and scales of relationships and productive actions that characterise a given socio-political reality (Lefebvre 1991 [1974]: 82–83). Furthermore, he also explores the instrumentality of space in the constitution and regulation of society (Lefebvre 1991 [1974]: 73; 175). In sum, space is approached as being intrinsically bound up with power, and is both the product and (re-)producer of social action and order (see also Hagmann and Kostenwein (2021) in the present collection). In my case, this implies an interest in how specific knowledges and practices surrounding drone usage by the police contribute to perform the airspaces in which they operate, and how, in turn, these airspaces, as carefully managed socio-political realities, affect how drones are used in their many forms and finalities. Thus, here, I approach drones as both the product and producer of novel regimes of "aerial governmentality" (Adey et al. 2013: 179).

Survey of Professional Drone Usage

Empirically speaking, my discussion is informed by select results from a large-scale quantitative online survey that was conducted in 2017 through Qualtrics among professional (public and private) drone users in Switzerland (Klauser et al. 2017). The survey offers the first systematic and comprehensive study of professional drone usage in the country and provides a detailed picture of the phenomenon's extent, facets, associated risks, opportunities and expected future evolution.

The questionnaire used for the survey was based on a systematic review of existing academic and non-academic literatures that have considered the drone problematic. This has allowed for the identification and ordering of the key issues and research gaps in the field (Klauser and Pedrozo 2015). Furthermore, the survey was informed by input from various key stakeholders in the field, including in particular the Federal Office of Civil Aviation and the Swiss Federation of Civil Drones. The resulting collaborations made important contributions in relation to the key concerns and issues addressed in the questionnaire.

The address file for the distribution of the questionnaire was set up manually, guided by a list of 10 professional milieux across the public and private sectors in which drones are particularly likely to be deployed. Again, this categorisation was based on the aforementioned review of existing grey literatures and media reports (Klauser and Pedrozo 2015), combined with a series of exploratory interviews with drone professionals, associations and public institutions.
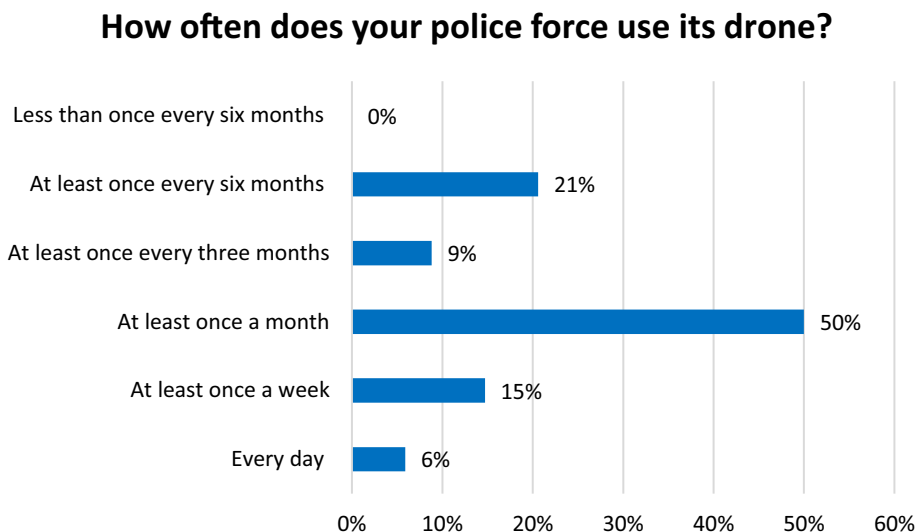
The survey was sent to 3,170 public and private organisations and 922 replies were received (490 representatives from private companies and 432 representatives from public institutions). Among all the survey participants, 162 indicated they worked for the police, and among these again, 47 mentioned they used a drone professionally. This high number of survey participants from the police is due to two reasons. First, the survey benefited from the support provided by the *Schweizerischer Städteverband* ("Swiss Union of Cities"), the *Konferenz der Städtischer Polizeidirektoren* ("Conference of City Police Directors"), the *Verband Schweizerischer Polizei-Beamter* ("Association of Swiss Police Officers") and the *Police Neuchâteloise* (Neuchâtel Police) (PN). Second, all cantonal police forces across Switzerland were contacted by phone prior to the survey to ask for the email address of the police department to contact in relation to the drone problematic.

