

# Charting COVID-19 futures: Mapping, anticipation, and navigation

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## Abstract

This commentary argues that visualisations of COVID-19 transmission and mortality map out possible futures. It outlines a navigational approach to such mappings which interrogates their role in guiding anticipatory actions that are shaping COVID-19's emerging geographies.

## Keywords

anticipation, COVID-19, future, mapping, pandemic

## Introduction

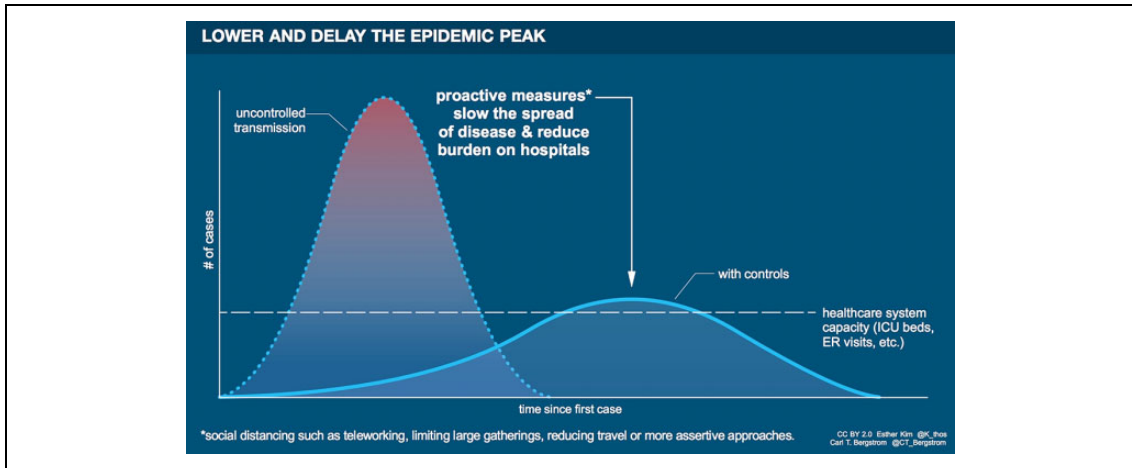
The emergence of COVID-19 was arguably a much-anticipated event. Novel zoonotic pathogens are staple subjects not only of apocalyptic fiction and emergency planning exercises but of future geographies scholarship which explores how such texts and practices enfold possible futures into the present as sites of affect, debate, and intervention (Anderson, 2010; Hinchliffe et al., 2017). Building on such research, this commentary examines the media through which possible COVID-19 futures were made present during those fleeting weeks in February and March 2020 when, in many locations, travel restrictions and so-called 'lockdowns' remained confined to distant places and times. Specifically, it investigates how apprehensions of mounting death tolls and restrictions on daily life were articulated through charts and graphs purporting to visualise possible pandemic futures, and how such diagrams participate in foretelling and actualising future COVID-19 geographies.

This investigation departs from the ambivalent status of charts as both graphical media and navigational devices. Addressing COVID-19 graphics as charts of pandemic futures highlights their capacity to express and reconfigure spatio-temporal relations through translating between temporal sequence and spatial arrangement. It also draws future geographies scholarship into dialogue with navigational accounts of mapping, which situate charts as constituents of wayfinding practices through which actors attempt to plot a safe course through turbulent spatial and temporal terrains (November et al., 2010). Navigational approaches to the charting of COVID-19 futures thus decentre such graphics as representations, investigating instead what work they might do within processes of anticipating,

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**Figure 1.** ‘Lower and delay the epidemic peak’. Source: CT Bergstrom, 2020. ‘Slow the Spread’. Available at: <http://ctbergstrom.com/covid19.html> (accessed 21 April 2020).

