CHAPTER 1

COLLECTIVE ACTION GOES DIGITAL

'Everyone out against everything' ran the headline of the leading Brazilian newspaper of 21 June 2013 in response to mass protests in over one hundred cities.[1] Starting as a demonstration against increased bus fares, the protests grew into a movement against a range of deep issues in Brazilian society: inequality, corruption, lack of public services, and spiralling expenditure on the country's commitment to host the 2016 Olympic Games as well as the 2014 World Cup. To the surprise of the world, the movement appeared to rise from the grassroots with no coordinating organization. Demonstrators refused to allow the flying of traditional political party flags in the protest marches, chanting, 'The people united don't need parties'. When the president, Dilma Rousseff, asked to meet with the leaders of the demonstration, she was told, 'there are no leaders'. This is not to say that such forms of collective action are not organized. Far from it, they are surprisingly well coordinated through the use of social media and other Internet-based platforms that allow users to generate and share content. In this way, states are being challenged by groups of citizens who have as their main weapon an ability to communicate and coordinate the resources of large numbers of people.

From wherever in the world you are reading this book, you are likely to have been touched by a mobilization that shares something with the one in Brazil; that is, having social media as a key tool of coordination. Movements like this have become a central feature of twenty-first-century politics, driving policy change, highlighting weaknesses in public services, bringing new political forces to the fore, acting as a focal point for dissatisfaction and discontent, campaigning for social rights, and challenging both democratic and non-democratic regimes.

From 2002, when large networks of young activists proved a major force in bringing the previously unknown Roh Moo-hyun to presidential power in South Korea, there has been a continual stream of examples. In 2003 millions of people were mobilized in eight hundred cities across the world, including two million in London on 15 February, to demonstrate against their states' involvement in the Iraq War, the largest protest in human history until that time. In 2008 the United States elected its first black president, with record levels of turnout (particularly among black and first-time voters), community support, popular engagement, and large-scale fund-raising from the general public. Mass demonstrations took place in Iran in protest at allegedly rigged election results in 2009, organized and beamed across the world through digital communications.

There have been dramatic developments in political activity for democratic and social rights. On issues of gender, mobilizations have ranged from a successful petition calling for the depiction of women on banknotes in the United Kingdom to global campaigns against the practice of female genital mutilation. In the United States in 2014, large-scale protests against perceived racism in policing started after the shooting of an unarmed black man in Ferguson, Missouri, in the summer and resurfaced at each new shocking incident. In the same year, students and other protesters calling themselves the Umbrella Revolution campaigned for democratic change in Hong Kong, using social media extensively to organize and to connect in a global movement. Even where Internet usage is low or there is heavy censorship, social media have played

a role in the dissemination of images of demonstrations or state violence to the outside world.

In many countries, the financial crash of 2008 and subsequent economic crisis brought social backlash, demonstrations, protests, and even riots against banks and their leaders. Protesters highlighted state retrenchment, corruption, and public-sector cutbacks as key issues. In Spain, the 15-M (Indignados) movement carried out a series of demonstrations from May 2011, campaigning against unemployment, welfare cuts, and Spanish politicians as well as the general political system, capitalism, and political corruption. Between 6.5 and 8 million people participated, with the support of over 500 associations, but they rejected political party or labour union collaboration. Inspired in part by the Indignados, the international protest movement Occupy has campaigned against social and economic inequality, particularly the disproportionate power of large corporations, since a high-profile demonstration in New York in September 2011 (Occupy Wall Street) that quickly spread to over eighty countries and six hundred local communities in the United States. In Greece, protests, demonstrations, and riots have become common occurrences since the summer of 2011, directed against an enfeebled state and determined to overturn the deep austerity programme required by the EU in return for a succession of bailouts. These protest movements continue in their countries of origin and have spread across the world. Some have seen the rise of far-right and anti-Islamist groups, as in Germany where protests by the Patriotic Europeans Against the Islamization of the Occident (PEGIDA) have been attended by thousands, matched by a counter-movement of anti-Nazi activists who use social media and mobile apps to find where extremists are planning protests and organize counter-protests.

Autocratic regimes have fallen into disarray and even collapsed in the face of mass demonstrations, mobilizations, protests, and generalized unrest. In Tunisia in December 2010, decades of discontent erupted when a young unemployed man, Tarek al-Tayeb Mohamed Bouazizi, was forbidden from selling vegetables in the street and set himself on fire, sparking off the Arab Spring of 2011.

President El Abidine Ali fled from Tunisia in January; a month later the Egyptian president Hosni Mubarak had also gone. Protests spread across the region to twenty countries including Yemen, Bahrain, Libya, Algeria, Morocco, Jordan, Oman, and Syria. Social media were heavily implicated in much of this activity, particularly in the so-called Facebook Revolution of Egypt. The movements and uprisings that characterized the Arab Spring have proved unstable and often unsustainable, some dissipating almost as soon as they began in the face of brutal suppression, some erupting into civil war and chaos, others reverting back to regimes as autocratic and repressive as those they sought to depose. But these movements changed the practice of politics by illustrating starkly both the potential and the risks of large-scale mobilization without formal organization. Across the region, such mobilizations—or the possibility that such mobilizations will erupt—have become a permanent feature of political life.

These are just some of the more prominent examples of a general phenomenon that ranges from global political movements to neighbourhood campaigns: the emergence of mobilization coordinated by social media as a political force. Use of social media and the nature of mobilizations may be distinct depending on the context and country, but there are common patterns too. In all there has been a surge of activity among those seen traditionally as the socioeconomic groups least likely to participate politically, such as the young and members of ethnic minorities. Such mobilizations periodically burst into public awareness and headlines. But in many ways, we know little about them, beyond the self-evident fact that the nature of collective action is continually shifting and evolving. Political movements based on digital coordination seem to gather momentum rapidly, yet many have proved to be unstable and difficult to sustain as in the Brazilian example with which we opened. The Arab Spring and the other events described above took the world by surprise, evidenced by articles by prominent commentators that predicted the mobilizations would have little lasting impact, such as 'Why the Revolution Will Not Be Tweeted' and (even after the Tunisian president had fled) 'Why the Tunisian

Revolution Won't Spread'.[2] Each new wave of demonstrations and protests seems to rise up from nowhere and defy prediction.

These mobilizations pose a challenge to social science. We do not yet understand their ecology: How do they get started, and how do they operate? Why do some succeed in achieving sustainability and policy and regime change against high odds, while others fail, even where the contexts seem similar? Given this protean context, this book's main task is to examine the relationship between social media and contemporary collective action. We ask how the widespread and growing use of social media affects the operation and functioning of contemporary politics. We will be able to answer this question only by examining the patterns, trends, numbers, and causal mechanisms behind the mobilizations that have surprised the world during the past decade. We use new data and new methods to delve into the changed environment within which citizens make decisions whether or not to participate politically. We believe that understanding this new environment and outlining the association between social media and collective action are the most significant (and exciting) challenges facing political science today. Only by developing that understanding will we acquire any predictive capacity or avoid the bemusement that surrounds each new mobilization.