In what follows, I focus exclusively on the answers given by the police participants from the survey, both those who use drones and those who do not, so as to ground my claims empirically. Evidently, the insights discussed according to this focus are but a start on the road towards a richer understanding of the air-bound expectations, imaginaries and practices arising from the acquisition and usage of police drones. Here, I cannot hope to answer these questions fully by employing a quantitative approach alone. However, given the space constraints and specific 'debate' format of the present contribution, I am content to sketch out some preliminary and, indeed, programmatic interpretations. These will be completed with a second paper, which will add a qualitative approach and draw upon the long-term case study of drone usage at Neuchâtel police (Klauser forthcoming).

The Air as a Context of Policing

Of the drone-using survey participants from the police, 58% would not use the airspace if they did not have a drone. This provides a strong first indication that drones bring the air ever closer to the police. According to 88% of the same respondents, the technology has

Figure 1: How often does your police force use its drone? N=34. [Colour figure can be viewed at wileyonlinelibrary.com]
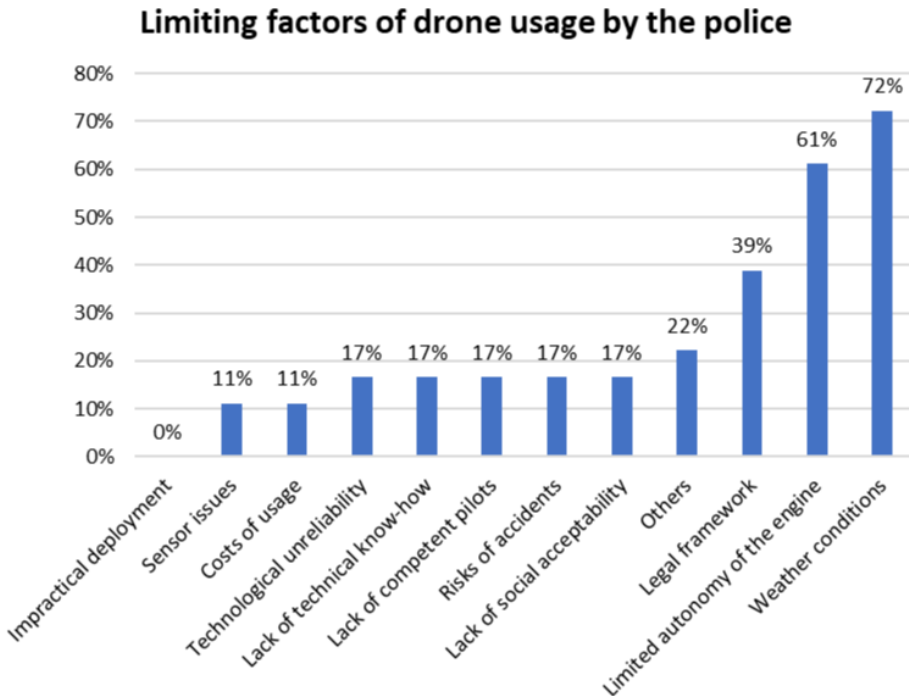
become indispensable as a professional tool: 50% deploy a drone at least once a month, 15% at least once a week and 6% every day (Figure 1). Thus, for many, the technology has created a novel relationship with the air that is professionally motivated. As far as most of the respondents were concerned, this novel relationship has since perpetuated itself. However, if drones make the air indispensable as a space in which to act, the police's practical engagement with the air is sporadic and ad hoc rather than continuous and systematic.

