University of Reading

Rhetorics of possibility and inevitability in commercial drone tradescapes

Article

Published Version

Creative Commons: Attribution 3.0 (CC-BY)

Open Access

Jackman, A. ORCID: https://orcid.org/0000-0003-4832-4955 (2016) Rhetorics of possibility and inevitability in commercial drone tradescapes. Geographica Helvetica, 71 (1). pp. 1-6. ISSN 2194-8798 doi: 10.5194/gh-71-1-2016 Available at https://centaur.reading.ac.uk/100418/

It is advisable to refer to the publisher's version if you intend to cite from the work. See Guidance on citing.

To link to this article DOI: http://dx.doi.org/10.5194/gh-71-1-2016

Publisher: Copernicus Publications

All outputs in CentAUR are protected by Intellectual Property Rights law, including copyright law. Copyright and IPR is retained by the creators or other copyright holders. Terms and conditions for use of this material are defined in the End User Agreement.

www.reading.ac.uk/centaur

CentAUR

Central Archive at the University of Reading

University of Reading

Reading's research outputs online

Geogr. Helv., 71, 1–6, 2016
www.geogr-helv.net/71/1/2016/
doi:10.5194/gh-71-1-2016
© Author(s) 2016. CC Attribution 3.0 License.

+ GEOGRAPHICA HELVETICA +

Rhetorics of possibility and inevitability in commercial drone tradescapes

A. H. Jackman

PhD Candidate, Human Geography, University of Exeter, Exeter, UK

Correspondence to: A. H. Jackman (ahj203@exeter.ac.uk)

Received: 16 October 2015 – Revised: 10 December 2015 – Accepted: 18 December 2015 – Published: 15 January 2016

Abstract. Drones have been posited as the "signature device of the present moment" (Noys, 2014). Whilst research into the proliferation of drones in military and defence spheres is gaining notable momentum, drones in commercial and "civilian" contexts "have remained widely unnoticed in academic research" (Klauser and Pedrozo, 2015:285). Complementing emergent scholarship in this area, this paper seeks to both explore and assert the trade show as a valuable site of (industry and advocacy) community "copresence" (McCann, 2011). Drawing upon empirical data, this paper unpacks the rhetorical framing of the commercial drone in the trade-show environment. In so doing, it explores two dominant rhetorical framings, or "techniques of imagination" (Kinsley, 2012:1559), of the commercial drone: those of possibility and inevitability. Such an analysis seeks to respond to calls advocating further attention to the "making of the drone", prior to its "functioning" (Klauser and Pedrozo, 2015) and end-point applications.

1 Rhetorics of possibility and inevitability in commercial drone tradescapes

> Lanyard and programme in hand, I'm through to the exhibition floor and free to roam. There is a maze of stalls ahead: they're encased in a (gimmicky) theme – there's a high top circus tent, bunting, a woman on stilts – it's a curious scene. I consult the floor plan. Outlined are a methodical grid of stalls, seminar spaces, and designated coffee and networking points. The channels start to busy up. The ringmaster begins his announcements, bellowing: "Browse the stands, full of technological wonders and delights. The opening talk will begin in 30 minutes in the big top, at the other side of the hall". I wander through this winding tradescape. There is a palpable momentum in the hum of hopeful conversation. The atmosphere is "electric", "buzzing", like the "micro drone" being demonstrated one stand over. A passer-by watching the display quips, "Let's hope that sucker doesn't hit us now", and laughs. Stands are adorned with application information, prototype platforms and sensors. This space is a hive of commercial and civilian drone activity; the underbelly of the burgeoning opportunity-scape of the reimagined and rebranded "good drone". Within the maze of stalls are several designated seminar spaces, open-air but cordoned off. Parallel sessions run almost continuously throughout the day. Presentations range from pitches for a "brand new" or "game-changing" capability or operation, to tackling key topics on the commercial drone agenda. In a session exploring "payloads of the future" I jot down a speaker's remark: "technology always wins". Inevitability?, I scribble. I regroup over coffee, leafing through the trade magazines amassed. An advertisement reads, "Unmanned. Unlimited". I dog-ear the page. Back again tomorrow.
>
> – Excerpt from author's fieldwork diary

2 Trade spaces of the commercial drone

The brief vignette that opens this paper is an excerpt from a fieldwork diary kept at an industry event, "The Commercial UAV Show" (CUS), held in London, UK, in October 2014.