SOCIAL MEDIA COMES OF AGE

Up until this point we have used the term 'social media' liberally, but it requires definition. Basically, social media are Internet-based platforms that allow the creation and exchange of user-generated content,[3] usually using either mobile or web-based technologies. They can take many forms, including blogs and micro-blogs (such as Twitter or Weibo); social networking sites (such as Facebook, Twitter, Tumblr, Tuenti, Instagram, Snapchat, or Orkut); content-sharing sites (such as YouTube, Flickr, and Vine); social bookmarking sites (such as Digg, Reddit, or Delicious); projects to produce online goods (such as Wikipedia or Baidu Baike); and virtual worlds

for gaming or socializing (such as Minecraft and Second Life). All these social media applications rely on the Internet. But as their use has grown to become the way that most users experience the Internet (discussed in Chapter 2), 'social media' is the more useful term to describe the kind of Internet-based interactions that impact upon collective action. Some of the Internet-based applications we discuss in this book are not by some definitions social media, such as the range of civic activism guided by email, apps, or websites, or government-initiated platforms that allow users to join campaigns with political goals. But they do allow the user to contribute some kind of content (such as signing a petition or sending an email to a political leader), and the boundary between these applications and social media is increasingly blurred as any mobilization (a demonstration, a petition, an email campaign) will be disseminated and shared on social media, exposing those considering whether to participate to the signals and influences that these media provide. We use the term to encapsulate these applications as well.

At this point, we should also clarify our use of the terms 'Internet' and 'web' due to the potential for confusion. The Internet is a global system of interconnected computer networks, while the World Wide Web, or the web for short, is a system of interlinked documents, navigated via hyperlinks and accessed via the Internet. Although for some computer science scholars the distinction is of enormous importance,[4] these terms are frequently conflated, and indeed in some languages (such as Greek and Spanish) one word is often used for both concepts. For our purposes, we select the Internet as the more relevant and widely used term because it is possible to access social media without the web, via an application on a mobile telephone, for example, but to use the web one must use the Internet. However, we do use the term 'web' where we reference research specific to the web, such as analysing the hyperlink structure of the World Wide Web.

Most early social media platforms were used primarily on computers connected to the Internet, and Figure 1.1 shows over-time usage of the Internet. In North America, usage had started to pla-

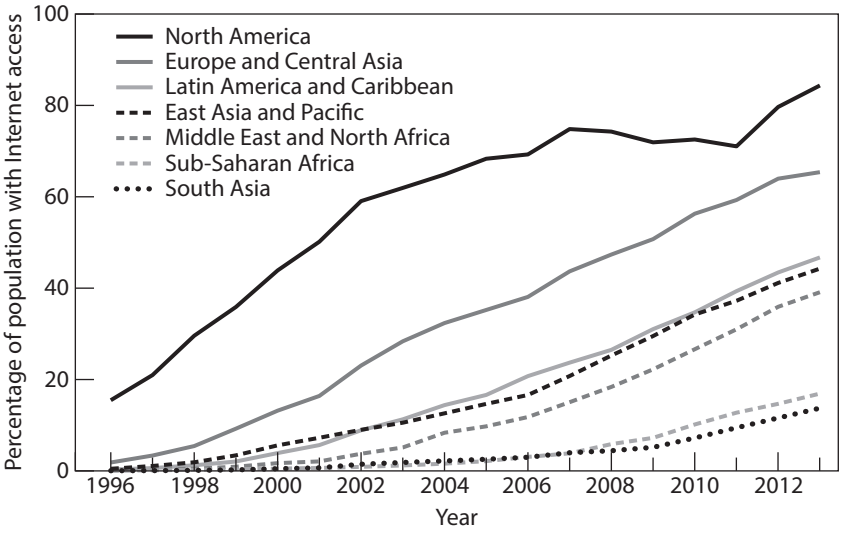

FIGURE 1.1 Internet usage across the world, 1996–2013

teau in the mid 2000s, but widespread use of Internet-enabled devices other than computers, such as smartphones and tablets, seems to have boosted acceleration again so that by 2013 usage was around 83 percent and is still rising. At 346 million, mobile phone subscriptions in the Arab world nearly matched the region's population by the end of 2011,[5] and increasingly the majority of these are for Internet-enabled devices. Even in sub-Saharan Africa and South Asia, the figures are nearing 20 percent.

Almost all major social media platforms now have native applications for mobile telephones and several newer platforms (such as Instagram and Pinterest) started on mobile devices directly. The availability of social media on mobile telephones has provided a massive injection of usage, as social media become available to users 'on-the-go', and even to new populations who do not have regular access to Internet-connected computers. At the time of writing, the number of mobile phones in the world that could access the Internet had outstripped the number of Internet-connected PCs and is contributing to the already dramatic rise in the use

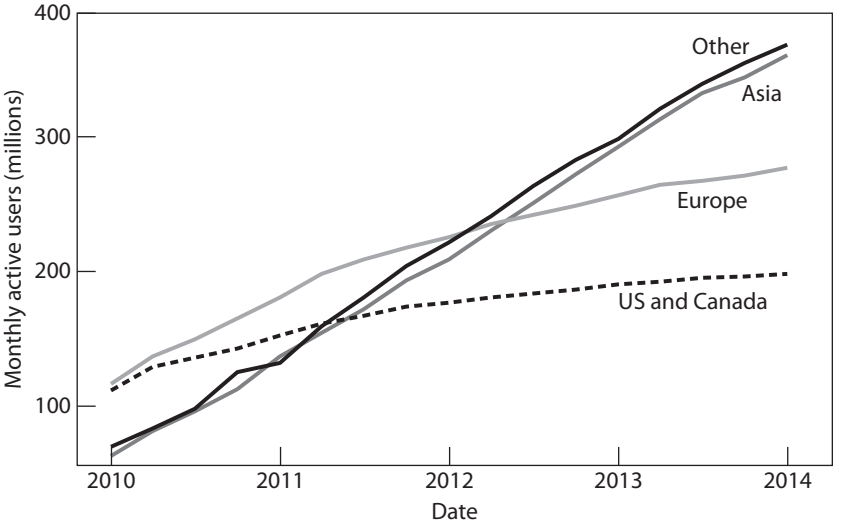

FIGURE 1.2 Facebook usage over time, across the world
Source: Facebook's annual reports (http://investor.fb.com/annuals.cfm). Monthly active users denote registered Facebook users who logged in and visited Facebook through the website or a mobile device or shared content with Facebook connections via a third-party website, in the past thirty days as of the date of measurement.