This initial picture of the police's drone-mediated "discovery" of the air as a meaningful context in which to act can be further differentiated if we consider the actual qualities attributed to the atmospheric volumes in which the drones operate. When asked to select the three most important factors that limit their professional drone usage from a list of 12 pre-determined options, 72% of the drone-using police participants chose "weather conditions", followed by 61% who selected "limited autonomy of the engine" and 39% who opted for "legal framework" (Figure 2). This gives us a series of initial insights into how drones cause the police to encounter the air. First, looking at the limiting factor of weather conditions, the air is seen in its materiality, that is, as a more or less agitated volume made up of elemental processes (wind, rain, etc.) that imposes specific limits on the use of drones. The lack of uniformity, stability and predictability of this "field of moving materiality" (Ingold 2006) becomes relevant to the police in novel ways.

The second most important limiting factor is the "limited autonomy of the engine", which defines the external limits of the volumes created, that is, their actual shapes. Third, but a long way behind the other two factors, "legal framework". Although the number of

Figure 2: Limiting factors of drone usage by the police (several answers possible) N=54. [Colour figure can be viewed at wileyonlinelibrary.com]

Limiting factors of drone usage by the police

police respondents who selected this factor is relatively low, it increases to 66% among the survey participants from private companies. Interestingly, 54% of the participants from private companies also chose "lack of social acceptability" as a limiting factor of drone usage. In contrast, only 12% of the drone-using police participants expected the population to be concerned about their use of drone technology. This emphasises that the regulatory and socio-politically constructed meaning and organisation of the airspace are not seen as limiting factors with regard to the police's usage of drones; legal authorisation and popular legitimacy are not considered to be significant issues. In point of fact, the police see themselves as being legitimate 'inhabitants' of the air. This contrasts with the answers given by private companies, and highlights the fact that the aerial realm, as a socio-politically produced space, is lived, perceived and conceived of in highly unequal ways.

Furthermore, the socio-political meanings and organisation of the air are also connected with the ground. Drones cannot be flown everywhere in the same way because of the legal regulations in place, the materiality of the built environment, the relief of the land, etc; it should be remembered that airspace is geographically situated. In addition, drone usage is tied to the ground in that it usually involves an operator in line of sight and, possibly, other spatially anchored devices and infrastructure. As Peter Adey maintains, "both the ground and the air reside together in vertical reciprocity" (Adey 2010a: 3).
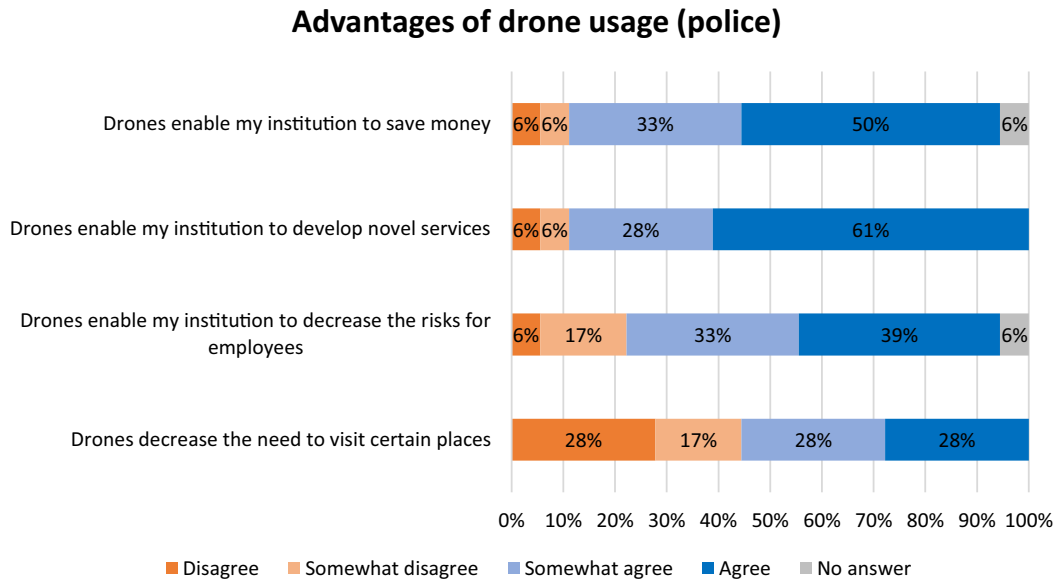
In sum, here we find a first type of drone-mediated relationship with the air: as a volumetric context in which to act, and which is perceived as an air mass possessing specific material and semantic qualities, to have place-related and drone-related limits and shapes, and as being connected to specific places in specific ways. If we are to understand contemporary policing through drones, we also have to foreground their volumetric aero-spatial context as a socially produced and carefully managed socio-political reality in a Lefebvrian sense (Lefebvre 1991 [1974]). This affects drone operations in their functioning, logics and implications.