Figure 1. The Commercial UAV Show (CUS) 2014. Source: author's photos.

Building upon this, and supplementing it with fieldwork experience at several additional commercial drone trade shows, in what follows this paper first introduces the site of the trade show, asserting its importance as a space through which to aid emergent explorations of the commercial drone.[1] It then provides initial reflections on an investigation of the presentation and framing of small commercial and civilian drones in the trade show. In so doing, it briefly unpacks two lenses through which the commercial and "civilian-use" drone was framed, presented, packaged and sold, in the trade environments encountered, namely the rhetorical framings of inevitability and possibility.

Trade events, exhibitions and "expos" are gatherings of industry partners, including manufacturers and service-providers, as well as representatives from the wider drone community, such as regulators and policy-makers, trade associations, advocacy groups, universities and end users. Such sites of "copresence" and "transfer" (McCann, 2011) are publicly positioned as spaces in which to "establish partnerships, deliver knowledge transfer and encourage growth within the UAV industry" (SkyTech, 2015a). These events can thus be understood as "soapbox" spaces or forums for the "key actors" in the industry, seeking to "define, understand and ultimately integrate UAVs into the commercial sector" (SkyTech, 2015b). As such, these spaces encompass a range of rhetorical framings through which various parties seek to understand, reimagine and rebrand the commercial drone. The trade show could thus be considered akin to a barometer, reflecting the (changing) industry mood around particular topics, debates and rebuttals on the commercial drone agenda.

As a notable site of congregation for the commercial drone advocacy community, trade shows act as a valuable space or window of access into this emergent tradescape and the questions that accompany the (often hidden) activities involved in the "making of the drone" (Klauser and Pedrozo, 2015) more widely. As such, a reflection upon trade-show framings, atmospheres, encounters and materials collected contributes to the wider project of a critical exploration of the industries, institutions and discourses of reimagining and rebranding that enable the functioning and proliferation of drones in commercial and civilian settings.[2] Like the approaches that have been adopted by those "attentive to the competing ways in which drone warfare is made sensible", this paper seeks to explore the rhetorical framings through which the commercial drone is "assembled, seen and experienced" (Van Veeren, 2013) in the trade show. In so doing, this paper draws upon recent approaches advanced in policy-mobilities literature advocating further reflection upon "the processes, agents, and institutions involved in mobilizing … policy ideas" (McCann, 2011:109). Following Crampton's (2015:4) assertion that the commercial drone "market is being created on an ongoing basis", this paper supplements such work with an exploration of the trade show as a (key) component site of these wider "performing markets". In so doing, it seeks to explore the "forms of knowledge", "practices, [and] technologies" of the trade show, those which constitute the geographies and "circuits of [drone] knowledge" (McCann, 2011:109, 112) in the tradescape more widely.

In addition to acting as a window into the wider commercial drone tradescape, trade shows are also significant

[1] The trade shows attended and discussed in this piece are The Commercial UAV Show 2014, Sky Tech 2015, and The Commercial UAV Show 2015, each held in London, UK, between October 2014 and October 2015. Each event attracted from 1000 to 2350 attendees, and showcased from 60 to 85 exhibitors (Coverdrone 2015; CUS 2015a, b). These events form part of a wider global event landscape, in which a growing number of trade events centred on the commercial drone are emerging. Events of different scales, but boasting similar exhibitor and seminar profiles, have taken place across numerous countries globally, with many more booked ahead (see http://Dronesdrones.com event calendar).