of social networking and micro-blogging sites.[6] Usage of just one prominent social media platform is shown in Figure 1.2, which shows a regional breakdown of Facebook's 1.2 billion users from 2010 to 2014. While growth in North America and Europe was reasonably steady during this period, having started from a base of over 200,000 in 2010, the rise in other regions in the world has been dramatic (note that this growth has occurred despite Facebook being blocked in one of the largest Internet markets, China). For example, by May 2014 the total number of Facebook users in the Arab world was over 81 million, up from 54.5 million in May 2013,[7] with a quarter of these users in Egypt. Other platforms showed different growth curves as they waxed and waned in popularity. By 2014, social media clearly represented the most popular part of the Internet, with Americans spending more time on social media than any other Internet-based activity and with

most applications being used for social and political activity, making 'social media' the term most appropriate to use in the context of collective action.[8]

WHAT COUNTS AS COLLECTIVE ACTION?

A book about collective action also must include a working definition of this term. By 'collective action', we mean any activity undertaken by citizens with the aim of contributing to public goods: goods that are both non-excludable and non-rivalable—that is, they have benefit but cannot be sold to private buyers.[9] Because public goods have these properties—that no individuals can be excluded from their use and use by one individual does not reduce their availability to others—they are subject to the free-rider problem, in that people not contributing to the good may still continue to use it.[10] Because of this, any individual deciding whether to contribute to collective action may decide to free ride or face the possibility that people who will ultimately benefit may not contribute or may make negative contributions that detract from the public good itself. Much of political science is devoted to understanding what motivates people to contribute to public goods and how they may be encouraged to do so in spite of these in-built problems, so that public goods such as a sustainable environment, basic rights, a democratic society, social welfare (funded through taxes), transport, and security continue to be provided. Any individual deciding whether to participate will weigh up the costs of participating and the expected benefit to herself of accessing the public good, factoring in the likelihood of her participation making a difference.[11]

What counts as collective action? There are some acts that uncontroversially fall within this definition, such as voting. Other political activities are also forms of collective action. Most academic commentators perceive some kind of 'ladder' of participation, all rungs of which are aspects of collective action.[12] They range from small acts such as signing a petition, voting, attending political

meetings or demonstrations, donating money to a political cause, and protesting or demonstrating, right up to political violence and armed struggle (although there has been much debate over the blurred edges at either end of the ladder).[13] The use of the Internet across all spheres of political life means that some of these acts have moved largely to Internet-based settings (signing petitions, for example), some remain largely offline but are usually coordinated through Internet-based means (voting, boycotting products, demonstration, and political violence), and some new acts enter the repertoire. As discussed in Chapter 2, these include posting a status; supporting or 'liking' something on Facebook, Tumblr, or Pinterest; tweeting or retweeting a political message on Twitter; and disseminating a photograph or video of police or military violence on YouTube, Facebook, or Twitter—all tiny acts of participation adding rungs to the bottom end of the ladder. We include all these activities in our definition of contemporary collective action.

The reader should note, however, that this is not an uncontroversial definition. Many commentators think that collective action primarily happens face-to-face or in closely allied activities and that online activities are inevitably peripheral and less important. There is a 'politics as pain' principle that pervades much of mainstream political culture, particularly in the United Kingdom, which is the view that contributing to politics should involve hard work and some kind of rite of passage. As a result, online participation is still often regarded as inferior to offline participation. This viewpoint was well encapsulated by the chair of the UK Public Administration Select Committee in 1999, during a hearing on online political participation, and in response to one of the authors' suggestion that party supporters might use the Internet at home late in the evening to participate in party business: 'If you describe it in that casual incidental way that gives a picture of people in a sense of having nothing better to do than to press buttons, not because they have anything in particular to contribute but because it is dead easy to do'.[14] In spite of all that has happened since these words were spoken, from the election of Barak Obama to the Arab Spring and the Occupy movement, we believe many in politics

today share these sentiments when they hear about political activity taking place on Facebook or Twitter. Indeed, the original source of the quotation above nodded in agreement when it was quoted back to him in 2013. Similar views have led, from the early days of the Internet, to a nascent literature on 'slacktivism' (a conflation of the terms 'slacker' and 'activism'). There are many political acts that seem to have little effect and that require minimum effort. Slacktivism originally had positive connotations,[15] as it was thought to be a low-cost, small-scale route into political participation, but was later discussed in pejorative terms by a whole host of commentators, such as Morozov.[16] Most notably, Gladwell, in his widely cited *New Yorker* article, argued that the small-scale actions and weak ties facilitated by social networking platforms such as Twitter could never engender the strong relationships that characterized the civil rights movement.[17]

If, as we claim, Internet technologies are now central to collective action, then understanding online collective action will be the clue to understanding collective action more generally, allowing us to reevaluate and develop mainstream collective action theories in the light of the possibilities enabled by new forms of digital technology. In this book, we show how Internet-based social media reshape the context within which citizens operate and influence their decisions about whether to participate politically. Changes to the information environment affect the way that citizens seek and find political information, affect the nature of the information that they receive, and reduce the costs of interacting with each other; they change the scale and shape of individuals' social and information networks and their positions within them, impacting upon the costs in the collective action decision. Such changes vary across the ever-increasing range of social media that have become available to citizens over the past decade—Facebook, Twitter, Tumblr, LinkedIn, Instagram, Pinterest, Weibo, Mixi, Cyworld, and Orkut—as well as the dedicated civic activist platforms run by, for example, Avaaz, Kiva, MoveOn, and mySociety, and national electronic petition sites. Through their selection process regarding which social media platforms to use, and how long to spend there, individuals personalize

information streams that they receive, which in turn influence the scope and limitations of their political behaviours.

UNDER THE INFLUENCE OF SOCIAL MEDIA

We investigate two key forms of social influence that social media exert on people deciding whether and when to join collective activity. First, in digital environments we can get to know accurately and in real time what other people are doing politically. By providing real-time information about what other people are doing, social media affect the perceived viability of political mobilizations and hence the potential benefits of joining, thereby altering the incentives of individuals to participate. We call this social information, the knowledge that helps people decide what they are going to do with reference to a wider social group and that, in so doing, has the potential to activate people's social norms. The abundance of social information in the digital world is in contrast to the offline world, where someone considering whether to sign a petition in the street will have very little idea of how many other people have signed. We investigate the influence of social information in Chapter 4, building on the work of Salganik et al. and Salganik and Watts, who performed experiments showing how changes to social information on the popularity of cultural artefacts (songs) changed the way that people viewed the quality of those songs.[18] We test these social information effects in a political context.