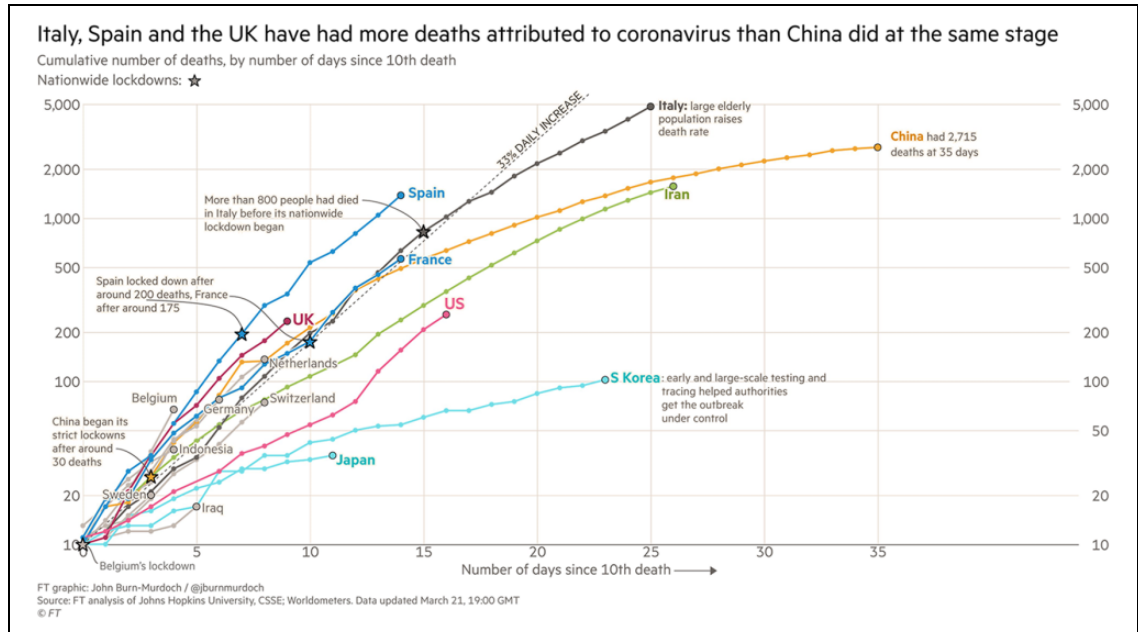
traversing, and intervening in pandemic futures (Donaldson et al., 2019). The commentary illustrates this navigational approach by comparing the anticipatory affordances of two charts of possible COVID-19 futures, arguing respectively that they facilitate distinctively biopolitical and geopolitical modes of traversal. It then suggests that a navigational analysis situates such charts as political technologies of decision and deliberation which, through catalysing and constraining dissensus over what course of action might best forestall viral catastrophe, participate in shaping COVID-19’s geographies.

### Flatten the curve!

Perhaps the most celebrated chart of possible COVID-19 futures began circulating widely via both broadcast and social media in early March 2020, often alongside exhortations to ‘flatten the curve’ of COVID-19 transmission. So-called ‘flatten the curve’ (FTC) charts frequently present two arcs describing changing numbers of COVID-19 cases over time. One, spiking exponentially upwards to far exceed healthcare system capacity, outlines a future of uncontrolled COVID-19 transmission. A second – sloping upwards more gently and peaking close to healthcare system capacity –

articulates a scenario in which public health interventions are introduced imminently, most patients receive adequate medical treatment, and excess mortality is minimised. Such charts’ axes are often unscaled, indicating that these are not ‘mimetic’ visualisations which represent a particular referent epidemic but purely conceptual mappings designed to render COVID-19 futures in a form susceptible to intervention and modification. Through converting the temporal disjunction between present and future into spatial distance on the x axis, FTC charts illustrate synoptically a relationship between present-day interventions such as school closures and future consequences in deaths avoided or delayed.

By converting time into space, FTC charts articulate a claim that prompt precautionary action could avert a catastrophic future of overwhelmed healthcare services and spiralling death tolls (Anderson, 2010). Yet their originators seek to mobilise eclectic pathways of anticipatory intervention. Some such charts (e.g. Figure 1) are produced by public health authorities and researchers attempting to encourage individual citizens to adopt transmission-suppressing habits from mask-wearing to remote working. Others are intended to inform policymakers’ efforts to forestall catastrophic COVID-19 futures through population-wide public health interventions such



**Figure 2.** 'Italy, Spain and the UK have had more deaths attributed to coronavirus than China did at the same stage'. Source: FT Visual & Data Journalism team, 2020. 'Coronavirus tracked: the latest figures as the pandemic spreads'. FT.com 21st March. Used under licence from the Financial Times. All Rights Reserved.

as regional quarantines. Indeed, certain commentators (Shipman and Wheeler, 2020) credit a report prepared by infectious disease modellers at Imperial College London containing several such charts of projected 'epidemic curves' associated with various public health interventions with shifting UK government policy away from delaying COVID-19 transmission through predominantly voluntary measures and towards suppressing it through a mandatory nationwide lockdown. This suggests that FTC charts may sometimes directly inform the processes of political navigation which have shaped unfolding geographies of COVID-19 infection and mortality. In configuring deliberations and decisions which enfold individual conduct and survival alongside the future vitality of populations and economies, FTC charts can be considered to enjoin an eminently biopolitical mode of anticipatory action (Hinchliffe et al., 2017). The graphical and spatial vocabularies through which they make COVID-19 futures available to political problematisation and contestation, and to individual

reflection upon the ethics of personal conduct, are therefore worthy of close examination.

### Spain is the UK's future

While FTC charts enjoin biopolitical and precautionary intervention through converting time into space, a second style of mapping renders COVID-19 futures navigable through transforming space into time. As new COVID-19 outbreaks appeared across the globe, news organisations and private individuals began compiling line graphs comparing the number of COVID-19 cases and deaths recorded over time in different countries, cities, and regions (Figure 2). Such COVID-19 trajectory charts share considerable visual and verbal vocabulary with FTC diagrams, depicting escalating coronavirus transmission and mortality as 'steepening' lines (or 'trajectories') to be 'flattened' through public health interventions. However, they are more mimetic in character, replacing purely conceptual mappings of COVID-19 futures with visualisations

of numerical data recording diagnoses and deaths in particular places. In so doing, COVID-19 trajectory charts often enrol the pandemic's spatial unevenness into peculiarly geographical modes of anticipation.