[2] Whilst trade shows are a valuable lens through which to reflect upon the commercial drone, the wider tradescape is of course comprised of a series of sites and networks. Explorations of the research and development (R&D), manufacture process, funding and other aspects of the commercial drone's political economy (akin to Hall and Coyne, 2014, on the political economy of military drones) would valuably complement this investigation (on this, see Crampton, 2015, on emergent commercial drone economies).

in that they provide an opportunity or site to consider the drone anew. Rather than reflecting upon the drone "in theatre" or in action – as it collects aerial imagery, senses, and navigates the air – as it performs, the drone can instead be considered prior to its end-point. This reframing is not to discredit the valuable and fruitful reflections regarding the (implications of the) "functioning of the drone" (Klauser and Pedrozo, 2015), but to supplement these by critically attending to earlier, formative and distinct stages of the drone's life course. In so doing, this paper seeks to reflect upon the spaces in and rhetorical framings through which the commercial drone is narrated and made possible: the commercial drone tradescape.

Whilst the trade show encompasses a variety of competing narratives, discussions of the commercial drone were predominantly framed in terms of risks or opportunities.[3] The former included focuses upon safety, responsibility, insurance and regulation. These discussions included displays of frustration (discussed below) and the presentation of both potential solutions and rebuttals to frequently cited concerns. The latter, drone opportunities, appeared the dominant focus of the trade shows attended. Within discussions of the opportunities accompanying the commercial or civilian-use drone, platforms were recurrently framed as "tools for good" and as offering both utility and promise in the "domestic" airspace. The framings that appeared with the most fervent frequency across the events, however, were those of inevitability and possibility. For this reason, in what follows this paper explores and unpacks these two recurrent rhetorical framings.

3 "Welcome to the future"

The first lens through which the commercial drone was recurrently rhetorically framed at the trade show was as an inevitable technological tool. Following on from the "welcome to the future" banner adorning the event programme (CUS, 2014a), the drone was described as the "aerial apex", which will "become an invaluable tool", the "clear" or "obvious" choice for a plethora of solutions, and as "the natural evolution of aerial technology" throughout the trade shows (CUS, 2014b; SkyTech, 2015c). Such labels reflected a persistent and insistent framing of the drone as inevitable: an unrelenting force of possibilities, which any regulatory tide cannot and ultimately will not quell. At times the drone was heralded as a kind of super-tool, boundlessly altering the reaches and realms of the possible. This was exacerbated by a number of speakers repeatedly stating that despite "regulatory barriers" or "hesitancy", "the technology always wins in the end" (CUS, 2014b; SkyTech, 2015c).

[3] In exploring the narratives and discursive imaginings of the commercial drone in the tradescape, this paper acknowledges the "vested interests" (Kinsley, 2012:1565) in the (drone) technology, in this particular context, by particular actors (see Dissent, 2014).

Together such sentiments can be understood as reflecting a particular future "orientation" towards the unfolding path of the drone (Anderson and Adey, 2012; Kinsley, 2012; McCormack, 2012). This inflection of futurity can be considered alongside the work of geographers who have considered how "specific futures [are] made present", "embodied, experienced, told, narrated, imagined, performed, wished, planned, (day)dreamed, symbolised, [and] sensed" (Anderson and Adey, 2012:1529, 1533; Kinsley, 2012; McCormack, 2012). Such work seeks to attend to the "measures, registers, apprehensions, engagements and movements that appear to be important for understanding the unfolding of … events" (Merriman, 2012, in Anderson and Adey, 2012:1530). The trade show can be understood as an event in which understandings of commercial drones are apprehended, framed and circulated through a series of rhetoric and affective mechanisms. These framings, including that of the *drone as inevitable*, can be considered precisely as these "engagements" significant in understanding the "imagined futures" (Anderson, 2010) at play in the unfolding of the technology's path.