Second, social media environments allow other people to know what we ourselves are doing by making us visible. Visibility has great appeal to many, as demonstrated by the 'selfie' phenomenon, where individuals or groups take photographs of themselves with mobile phones and upload them to social media websites. 'Selfie' was word of the year in the *Oxford English Dictionary* in 2013, when usage of the word increased by over 17,000 percent. Visibility has less narcissistic uses also. As never before, we can disseminate images or video clips, express our views, put our names to contributions or donations, and publicize our experiences of

interactions with the state or any other organizations. This new visibility expands our possibilities for undertaking collective action in terms of how we might try to spread ideas or information and draw in other people. In the strongest form of visibility, we identify ourselves by our names, our faces, and our social media profiles, and with the actions we undertake, as in the Ice Bucket Challenge of the summer of 2014 when people posted videos having ice-cold water poured over themselves to raise money for research into motor neurone disease. This form of visibility has been shown to have a strong effect on people's willingness to participate politically: for example, to vote,[19] to give to charity,[20] or to undertake a sponsored bicycle ride.[21] In other contexts, we might want our actions to be visible but our identity to remain anonymous. In the protests that swept Egypt and Tunisia in 2011, anonymity was crucial to the participation of many, particularly in the early demonstrations, but their visible actions formed a crucial conduit of social information to other people. In Chapter 5, we compare the effects of visibility with social information, looking at how these two kinds of social influence differentially affect people's willingness to contribute to collective goods.

Social media do not provide a homogeneous environment: platforms have particular designs and interfaces that offer (or do not offer) varying amounts of social influence. These various features of interaction on the many commercial social media sites and applications create different kinds of communities and information environments. Some platforms engender the creation of network structures, provide distinct types of social information, allow or do not allow feedback, and offer varying levels of visibility and anonymity. In so doing, they exert varying forms of social influence on their users, making them more or less conducive to political participation. Links across platforms create 'networks of networks',[22] allowing information relating to any one mobilization to travel across platforms, with the potential for the shape of networks on one platform to influence information dissemination and ultimately collective action on another. Many studies of Internet-based activism have focused on individual platforms in isolation.[23]

In contrast, in this book we focus on the effects of social information and visibility as generic influences on participation (particularly in Chapters 4, 5, and 6), which we hope will contribute to the understanding of behaviour on any social media platform that exerts these influences in some form.

As well as creating distinct information environments across alternative social media platforms, social media affect the behaviour of different people in different ways. Some types of people will be more susceptible than others to the social influence exerted by social media, such as being made visible or receiving information about what others are doing. We explore this heterogeneity in susceptibility to social influence in Chapter 6. Classical explorations of political participation have focused on socioeconomic variables as a way of explaining differences in levels of participation,[24] finding, for example that white, higher income individuals from older age groups with higher levels of educational attainment are more likely to be involved in collective action. Although some of these differences remain for some kinds of online participation,[25] widespread use of social media challenges these long-held assumptions, with participation rising among younger groups and the low costs of participation reducing the importance of income levels in determining people's decisions to participate or not. We turn therefore to another source of individual difference—personality—which has been shown in recent political science work to be as important as demographics in shaping political behaviour and attitudes.[26] In Chapter 6, we explore the relationship between personality and susceptibility to social influence, discovering that some personality types are more influenced by social information and visibility.

Differential reactions to social influence could help to explain why some mobilizations succeed and others fail, an idea we explore in Chapter 7. We are inspired by work from the 1970s when the economist Thomas Schelling and the sociologist Mark Granovetter argued that people have different thresholds for joining mobilizations in terms of the number of other participants they require before they themselves will join in.[27] Under this view, people with low thresholds will be willing to join a mobilization at

an early stage when there are few signals of viability; people with high thresholds will join only at the later stages when the majority of potential participants have already joined in. These differences will affect the type of collective action that results. Some people with very low thresholds are needed to start a mobilization, which will encourage the followers with slightly higher thresholds, and so on, until the tipping point where most people's thresholds lie is reached and there will be a flood of followers. In an Internet-based environment, people are likely to know how many other people are joining in real time so they can match their joining point to their own threshold. Schelling and Granovetter developed models of how the distribution of thresholds would be critical to the success or failure of mobilizations. But they did not explore what causes individuals to have the threshold that they do. In Chapter 7, we investigate the relationship between personality and threshold, attempting to identify the personality types associated with low thresholds and willingness to start and whose participation is crucial to propel a mobilization towards a tipping point and some kind of success. The well-known idea of the tipping point has been popularized by writers such as Gladwell,[28] but only by examining mobilizations in detail using the kind of direct, empirical evidence afforded by digital systems can we ascertain whether and when such actions will take place.

If the distribution of thresholds is what matters for a mobilization, then leadership in the traditional sense is not so important. What is needed is a number of starters, people with low thresholds for starting and joining a mobilization and who are good at dissemination so that people know that an event or mobilization is happening. Under this model, charismatic leadership is not necessarily required to recruit burgeoning numbers of followers; people willing to carry out micro-acts of participation by disseminating an image, clicking 'like' on an influential photograph or Facebook page, or retweeting a political viewpoint, and who can carry the movement forward to a tipping point. This pattern is summed up by one of the Egyptian activists in the 2011 revolution: '[Mobilizations] of the past have usually had charismatic

leaders. . . . But the revolution in Egypt was different. . . . It was like an offline Wikipedia, with everyone anonymously and selflessly contributing efforts towards a common goal. . . . Ultimately it was the great middle of the population that needed to overcome its fears and believe that change was possible'.[29] Ghonim could be describing a normal distribution of thresholds. For example, in the early days of the Egyptian revolution, nearly half a million people supported the Facebook page We Are All Khaled Said, showing images of a young man brutally killed by Egyptian police. To attain this number would have required people with low thresholds to join at the beginning while those with higher thresholds would have joined later. All played an individually small part in showing the rest of Egypt (particularly the five million Egyptian Facebook users at that time) that the revolution was gaining traction and ultimately in removing Mubarak from power. As Mason put it, 'to stop the revolution he would have had to close down the Khalid Said page, hunt down its members and round up the protest networks'.[30]

UNCERTAINTY AND TURBULENCE IN ONLINE COLLECTIVE ACTION

The onslaught of Internet-based collective action discussed above might give the impression that use of social media is a surefire way for mobilization to succeed. But most online mobilizations fail. In fact, a higher proportion of online than offline mobilizations probably fail due to the very low start-up costs of initiating (say) an online petition or an email campaign or a Facebook group, which means that many non-viable initiatives get started. While those that succeed may reach millions (a petition calling for fair trade attained eighteen million signatures in 2009), 43 percent of petitions posted on the UK government site for three or more months by 1 March 2013 had five or fewer signatures.