The Air as a Perspective of Policing

All the drone-using police participants in our survey use equipment that is supplied with a photo and/or video camera. This means that drones are not used for transportation purposes alone. In addition, 38% of the participants use image analysis software. Thus, in acting as remote "vision machines" (Virilio 2000: 16) through "vertical mediation" (Parks 2016: 230), drones are deployed because they offer the police a novel aerial perspective onto the ground, which could not be offered otherwise. If drones make the police act in the air, they do so because of the gaze from above and which they convey from afar. Thus, the air is not only discovered as a volume in which to act, but also as a volume that offers a perspective from which to watch and act. Indeed, only 16% of the drone-using police respondents assume that drones could be replaced by a camera on the ground. What matters is the technology's aeriality or, to put it another way, the way in which the technology makes the aerial dimension relevant for policing purposes on the ground. Drones are deployed and framed discursively as aero-visual techniques of power that allow specific forms of action on other spatially anchored actions.

This initial conclusion can be confirmed and further differentiated if we consider the actual advantages of the way drones function aerially from the police's viewpoint (Figure 3). Of the drone-using police respondents, 89% agree that drones "enable my institution to develop novel services". As far as 72% of the same respondents were

Figure 3: Advantages of drone usage (police), N=18. [Colour figure can be viewed at wileyonlinelibrary.com]

Advantages of drone usage (police)

concerned, drones reduce the risks encountered by police officers. Thus, drones are seen to enable novel types of safer and cheaper action without, however, reducing the actual police presence on the ground. Of the drone-using police respondents, 45% disagreed with the idea that drones would reduce the need to visit certain places.

In sum, drones make the police discover the air not only as a context in which action can take place, but also to use it as a perspective from which action can take place. In both cases, the air is invested with specific values, meanings and, indeed, functionalities. It is instrumentalised not only as a space in which to act, but also through which to act. Or, to paraphrase Foucault, the air is engaged in a specific way in which certain actions modify others (Foucault 1982). In a Foucauldian sense, the air mediates the exercise of power – as "a way in which certain actions modify others" (Foucault 1982: 788) – on the ground.

The Air as an Object of Policing

Existing academic work shows that drones cause the airspace to become not only more visible and available for political and social reflection and action, but also increasingly contested in the sense of being a space in which and through which all kinds of public and private interests and actions are being conveyed (Klauser and Pedrozo 2017). In Switzerland alone, according to official estimates, more than 100,000 drones are currently in use, most of which are thought to be in private hands (Seydtaghia 2019).

With this proliferation of drones, the air becomes not only a space of opportunity, but also one of risk; and as such an object of policing and one the police need to have a stake in. Media-reported incidents of private drones narrowly avoiding collisions with commercial airliners illustrate this problematic powerfully (Whitlock 2014). To address this

issue, police forces across Switzerland have started developing all kinds of counter-drone solutions: the Geneva police are currently awaiting federal authorisation for the deployment of their two baby eagles to intercept drones (Wertheimer 2018b); in the canton of Vaud, cantonal police have bought anti-drone guns that eject nets to catch drones and bring them to the ground (Le Matin 2019); and since 2017, an anti-drone defence shield, which includes counter-UAV jammers that aim to incapacitate any drones that may appear (Moon 2018), has been erected during the period in which the World Economic Forum is held in Davos. Thus, drones also cause the police to relate to the air as a 'space of fear', which is affectively laden, conveys various security issues and threats and, thus, requires additional technologically mediated efforts of governance and policing.