In a paper exploring ubiquitous computing, Kinsley (2012:1554) unpacks "how particular visions of … future technology use are constituted". Drawing upon such an approach, this paper considers the rhetorical framings through which the commercial drone is envisioned at the trade show, and the role and relation of futurity in such *envisionings*. For example, accompanying the aforementioned heavy-handed, deterministic and somewhat dogmatic sentiments about technological inevitability, speakers and participants frequently used analogy in order to situate, foster familiarity and communicate the utility of the "changing tide, or should we say skies, that the drones bring" (CUS, 2014b). Here, organizations utilizing or advocating drones frequently drew comparisons with the mobile phone, asserting "as people become more aware of the benefits, they're less worried about someone watching them … It's like locational tracking on the cell [mobile] phone, versus the value of having the cell phone" (CUS, 2014b). As Rothstein (2015) notes, drawing upon analogous technologies to make the drone more palatable or familiar is also commonplace across wider discussions of the technology. In unpacking the recurrent utilization of four technologies as analogical devices frequently drawn upon in drone discussions (the automobile, aircraft, computer and robot), Rothstein (2015:1) describes the careful reduction of history to a "single story". This carefully crafted "reduction" was not only evident but rampant across the tradescape, where the nuances and complexities associated with the (airspace) integration of the commercial drone were often brushed over and rearticulated in relation to established and familiar technologies, responses and refrains. In drawing upon ubiquitous and mainstay devices, various advocates sought to "naturalize" the drone, framing it as "not a totally radical departure, but an infrastructural evolution" of technologies before it (CUS, 2014b). By employing analogy, advocates rhetorically conceded that whilst no technol-

ogy is risk-free, any such (alleged) risk is outweighed by the "almost unimaginable benefits" (CUS, 2015c) that the drone may yield, demonstrating the risk–reward compromise accompanying many technologies. The positioning of the drone as inevitable was often accompanied with a further rhetorical framing of the drone as a device altering the very possible.

4 "The best possible awaits"

The second lens through which the commercial drone was recurrently rhetorically framed at the trade show was that of possibility. The question of possibility first emerged in the pitching of the trade show as a space in which to explore and "demonstrate the endless possibilities and advantages that UAVs can offer the commercial sector" (CUS, 2014b). The focus on the commercial "drone-possible" then persisted in the event welcome address, with one speaker praising the event's approach to "infinite [drone] possibility", boldly asserting that the commercial drone industry was currently "only scratching the surface of the possible" (CUS, 2014b).

As the event continued, case studies of numerous small commercial and "civilian" drone applications – both operational, trialled, under development and envisioned – were showcased. Such envisionings utilized particular "techniques of imagination" (Kinsley, 2012:1559), drawing upon a sense of the possible as that of an unlimited space of uses not yet recognized, in order to frame the drone. Like other emergent technologies, these framings were often "animated by the circulation of hopes in and for possible or potential future benefits" (Anderson, 2007:157). In so doing, the showcased drone was framed to be understood in terms of its potentiality and promise – as an "invaluable tool" (SkyTech, 2015c) which facilitates both that which "was not possible before" and that which "we never thought possible" (CUS, 2014b; SkyTech, 2015c). This sentiment was reflected in the drone being frequently designated as the "disruptive technology of the moment" (CUS, 2014b), altering the realms and reaches of the possible. Such bold statements and visions were accompanied with a series of romanticized idioms, from "the sky's the limit", "if you can imagine it, it's possible", "[drones] give you a new perspective", "nothing's impossible", to "the best possible awaits" (CUS, 2014b). Akin to the previous framing of the drone as inevitable, the *drone as possible* also encompassed a form of futurity, with such visions and techno-"orientations" being framed in terms of (future) expectation and promise (Anderson, 2007; McCormack, 2012).

Accompanying these boundless and frontierless imaginations and envisionings of the drone possible, however, was a distinct narrative around what might limit or constrain the quelling of the "drone-possible". The "drone-possible" would, according to numerous speakers, be limited and undermined by both the "stilted" regulatory landscape and the ill-conceived actions of so-called "rogue actors" (CUS, 2015c; SkyTech, 2015c). The frustration around various unfolding regulatory landscapes was encapsulated in the recurrent refrain that "regulations will defeat possibilities" (CUS, 2014b), which was uttered three times in a single presentation by an advocacy group. The quelling of the possible was also attributed to irresponsible and "unscrupulous actions of some [users which] will spoil the vast opportunities for others" (CUS, 2014b). This stance was concretized in the mantra that circulated amongst industry and advocacy representatives that "the technology's not the problem – it can be misused, it's the person's intention" (CUS, 2014b).