Such skewed distributions are reported for many Internet-based human activities.[31] These distributions are generally referred to as

fat-tailed. The right tail decays more slowly for large values compared to a normal, bell-shaped distribution, resulting in a thicker or 'fat' tail. In the world of social media above all, a few sources will be extremely successful in attracting links and users, while the rest do very much less well in terms of attracting attention,[32] and this is often described as exhibiting a power law, a specific case of fat-tailed distributions where the distribution takes the form of the quantity, x, raised to some negative power ($x^{-\alpha}$). We observe such a pattern in the petitions data gathered from all petitions submitted to the UK government petition platform between 2010 and 2013, which we discuss in Chapter 3. Figure 1.3 compares the distribution of signatures to petitions with what a normal distribution or bell curve would look like, showing how a few petitions receive a very high number of signatures (far higher than in a normal distribution) while most receive very few (far more than in a normal distribution). The actual petition data exhibit a classic fat-tail distribution, contrasting strongly with the classic bell shape of the normal distribution.

These kinds of distributions have been observed many times, not only in Internet-based settings, but also for some natural phenomena,[33] such as the distribution of time intervals between earthquakes, which have a non-normal distribution. Similar distributions have been identified as characterizing policy change in liberal democracies by the political scientists Frank Baumgartner and Bryan Jones, who have mapped the frequency distributions of changes in the US policy agenda in different policy sectors and found the same non-normal pattern.[34] Baumgartner and Jones argue that such a distribution is evidence of a 'punctuated equilibrium' model of policy change, where policy attention proceeds through long periods of equilibrium or stasis, punctuated by bursts of activity and positive feedback during short periods of rapid change. By identifying a similar pattern for the attention of citizens as evidenced by petition signing behaviour, as we do in Chapter 3, we identify a possible role for online collective action in policy agenda setting. That is, where political mobilizations using social media fail, they do not interrupt the period of stasis, and on the

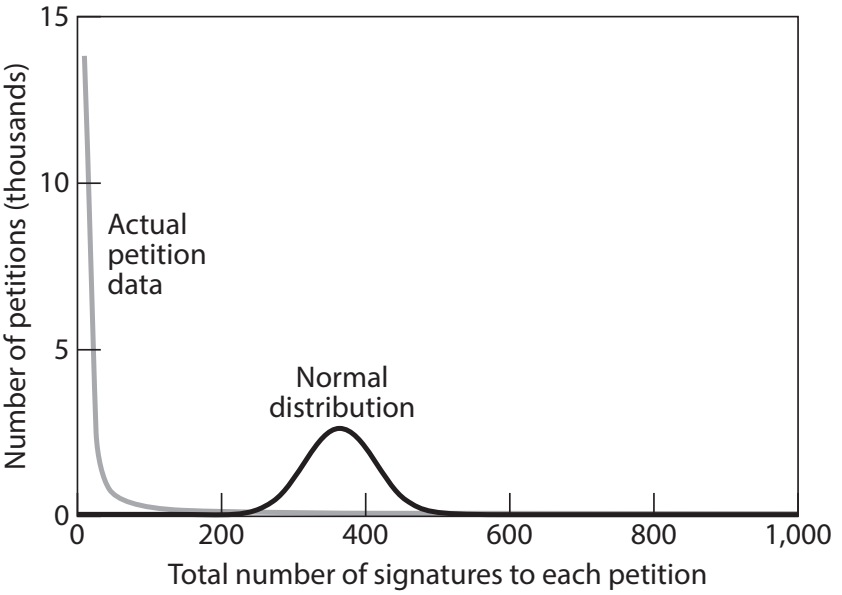

FIGURE 1.3 Distribution of petition signing in the United Kingdom
Note: The line labelled 'actual petition data' shows the actual data for 19,789 petitions to the UK government petitions platform, created between 5 August 2011 and 22 February 2013: comparing the number of petitions (y-axis) with a given number of signatures (x-axis) shows that the data are very skewed with a fat tail. The line labelled 'normal distribution' shows what a normal distribution would look like for the same quantities for a same-sized sample with the same average number of signatures (365 signatures per petition) and a standard deviation 100 times smaller than the one of the actual data (for the sake of diagram clarity).

few occasions where they take off, they initiate or contribute to punctuations. In this way, such mobilizations could inject more turbulence into the policy making process.

Distributions of this kind make it difficult to predict punctuations. Just as it is difficult (but not impossible) to know when and where the next earthquake will happen, it will be difficult to know where the next demonstration or revolution is likely to take off. There are many nascent protest movements across the world; most may never succeed in attaining public prominence, but it will be difficult to predict those that do. If in later chapters we find evidence of thresholds and tipping points as we suggest above, then

this unpredictability will be even greater, as tipping points introduce extra instability and volatility. If, as we hypothesize in Chapter 6, personality rather than demographic difference is structuring thresholds, in terms of the way that people respond to social influence on social media, then contemporary collective action may become even more difficult to model and predict. Whereas we may to some extent predict behavioural change based on demographics where we know the distribution of socioeconomic variables within a population, personality is part of the hidden, unchangeable world of individual difference, not routinely collected on censuses or official statistics, as demographics are.

In summary, social media inject turbulence into political life. They facilitate a non-normal distribution of mobilizations, where most fail and a few succeed dramatically, oiled by social information and visibility and propelled forward by individual thresholds and tipping points. In the rest of this book, we investigate the dynamics behind the success and failure of mobilization via social media, and thereby uncover ways that the small number of extreme events might be understood and even predicted.

COULD PEOPLE MOBILIZE TODAY WITHOUT SOCIAL MEDIA?

On 7 January 2015, two Islamist gunmen burst into the Paris offices of the French satirical magazine *Charlie Hebdo*, and killed ten staff and two police officers, claiming provocation by the magazine's publication of cartoons of the prophet Muhammad. Shortly after the attack, the slogan 'Je suis Charlie', a statement of belief in freedom of expression and solidarity with the cartoonists who died, trended on Twitter and quickly spread to other social media around the world, with Facebook users using it to replace their profile pictures. By the evening, hundreds of thousands of people had gathered in the main squares of Paris in solidarity with *Charlie Hebdo*. One photo posted on Twitter bore the caption, 'This morning, none of these people knew they would be here tonight!'. On

11 January, about 2 million people gathered in Paris for a rally of national unity, with 3.7 million joining demonstrations across France. Could this kind of rapid popular response have happened without social media?