Such charts typically plot each location's COVID-19 trajectory beginning not from a single calendar date but from an epidemiologically significant event (e.g. its 10th confirmed COVID-19 death). This produces a curious visual effect. Because the inaugural event will have occurred in some places before others, the trajectories of places whose COVID-19 epidemics began earlier extend further along the x axis. They therefore appear to be located further ahead in time, meaning that the COVID-19 present of the US and Germany seemingly lags behind that of China and Italy. COVID-19 trajectory charts thus convert the heterogeneous simultaneity of spatially dispersed outbreaks into temporal sequence, making it possible to suggest (as does Figure 2) that the UK's outbreak is 'following days behind' those of Spain and Italy. As Massey (2005) notes, such transformations of spatial difference into temporal succession often co-opt cartographic techniques into (anti)political narratives. Massey's target is Euro-American geopolitical imaginaries which reduce geographical difference to a hierarchy of historical development in which metropolitan centres such as New York and Paris represent a singular 'destination' of advanced modernity towards which other places are 'progressing'. Such unilinear evolutionary sequences, she argues, both express inequalities of power through permitting peripheral places to 'advance' only by imitating metropolitan locations and repress political contestation over their direction of travel through disavowing alternative trajectories of development.

It is thus important to consider critically what geopolitical imaginaries COVID-19 trajectory charts' arrangement of places into temporal sequences might articulate. Intriguingly, such charts unsettle and reshuffle ingrained historical hierarchies, recasting supposedly 'backwards' China and Iran – like the southern European peripheries of Spain and Italy – as possible futures towards which metropolitan states are hurtling. Moreover, they

differ from the objects of Massey's (2005) critique in depicting COVID-19 futures containing numerous possible 'destinations', exemplified by different places, towards which national, regional, or municipal governments might seek to navigate their territories. Indeed, when annotated with descriptions of the public health interventions which brought about the 'futures' currently occurring elsewhere, COVID-19 trajectory charts can encode directions towards multiple destinations. Thus, Figure 2 suggests that if the UK maintains its current COVID-19 policies then it will likely follow Spain's rapidly 'steepening' mortality curve, but a timely lockdown might yet produce a future more akin to events in France or China. Such prescriptions lend the biopolitical modes of anticipatory navigation afforded by FTC charts a geopolitical hue, for they entangle future-defining public health interventions in relations of inter-territorial mimicry so that pursuing a particular COVID-19 future entails imitating another place. Growing international eagerness to emulate a 'South Korean model' of mass testing and contact tracing perhaps illustrates this point. Yet in promising that routes towards multiple 'destinations' remain navigable, such mappings also configure more complex futures and (as argued below) hold the potential to catalyse more political modes of navigation than the binary choices frequently proffered by FTC charts.

### Political mappings

Having suggested above that FTC charts afford a biopolitical mode of anticipatory wayfinding, to which COVID-19 trajectory charts impart a distinctively geopolitical flavour, I will conclude by considering how a navigational analysis might draw out what is political across these contrasting mappings. Navigational analyses address maps as devices which configure the plotting of an itinerary (Donaldson et al., 2019; November et al., 2010). They thus situate COVID-19 charts within processes of deliberation, decision, and intervention through which individuals and organisations traverse potentially hazardous futures, and which thus precipitate anticipatory actions that bring particular geographies of disease into being. This move casts

COVID-19 charts as devices which are political in the sense that, through mapping a particular range of possible epidemic trajectories, they partake in opening up, and constraining, agonistic spaces of dissensus and contestation over what course of action should be pursued over COVID-19 (Barry, 2002). To illustrate, most FTC charts channel debate towards a binary choice between two futures entailing greater or lesser death tolls, which pits immediate intervention against potentially catastrophic inaction. Meanwhile, COVID-19 trajectory charts articulate directions towards a wider (yet finite) range of futures exemplified by the presents of different places. They thus present a broader range of possible COVID-19 futures, potentially catalysing expert and public deliberation over which package of interventions might propel a place towards the most desirable destination.

COVID-19 charts configure the spaces of possibility and decision within which courses of anticipatory action are set through delineating the range of possible futures available to deliberation and intervention. This casts such charts as key participants in the navigational processes which actualise certain COVID-19 futures and render others counterfactual. That COVID-19 trajectories mapped by some such charts are already becoming manifest as profoundly unequal national and global distributions of infection and mortality illustrates that critical investigation of such anticipatory mappings matters. For the navigational processes which they configure currently inscribe geographies of life and death. This commentary has begun such exploration by examining the navigational affordances of two COVID-19 charts. However, much remains unknown about the anticipatory and navigational practices in which COVID-19 charts are embedded, how particular charts circulate and gain traction among policymakers and publics, their role in

mediating scientific and political controversy, and the geopolitical imaginaries which they articulate. Investigating such issues is a task for which human geography's long critical engagement with cartography's culture, politics, and practices leaves it uniquely well-equipped.

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