In response to such sentiments, industry, regulatory and advocacy representatives proposed both (voluntary self-)regulation and public education. Representatives stressed the importance of adopting and publicizing the "necessary safety precautions" (CUS, 2014b). In addition to supporting efforts to highlight existing regulation, advocates promoted and shared particular avenues of guidance and self-regulation in order "to avoid the incident that ruins it for everyone else" (CUS, 2015c). When pressed in questions about unsafe operation or misuse, speakers often reframed the conversation to emphasize the importance of instead addressing the public perception of drones. In so doing, advocates illustrated their focus on "win[ning] the public over" by "demystify[ing] the landscape" and "addressing the[ir] misconceptions" (CUS, 2014b). This refrain of demystification or "drone destigmatization" (CIC, 2012) was stressed by various event participants and attendees, from advocacy groups to end-user organizations. It seemingly centred around stressing that "this is not a risky technology anymore, [but] a proven technology" (CUS, 2014b). As such, users and manufacturers were encouraged to "sell the value of UAVs and concentrate on good news stories" (CUS, 2014b), in order to allow the "drone-possible" to be unlocked.

As intimated in the opening vignette, The Commercial UAV Show 2014 was encased in a circus theme. Entering the maze of stalls and being greeted by a costumed ringmaster[4] initially felt a curious scene. This sentiment is reflected by correspondent Morley Safer, who, in a press piece exploring whether "the skies of the future will be filled with buzzing [commercial] drones", remarked that "to the first time visitor, the drone show [trade show] is part sci-fi, part video extravaganza, and part old-fashioned sales pitch" (CBS News, 2014). Upon reflection, however, this curious "extravaganza" acted as something far more than a mere backdrop or prop, and rather embodied and reflected precisely the event's mantra: that of possibility – the commercial "drone-possible". The circus-scape is one filled with "techniques of illusion" (Bouissac, 2012:50) and magicians "doing the impossible" (Aronson, 2013, in Rolfe, 2014:1608). Like the circus with its illusions, the trade show presents the drone as that which makes the seemingly impossible [task] possible.

[4] To see high-quality photographic event coverage, see Totally Unmanned (2014).

Both are sites of choreographed performance: rehearsed, routinized, polished acts and persuasive (sales) pitches. From the intermingling of people on stilts to the drone taking "selfies" (a.k.a. "dronefies"), the circus-themed trade show was a choreographed site of spectacle, illusion, wonder and excitement. The circus scene and theme thus felt like a metaphor and embodiment of the rhetorics of possibility circulating in the commercial drone trade show itself.[5]

5 Moving forward

> The most important thing is to focus on what's below the drone – commercial viability dictates all" (CUS, 2014).

Together the trade-show framings of the commercial drone, in terms of inevitability and possibility, may be understood as united by an undercurrent of techno-fetishism. The tendency to fetishize the military drone has been explored by Shaw (2011:8), who, drawing upon Marx, demonstrates the presentation of the military drone as "devoid of social relations", which are instead "mystified and masked" (see also Shaw and Akhter, 2012). In so doing, it is argued that the military drone is "present[ed]... as an autonomous agent, isolated from the imperial and military apparatus behind it" (Shaw and Akhter, 2012:1501). This approach to understanding the "fetishized" and "masked" drone may arguably also be applied to the commercial drone, which is, at the trade show, often presented and heralded as a technological solution bar none in lieu of sustained critical interrogation of the concerns associated with such aerial integration. Similarly, scope remains to further interrogate the unfolding of the narratives and imaginations of the commercial drone within and beyond the trade show. As such trade events have both a notable press and social media presence, an exploration of both the distilling and creation, and the circulation and amplification of such sound bites, slogans and buzzwords may also prove fruitful in supplementing critical explorations of the commercial drone more widely.

6 Concluding remarks

> We're looking at the future... And whether we like it or not, the future is looking back at us" (Morley Safer in CBS News, 2014).