In spite of the plausibility of Internet-based social media having brought about the rash of collective action that has characterized the twenty-first century, it is very hard to pose the counterfactual. After all the French Revolution of 1848 and the wave of revolutions that followed across Europe, the student protests and general strike of 1968 in France, and the revolutions that broke authoritarian control in Central and Eastern Europe in 1989 all occurred without these forms of electronic communication. In the case of the Arab Spring, there seems to be a sense of change bubbling up from the bottom rather than being triggered by changes at the top, as occurred in 1989. As one commentator put it, 'there is something in the air that defies historical parallels; something new to do with technology, behaviour and popular culture'.[35] But we cannot prove that the type of mobilization today is due to social media, rather than any of the other factors that have been identified, such as the intensity of domestic or global financial crises in the aftermath of 2008, or the culmination of decades of declining trust in political institutions. What can be done is to investigate the effects of specific forms of social influence exerted by social media on collective action; to explore how different types of people respond to these influences; and thereby to investigate the mechanics of contemporary collective action. If we cannot always pose the counterfactual, we can at least make a case for a plausible set of relationships.[36]

Whether or not the demonstrations in Brazil or Hong Kong or the uprisings of the Arab Spring would have happened without social media, such platforms clearly played an important role in shaping the kind of transition that followed. After the Egyptian and Tunisian revolutions, the first elections were dominated by the Muslim Brotherhood, a long-standing institution in the region that had played only a minor role in the revolutions, but was one of the only organizations capable of acting as a political party straightaway. In post-revolution Egypt, the election of Muslim Brother-

hood candidate Mohamed Morsi as president soon evoked widespread dissatisfaction among the protest movement of 2011 as he granted himself unlimited powers to 'protect' the nation and the power to legislate without judicial oversight. As one scholar commentating on the failure of the opposition movement to stand up to President Morsi's restrictive constitutional reforms put it,

> In a matter of days during the uprisings of January 2011, these same activists found their status transformed from protestors, demonstrators and strikers, who were members of loosely structured networks, to that of 'revolutionaries'. . . suddenly confronted with the expectation that they would either capture or renegotiate state power. . . . The activists/revolutionaries, however, had no ready plan, grand or otherwise, for the day after. Despite their fearless efforts to challenge the Mubarak regime and its institutions, they had never intended to replace it by themselves. Their focus was on perfecting tools and tactics to change the nature of traditional politics. Along this journey, they did not develop the kinds of skills, including organizational ones that could one day equip them to match the might of the military establishment or the iron discipline and mass base of the Muslim Brothers, whose organization has been in existence since 1928.[37]

These words illustrate how Internet-based activity has the potential to produce disruptive social and political change without the normal organizational trappings of revolutionary change, such as political leaders in the wings, resistance organizations or institutions such as political parties that would otherwise help to sustain anti-system activities and then can help coordinate bureaucracies once the old regime has gone. The interesting question is not whether mass mobilization of the kind that took place in Egypt could have happened without the Internet and social media, but how the nature of the mobilization shaped the nature of the revolution and its aftermath. After mass demonstrations against Morsi in 2012–13, the military moved in, arrested Morsi, rounded up the Muslim Brotherhood, and established a new administration. By May 2014, the former head of the Egyptian Armed forces, Abdel

Fattah el-Sisi, had been elected as president, presiding over a regime that many consider to be as repressive as that of Hosni Mubarak.

NEW METHODS FOR NEW MOVEMENTS

We use two key research methods to investigate the relationship between social media and collective action in this book. First, as well as being a major site for collective action, social media provide new ways to research it. Every participatory act, however small, carried out on social media leaves a digital imprint. So mobilizations produce digital trails that can be harvested to generate large-scale data, which can be retrieved and analysed with software, text- and data-mining tools, and network analysis.[38] These are so-called big data, a trend in the corporate world that has received a great deal of attention since 2012 from journalists, academic commentators, and entrepreneurs.[39] The much-debated term 'big data' typically refers to real-time, transactional data too large to be manipulated in a desktop computing environment. At the time of writing, the term itself was widely considered to be overhyped and losing currency, but the phenomenon remains an important one for social and political science. These are a new kind of data for social science, real-time transactional data that tell us what people in some population are really doing or have done, as opposed to survey data, the traditional staple of social science, that tell us what people think they did or might do in the future. They are more like the data that characterize the physical and life sciences and offer great potential for understanding human behaviour, offering a new lens on the social world. Some claim that tools based on such data will revolutionize the future of social science: 'Just as the microscope and telescope revolutionized the study of biology and astronomy, socioscopes in living labs will revolutionize the study of human behaviour'.[40]

These data also present new challenges, in terms of the technical skills, multidisciplinary expertise, ethical and legal procedures, and computing resources required to harvest, store, and analyse them.

These challenges are being tackled through the field of data-driven computational social science, which has been 'spearheaded by a few intrepid computer scientists, physicists, and social scientists' and the nascent field of social data science.[41] Collective action research has never before had the possibility of data like these, so we consider this a rich approach for this book. In Chapters 2 and 3 we report a new big dataset of all the petitions created on the UK and US governments' petition platforms over three years as well as data from a range of social media such as Facebook, YouTube, Wikipedia, and Twitter.

Computational social science approaches can give us an understanding of the shape of collective action in terms of the network structure or mobilization curves, for example, but (in contrast to a survey) digitally generated data of this kind do not come with demographics attached. When we look at real-time transactional data relating to mobilizations, we do not know who the participants are in terms of their socioeconomic status or indeed any variables of individual-level difference. Other methods are required to study in detail individual behaviour and motivations and the effect of different kinds of application and information environment. So the second method we use to explore the mechanics of collective action is experimentation. In the social sciences, an experiment occurs when the researcher randomly allocates subjects to treatment and control conditions in a randomized controlled trial, the common method in medicine and health evaluations. They are carried out either in laboratory conditions, where there is high degree of control over the environment in which experiments take place and with subjects who are recruited for the research and incentivized via payments,[42] or in the field, where some treatment is applied in a real social setting and many more people can participate. More recently, the Internet itself has been used for experiments, blurring the distinction between laboratory and field, for example where network analysts use experiments to understand the spread of collective activity through online social networks.[43]

Experiments can provide unbiased estimates of how different kinds of information affect participation by randomly varying the

information provided to subjects and observing the effect on their behaviour. Any differences—both observed and unobserved—between a treatment and control group have been removed by randomization meaning that any difference in outcome between the treated and control groups can only be attributed to the intervention. Provided experiments have been implemented without threats to internal validity, they can offer a causal inference of the effect of one variable on another. Partly for these reasons, experimentation is in fashion in the social sciences, and political science is no exception.[44]

The other big development in experimental methods is the use of natural experiments, where observational differences in the real world sometimes can be treated 'as if random'.[45] A regression discontinuity (RD) design can be implemented to appraise the impact of such random differences on the outcome of interest. An RD design uses cut-off points or other random breaks in the generation of outcomes, such as eligibility criteria or boundaries, with the assumption that there is a random distribution of observations around these points that can be analysed as if they are in a randomized experiment. Natural experiments can be useful when it is very hard to randomize treatments and also have a special place for the Internet where many of the designs of platforms vary how citizens see information as if by chance. There are also so-called quasi-experiments, where the differences over time or place are not as if random but can be analysed like experiments.[46] Examples include interrupted time series where breaks in programme inputs can be evaluated using a statistical model of their change over time in comparison to other groups.