It is hardly surprising, therefore, that the police participants in our survey largely approve of the existing legal criteria and regulations that apply to the operation of drones: 78% and 84%, respectively, agree that drones should not be deployed "within 100 metres of gatherings of people" or "above high-risk sites"; 83% agree that drones should be flown only in direct line of sight; and 94% approve of the legal obligation to have insurance cover of at least 1 million Swiss francs when using a drone (Figure 4).

However, despite the strength of approval of the existing restrictions in relation to the operation of drones, the police remain more critical than other respondents in our survey about the overall adequacy of the actual legal framework (Figure 5). Among all the police respondents (those who use drones and those who do not), only 38% consider the existing drone legislation to be sufficient for the prevention of terrorist attacks (compared with a 49% approval rate among participants from private companies). Of the police

Figure 4: Strength of police approval of the legal requirements for private drone usage. N=18. [Colour figure can be viewed at wileyonlinelibrary.com]
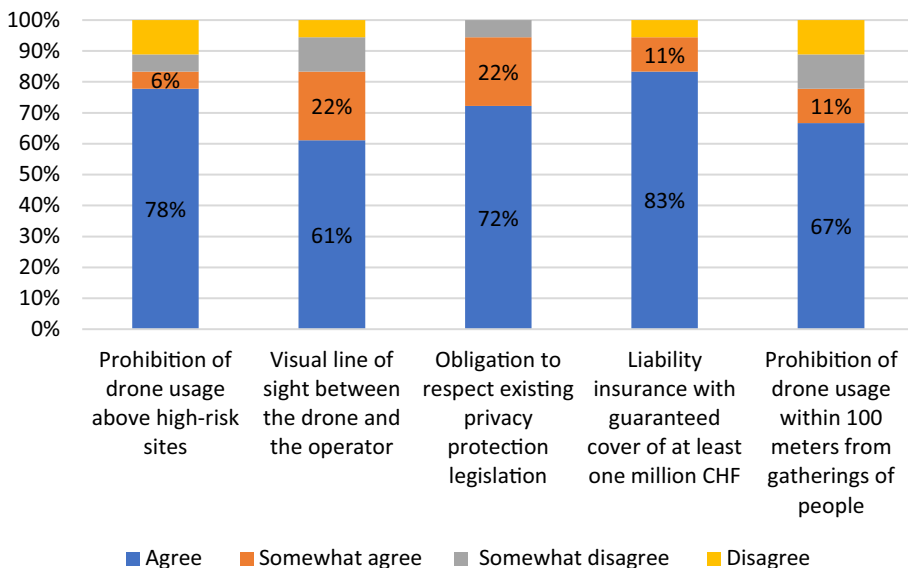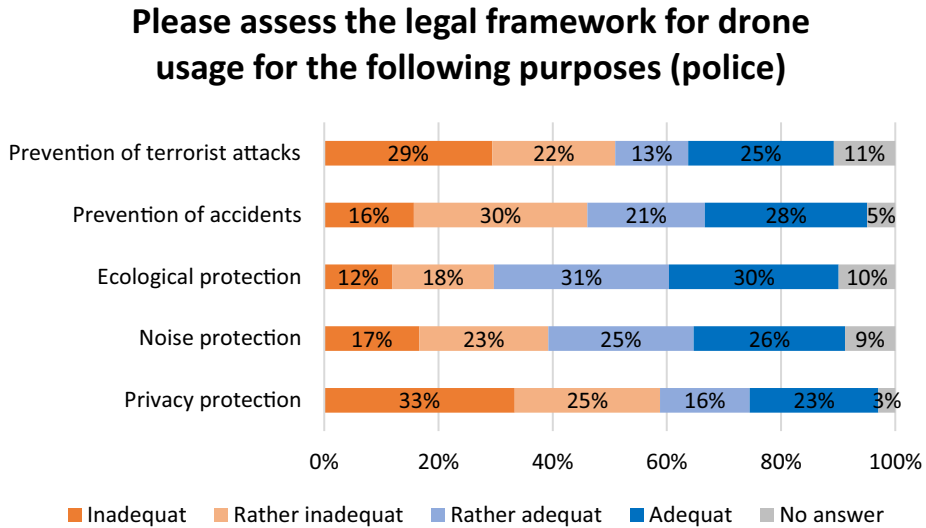
Figure 5: Assessment by the police of the adequacy of the existing legal framework for drone usage, N=112. [Colour figure can be viewed at wileyonlinelibrary.com]