This paper has sought to assert the trade show as both a valuable site and lens through which to explore the commercial drone tradescape, and to attend to the drone at an earlier stage in its life course, one that arguably fuels the proliferation of its end-point applications and operations. In so doing, it has offered a brief reflection upon the framing of the commercial drone in the trade-show environment. By introducing two rhetorical framings through which the drone is recurrently portrayed and understood in these environments, those of inevitability and possibility, it has sought to reflect upon the modes of "practices, representations, and expertise" (McCann, 2011:120) through which the reimagined, rebranded and "destigmatized" "good drone" is presented in the trade environment. Drawing upon fieldwork material, it has explored the trade-show framing of the drone as a powerful, inevitable and limitless solution, to tasks both known and unknown. In so doing, it has pointed to the value in further exploring the techno-fetishist "mystification" and "masking" of the "implications of [commercial] drones... how they act" (Klauser, 2015) moving forward.

Described as the "signature device of the present moment" (Noys, 2014), the drone is a technology whose path is still very much unfolding. Trade shows provide both a window of access and a lens through which to consider the rhetoric and aesthetic framings propelling the proliferation of the commercial drone. A speaker at The Commercial UAV Show 2014 proclaimed, quoting Peter Drucker, that "the best way to predict the future is to create it". Reflecting the wider imaginations and framings of technological inevitability and possibility, this quote was met with resounding applause. By beginning to attend to such sites, framings and imaginations, this paper has sought to offer a reflection of the commercial drone as a significant emergent technology "poised between 'reality and dream, present and future, fact and fiction"' (Hayles, 2004, in Anderson, 2007:158).

Acknowledgements. I would like to thank my PhD supervisors, Sean Carter and Pepe Romanillos, and the anonymous referee, for their valuable comments and support. Thanks also to Francisco Klauser and Silvana Pedrozo for organizing the conference "Power and Space in the Drone Age", at which this paper was originally presented.

Edited by: B. Korf
Reviewed by: one anonymous referee

References

Anderson, B.: Hope for nanotechnology: Anticipatory knowledge and the governance of affect, Area, 19, 156–65, 2007.

Anderson, B.: Preemption, precaution, preparedness: Anticipatory action and future Geographies, Prog. Hum. Geog., 34, 777–798, 2010.

Anderson, B. and Adey, P.: Guest editorial, Environ. Plann. A, 44, 1529–1535, 2012.

Aronson, S.: The illusion of impossibility, in: Magic in Mind: Essential Essays for Magicians, edited by: Jay, J., Vanishing Inc., US, 35–37, 2013.

[5]The association between the drone and the circus (aesthetics, atmospheres) is also evident outside of the trade environment, in, for example, the Cirque du Soleil's collaborative performance piece (YouTube, 2014), and Air's upcoming "Drone Circus" (BBC, 2015).

BBC: BBC Future: The man who plans to be a ringmaster – of a drone circus, available at: http://www.bbc.com/future/story/20150731-the-man-who-plans-to-be-ringmaster—of-a-drone-circus, last access: 9 October 2015.

Bouissac, P.: Circus as multimodal discourse: Performance, meaning, and ritual, Bloomsbury Publishing, US, 1–288, 2012.

CBS News: Drones over America, 60 minutes, available at: http://www.cbsnews.com/news/drones-over-america-60-minutes/ (last access: 9 October 2015), 16 March 2014.

CIC: The Case for Humanitarian Drones, available at: https://www.opencanada.org/features/the-case-for-humanitarian-drones/ (last access: 9 October 2015), 12 December 2012.

Coverdrone: Coverdrone exhibiting at Sky Tech 2015, available at: https://www.coverdrone.com/coverdrone-exhibiting-at-skytech-2015/, last access: 1 December 2015.

Crampton, J. W.: Assemblage of the Vertical: Commercial Drones and Algorithmic Life, SSRN, doi:10.2139/ssrn.2693625, available at: http://ssrn.com/abstract=2693625, (last access: 26 November 2015), 12 November 2015.

CUS: The Commercial UAV Show programme, in email to delegates from event organisers, Terrapin, ahead of the event, 10 October 2014a.

CUS: The Commercial UAV Show 2014, event field notes, Olympia, London, 21–22 October 2014b.

CUS: The Commercial UAV Show prospectus, in email to delegates from event organisers, Terrapin, ahead of the event, 10 August 2015a.