We use four experiments in this book. In Chapter 3, we take advantage of a change in the UK government's petition platform to include information about which petitions are most popular. Having collected data before and after the change, we are able to make some direct claims about the effect of the change in a quasi-experimental design, and we are able to analyse the point at which subjects can see the signatures of others in a natural experiment using a RD design. In Chapter 4, we report on a quasi-field experi-

ment, conducted remotely via a custom-built interface that tests the influence of varying levels of social information on people's willingness to take part in collective action, and discuss a field experiment carried out with mySociety, a social enterprise that offers web support for those who wish to contact their political representatives. In Chapters 5, 6, and 7 we use data from a large-scale laboratory experiment where we simulate a social media environment to test the relative influence of social information and visibility, investigate differences according to personality, and appraise evidence of different thresholds as discussed above.

CLASSIC WORKS OF COLLECTIVE ACTION

In this book, we set out our theories of Internet-based mobilization and then examine and test different features of online environments on social media to uncover the mechanics of contemporary collective action. Are we proposing a new theory of collective action? The answer is no or largely no. This book is inspired by the classic books in social science, in particular Mancur Olson's *The Logic of Collective Action* (1965) and Russell Hardin's *Collective Action* (1982).[47] We broadly agree with the existing collective action framework developed by Olson in 1965 and his followers since that time. The fact that people act collectively on social media in no way changes the assumptions of public choice models, for example, that individuals are rational actors who maximize their utility by comparing the costs and benefits of any action. But social media do change the costs and benefits for individuals to participate politically.

We use a rational choice framework to reanalyse the decisions people make in these new conditions. In common with other scholars, such as Lupia and Sin, Bimber et al., and Bennett and Segerberg, we argue that important parts of the expected benefits and costs of collective action need to be reexamined and reworked for online contexts.[48] Our theoretical model focuses on the cost-benefit equation for individual people as they consider whether or

not to undertake a participatory act aimed at provision of public goods. For example, one of the experiments reported here shows that visible social information about the behaviour of others increases the efficiency of a mobilization and so reduces the aggregate costs of participation. Likewise, visibility, by shaming certain types of individuals to contribute to the public good mobilization, decreases the monitoring costs that Olson considered important, increasing the viability of large groups. Effective use of social influence of this kind can reduce the need for leaders to apply selective incentives (which can be expensive) and reduce the need for well-resourced leaders to apply them.

Diverting from this school of thought, however, we think that the work of Olson can be applied to the problem with a more subtle and varied conception of individual psychology in order to understand how the effect of social influence in the form of social information and visibility might be based on different personality types, which is explored in Chapter 6. As we investigate in Chapter 7, personality may be the clue to someone's threshold, allowing us to gain understanding of how thresholds are distributed in a population. Drawing on work both from within and outside of political science, we meld a rational choice Olsonian model with a political psychological model emphasizing personality and context.[49]

MODERN-DAY COLLECTIVE ACTION CLASSICS

There are a number of works relevant to the relationship between collective action and social media that have already started to stand the test of time as modern-day classics, some from outside political science. Information technology in general and, more recently, the Internet in particular have long been identified as tools that have the potential to transform collective action and radically empower citizens in relation to the state or corporations. But it was in the early 2000s when some political scientists turned their attention to the Internet, reevaluating Olson's theories of collective

action in the light of recent developments. Bimber, and Lupia and Sin reconsidered the logic of participation in the light of widespread use of the Internet, arguing that it affects opportunities and incentives that are relevant to collective action, advantaging some collective endeavours and endangering others.[50] These were surprising findings because the overwhelming conclusion of most of those who followed was that Internet-based technologies mainly reinforced earlier participation patterns, with those that had habitually participated participating more, and inequalities in participation becoming greater.[51] Later research, however, has started to evidence the 'new mobilization' thesis, showing that the Internet may be facilitating the mobilization of new individuals and groups of individuals who have traditionally not participated.[52]

The phenomenon of online mobilization, participation, and protest has received most attention from scholars operating outside political science. The law professor Yochai Benkler's *The Wealth of Networks* was a groundbreaking intellectual paean to the potential of peer production, which inspired a whole generation of scholarship on the Internet.[53] His book articulated for the first time how Internet-based platforms were allowing individuals to produce content, collaborate, and add value in a whole range of contexts, leading to an empowerment of citizens with potentially transformative effects for both the economy and society. Shirky's *Here Comes Everybody* was also a powerful impetus to the idea that in online contexts people could 'organize without organizations', although the focus of his book is on networks, groups, and what he calls 'pseudo-organizations', rather than the individual decision-making processes we deal with here, and is based on a mixture of individual anecdotes and economic theory, rather than empirical evidence or research.[54]

Some recent works do focus explicitly on collective action online. For example, Chadwick's *Internet Politics: States, Citizens, and New Communication Technologies* is a highly useful review of Internet-based political activity in general, with a chapter on 'Interest Groups and Social Movements' reviewing the literature at the time on collective action, but not providing the research-based

analysis that this book puts forward, nor does it really employ the collective action approach that we use.[55] Chadwick's more recent work, *The Hybrid Media System: Politics and Power*, examines what he terms the political information cycle, exploring US election campaigning and the norms of operation for political organization, mobilization, and influencing the news agenda followed by organizational phenomena such as WikiLeaks.[56]

A prescient and seminal work investigating the relationship between information technology and politics was Bimber's *Information and American Democracy*, which introduced the idea of postbureaucratic pluralism as an organizational response to information abundance, where the organization of collective action requires fewer resources and informal association becomes more important, a discussion we engage with in Chapter 8.[57] Bimber's more recent work, *Collective Action in Organizations*, shares with ours the assumption that digital media are a vital and changing element of the context in which individuals decide to participate in collective action, but takes a different unit of analysis.[58] Although that book discusses extensively the phenomenon of organizing without organizations, the focus is to 'bring the relevance of formal organization back into contemporary collective action' (as its title suggests), arguing that digital media enable formal organizations to offer much broader opportunities for people to establish their own participatory styles.