Please assess the legal framework for drone usage for the following purposes (police)

respondents, 49% and 39%, respectively, consider the existing legal framework provides an adequate framework for the prevention of accidents, and for the protection of people's privacy. In contrast, among the respondents from private companies, these percentages rise to 71% and 78%, respectively.

In sum, drones have also caused the police to discover the aerial domain as a space on which to exercise power, both in a practical and in a legal sense. The air is being territorialised as a space that needs to be controlled, defended and regulated. Thus, the aerial dimension becomes a problem of governance in a novel way.

Perspectives

Taken together, the three parts of my preceding argumentation draw an initial picture of the aerial realm as a space that is bound up, intrinsically, with the exercise of power, as something the police need to have a stake in (an object of policing), a context in which police action can take place and a mediator and perspective of police action on the ground. Of course, much more would have to be done to understand, problematise and conceptualise more fully the multidimensional, volumetric power geographies of the airspace within which drones operate and which drones contribute to make explicit and perform. Thus, at this point in time, there is a critical need to conduct more detailed empirical case studies, which could provide a clearer picture of the role of the aerial dimension in the projection of power on, across and within space. This would begin a fascinating journey into the aerial realm as a geopolitical space that is lived, experienced and socio-politically produced in highly unequal ways, structured by complex vertical and horizontal boundaries, contested by various public and private interests, and shaped by contrasting affective experiences (of hope and fear, for example).

It is to be hoped that such kinds of explorations will also lead to a broader volumetric rethinking of the key research topics that have long shaped security studies and political

science. These range from issues of (security) governance in its public–private and cross-scalar articulations through the problematics of borders to wider considerations of social and spatial justice. All these topics also have a vertical and, indeed, aerial component, which has long been underplayed if not completely forgotten.

What I offer here is a starting point for such an inquiry. Among the many themes for future reflection, two challenges stand out in particular. First, my discussion hinted again and again at the fact that both 'airspace' and 'air power' must be approached in their inherent plurality and multidimensionality. Different actors act in, on and through the air in different ways and on different levels in relation to the air's materialities and meanings and its gaseous and affective dimensions. An important future task will be to think more carefully about the ways in which these differing levels and dimensions are bound together and interact, to gain a more detailed understanding of the simultaneously elemental and affective, and sensory and cognitive dimensions of the atmospheric volumes in which, on which and through which we act.

Second, and following on from the previous point, a particularly important task in future work will be to develop a vocabulary that is genuinely appropriate for capturing the multidimensionality of the volumetric power geographies of everyday life. Elsewhere, I have started to address this question through Peter Sloterdijk's theory of spheres (Klauser 2017), drawing upon the vocabulary of bubbles, globes and foams (Sloterdijk 2016 [2004]), but much more has to be done to develop a sufficiently precise and differentiated terminology through which to advance a properly volumetric way of thinking about power and space. Mirroring McCormack's seminal analysis of the hot-air balloon (McCormack 2018), I see the drone as a heuristic tool, the use of which will enable this kind of agenda to be pursued. Thus, after all, the drone might not only inspire the police to discover the air, but also encourage the social sciences to take the question of volume seriously.

Acknowledgements

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Francisco Klauser is professor in political geography at the University of Neuchâtel, Switzerland. His work explores the socio-spatial implications, power and surveillance issues arising from the digitisation of present-day life. Main research topics include video surveillance, mega-event security, smart cities, airport surveillance, civil drones, and big data in agriculture. *Address for correspondence:* Institut de géographie, Université de Neuchâtel, Espace Louis-Agassiz 1, 2000 Neuchâtel; Email: Francisco.klauser@unine.ch