CUS: The Commercial UAV Show: 2015 post show report, available at: http://www.terrapinn.com/exhibition/the-commercial-uav-show/2015-post-event-report.stm, (last access 2 December 2015b.

CUS: The Commercial UAV Show 2015, event field notes, Excel, London, 20–21 October 2015c.

Dissent: Droneism: Joanne McNeil and Ingrid Burrington, available at: https://www.dissentmagazine.org/article/droneism, (last access: 1 December 2015), 2014.

Dronesdrones.com: Drone industry events: international calendar, available at: http://www.dronesdrones.com/events/, last access: 2 December 2015.

Hall, A. R. and Coyne, C. J.: The Political Economy of Drones, Defence Peace Econ., 25, 445–460, 2014.

Halyes, K.: Connecting the Quantum Dots: Nanotechscience and Culture, in: Nanoculture: Implications of the new technoscience, edited by: Hayles, K., Intellect Books, UK, 11–26, 2004.

Kinsley, S.: Futures in the making: Practices to anticipate "ubiquitous computing", Environ. Plann. A, 44, 1554–1569, 2012.

Klauser, F.: Opening remarks (introductory presentation) at "Power and Space in the Drone Age" conference, Université de Neuchâtel, Switzerland, 27 August 2015.

Klauser, F. and Pedrozo, S.: Power and space in the drone age: a literature review and politico-geographical research agenda, Geogr. Helv., 70, 285–293, doi:10.5194/gh-70-285-2015, 2015.

McCann, E.: Urban Policy Mobilities and global circuits of knowledge: Toward a research agenda, Ann. Assoc. Am. Geogr., 101, 107–130, 2011.

McCormack, D.: Governing economic future through the war on inflation, Environ. Plann. A, 44, 1536–1553, 2012.

Merriman, P.: Human geography without time-space, T. I. Brit. Geogr., 37, 13–27, 2012.

Noys, B.: Drone Metaphysics, presentation at "As Above, So Below – A Colloquium on Drone Culture", University of Lincoln, Lincoln, UK, 24 May 2014.

Rolfe, C.: A conceptual outline of contemporary magic practice, Environ. Plann. A, 46, 1601–1619, 2014.

Rothstein, A.: Drone (Object Lessons), Bloomsbury Publishing, US, 1–189, 2015.

Shaw, I. G. R.: The spatial politics of drone warfare, PhD Thesis, University of Arizona, USA, available at: http://arizona.openrepository.com/arizona/bitstream/10150/145131/1/azu_etd_11524_sip1_m.pdf (last access: 9 October 2015, 23 March 2011.

Shaw, I. and Akhter, M.: The unbearable humanness of drone warfare in FATA, Pakistan, Antipode: A Radical Journal of Geography, 44, 1490–1509, 2012.

SkyTech: SkyTech 2015, Business Design Centre, London, 24 April 2015, Post-event report, emailed directly to event attendees, 7 July 2015a.

SkyTech: SkyTech 2015, UAV Conference & Exhibition newsletter, available at: http://www.isprs.org/news/newsletter/2014-05/45_ISPRS-E-Shot-Info.pdf (last access: 9 October 2015), 1 February 2015b.

SkyTech: Sky Tech 2015, event field notes, Business Design Centre, London, 24 April 2015c.

Totally Unmanned: The Commercial UAV Show: 2014 in pictures, available at: http://www.totallyunmanned.com/2014/10/27/commercial-uav-show-2014-photo-gallery/ (last access: 9 October 2015), 27 October 2014.

Van Veeren, E.: There is more than one way to imagine a drone: Visualising the practice of drone warfare, available at: http://aschcenter.blogs.brynmawr.edu/2013/02/20/there-is-more-than-one-way-to-imagine-a-drone-visualising (last access: 9 October 2015), 20 February 2013.

YouTube: Cirque du soleil: SPARKED: A Live Interaction Between Humans and Quadcopters, available at: https://www.youtube.com/watch?v=6C8OJsHfmpI (last access: 9 October 2015), 22 September 2014.