Another programme of work with high relevance to ours is that of Lance Bennett, culminating in his 2013 book (with Segerberg), *The Logic of Connective Action: Digital Media and the Personalization of Contentious Politics*, and summarized in earlier articles.[59] In his most recent work, Bennett focuses on the Occupy movement and the extent to which it has developed without formal organizations at its core, but rather with self-organized networks of individuals with digital media platforms as organizing agents. The work reports valuable empirical qualitative research into why movements such as Occupy seem to succeed in gaining the critical mass of support to enable them to grow and sustain themselves over significant periods of time. However, in common with Bimber

et al. and much other research in this burgeoning field, it focuses on successful mobilizations, rather than looking at the generic phenomenon of Internet-based mobilizations.[60] It cannot, therefore, and does not try to identify what is distinctive about those that succeed in contrast to the vast majority that fail as we do here.

Some of the work we draw on comes from even further afield; engineering, computer science and physics. From the earliest days of the Internet, physicists and engineers turned their attention to its network structure and how information diffuses and spreads in Internet-based networks, and some of these scholars have played a role in developing the field of computational social science, as noted above. The physicist turned sociologist Duncan J. Watts has played a key role in developing the 'science of networks'[61] as a way of understanding the role that network structure plays in determining system behaviour. In *Six Degrees* he replicated the earlier work of Stanley Milgram in order to demonstrate that Internet-based communication represents a 'small world network', characterized by high local clustering and short global separation, where each individual participant is on average only 'six degrees' or less away from every other, as in Milgram's analysis of offline communication networks.[62] Watts and other researchers in the growing field of computational social science have continued to explore patterns of information and behaviour diffusion and spread across Internet-based networks.[63] This work is drawn upon here, as is the extensive work on network diffusion carried out by James Fowler and his research team.[64]

WHAT THIS BOOK IS NOT ABOUT

This is a book about individual people and the influences that Internet-based information environments exert on them, and how such influences affect their behaviour. It is not a book about organizations, although, of course, people work within constraints set by organizations, like a petition site for example, and these constraints need to be taken into account.

This book is not arguing that the political system has been completely reinvented as a result of the Internet and social media. We are not arguing, for example, that institutions, organizations, or hierarchies are disappearing just because people use social media as that would not be a credible argument. They remain important influences on individual behaviour, but in the analysis presented here we have not analysed these influences.

This is not a book about people who do not use the Internet. We start from the assumption that most contemporary collective action has an online element and some action takes place entirely online. Most forms of collective action and political participation are moving in this direction. According to the World Bank (as shown in Figure 1.1), by 2014 Internet use had reached over three-quarters of the population in North America and Europe, significant proportions of East Asia and the Pacific, Latin America and the Caribbean, and the Middle East and North Africa, and nearly 20 percent of sub-Saharan Africa. Obviously, large portions of these populations still do not have access to the possibilities for collective action that we analyse here, although it could be argued that many of these are exposed to Internet influences, through friends, family, colleagues, traditional media sources, and street-based demonstration and protest.[65] But having identified social media use as an important element of contemporary collective action and noting that Internet penetration continues to grow rapidly (particularly in Africa and Asia), we consider our analysis of the dynamics of Internet-based political behaviour that can be applied to the 34 percent of the world's population that do use the Internet as a representative phenomenon, and one that will be a valuable pointer to future political behaviour.

This book does not aim to explore normative political theory about what kind of democratic interaction helps us lead the good life or make moral choices. We are interested in the theories and models of empirical political science. Neither do we look at deliberation or discourse here. The Internet in general and social media in particular have been much touted as venues for democratic expression, the new public sphere to replace Habermasian

coffeehouses.[66] We do not examine these claims here, but note that the transformative potential of the Internet has yet to be demonstrated in these studies.[67] Implicitly, the approach we offer is an alternative to deliberation: rather than social media changing beliefs and values, they can harness existing values and behaviour, and coordinate them more efficiently to achieve collective goals. Social media revive the debate about the pluralist potential of democratic and public institutions in a way in which they can coordinate a large number of fixed preferences and give weight to more intensely held preferences. Of course this could be complementary with the encouragement of a more deliberative process, but it could more plausibly operate independently.

We do not look a great deal at the end point of collective action, that is, the actions of the state and policy change. Neither do we look at the interactions between citizens and the state, nor at the Internet-based activities of government itself, in terms of digital or 'e-'government. That is another subject, and one upon which one of the authors has already written extensively.[68] We do, however, consider possible governmental responses to new forms of collective action in the final chapter.

WHAT THIS BOOK *IS* ABOUT

Our aim is to analyse the effect that information provided by or presented to other people has on any one individual, and how cumulative tiny acts of political participation—'micro-donations' of money, time, and effort—scale up to form (or do not form) a mobilization. These are very small amounts of time, effort, or money contributed by individuals, which are insignificant on their own but when added together across hundreds of thousands of people make up very large sums. With these resources, the many small acts that citizens perform from day to day have large consequences when added together. Moreover, the theory of collective action tells us that the total of these actions is more than the sum of these parts, because of the tipping points and dynamic processes

we discuss. We are particularly interested in the impact of social information and visibility and how these forms of social influence encourage feedback between potential participants and generate the impulse to undertake collective action. The impact of these influences is differential, depending on the personality and dispositions among individuals, which creates the possibility of leadership and activates people who can overcome the high start-up costs of engaging politically.

We are interested in developing a new understanding of the workings of political systems, and where the Internet and social media render existing institutions unfit for purpose. Our key aim is to develop a model of contemporary collective action appropriate for such turbulent times. We draw together the experimental and big data evidence from the following chapters, providing the reader with a methodological toolkit for understanding collective action in the twenty-first century.

We want to know what model of democracy appears to be emerging in the era of online collective action. Of all the *isms* of normative political theory, we argue in Chapter 8 that pluralism emerges as the model of democracy with most to gain from the political trends and patterns we have observed in this book. But this is not the ordered, organized vision of the early pluralists such as Robert Dahl, based on interest groups as the basic building block of society. Rather it is a chaotic, turbulent pluralism, characterized by collectives of individuals contributing micro-donations of resources, the majority of which fail but a minority of which succeed in securing political change. As in the past it may be a minority that trigger or drive forward successful revolutions or mobilizations for policy change, but the process from expression and dissemination of dissatisfaction and dissent to rebellion, revolt, or action on the streets is made quicker and more immediate because of real-time feedback among a huge majority of followers. This phenomenon poses challenges to governments in terms of forming a legitimate response. But it also offers possibilities in terms of using the data that social media provide—the kind of big data that we use in this

book—to understand the needs, preferences, and behaviour of citizens and build them into policy making.

Understanding the dynamics of collective action in chaotic pluralism and the ways in which states can respond will be a vital task of political science in the future. We believe that the current period provides a unique time to understand the turbulence of contemporary politics, as we transition from a world dominated by paper, broadcast media, and face-to-face communications to a world where the Internet is the ubiquitous medium through which communication and coordination take place. This transitional period, the first two decades of the twenty-first century, when we can directly observe and reflect upon changes in political practice, provides the best chance of understanding the dynamics of the new political world.