Title: Environmental nongovernmental organizations' digital media practices toward environmental sustainability and implications for informational governance

Authors:

Eugene Nulman[a], Suay M. Özkula[b]

[a] Centre for Critical Social Research, Birmingham City University, City North Campus, Perry Barr, Birmingham B42 2SU, United Kingdom and Centre for the Study of Social and Political Movements, University of Kent, Canterbury, CT2 7NF, United Kingdom

[b] School of Social Policy, Sociology, and Social Research, Cornwallis North East, University of Kent, Canterbury, CT2 7NF, United Kingdom

* Corresponding author: Nulman, Eugene (E.Nulman@kent.ac.uk), present address: School of Social Sciences, City North Campus, Perry Barr, Birmingham B42 2SU, United Kingdom

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Abstract

This paper reviews the literature on environmental nongovernmental organizations' (ENGOs') digital communication practices in the context of the growing use of digital technology in the public and political sphere. Specifically it explores the existing and potential uses of digital tools in information flows across a range of stakeholders and publics by ENGOs while paying attention to the processes and determinants of those practices. The review spans a cross-section of Global North and South ENGOs to understand the contextual factors of digital technology use, and assess the implications for a move from conventional to informational governance. We find that ENGOs are not utilizing digital technologies in advanced ways, curbing the speed at which informational governance is replacing conventional governance.

Introduction

Environmental nongovernmental organizations (ENGOs) have attempted for decades to influence the design, legislation, and implementation of environmental sustainability policies. Digital technology has become important for ENGOs seeking to influence these policies due to its role in increasing information flow to policymakers from organizations and their constituents which has been a persistent and central aspect of the work of many ENGOs across a wide range of policy domains concerned with environmental sustainability [1,2]. By using digital technology, ENGOs have been engaging in practices that pose a challenge to conventional governance structures. The aim of the review is to explore how ENGOs use these digital technologies, what contextual factors determine that use, and how those practices impact ENGOs' ability to spearhead a transition to a new form of governance – information governance, which places information at the center of decision-making processes and threatens the hierarchical nature of conventional governance structures found within the state (see other articles in this special issue).

ENGOs have been seen as particularly early risers to the adoption of new digital technologies [3,4*,5,6,7,8,9]. Digital technology includes internet-based social media and refers to a sum of technologies based on a code existing of 0s and 1s [10,11]. In particular, digital technologies are able to operate through an online connection such as computer and smart phone technologies. They often have multiple uses and are not confined to specific structural, organizational or ideological boundaries and are therefore particularly useful for an environmentalism that is heterotopian and multi-scalar [12]. In many ways ENGOs have already shown great success in their integration of digital technologies for organizational goals. Major ENGOs including Greenpeace, WWF and Friends of the Earth are among the top ten (of one hundred) UK charities analyzed on their use of social media in the 2012 and 2013 Social Charity Indices [13,14]. In addition, ENGOs have applied digital technologies in various ways including directly communicating with policymakers regarding sustainable policy, and indirectly affecting the policymaking process through the development of stakeholder support [15,16,17].

However, beyond digital technology's costs and benefits to ENGOs, the emergence of these new Information and communications technologies (ICTs) has altered the forms of information flow between ENGOs, policymakers, and general publics – leading to a new of governance in which information is a vital resource. Those changes to information flows are predicated on the quality and quantity of actors' uses of digital tools, which are themselves resultant of various processes. The increased use of digital technologies provides a platform for ENGOs to engage in the contestation of an information flow from government to citizen by (1) becoming legitimate actors (outside of the establishment) who can communicate via digital networks to the public regarding environmental concerns and policies, (2) taking part in adaptive environmental governance processes outside of official state channels, and (3) challenging the spatial scales of power that lock environmental decision-making within the sovereign borders of nation-states despite the transnational properties of environmental harms. This review will first examine the opportunities these technologies provide ENGOs for engaging in conventional and alternative interactions between the state, civil society, and the wider public. This is followed by a review of the empirical literature on existing practices and their determining features, covering a broad cross-section of ENGOs across the Global North and South. It concludes with a critical evaluation of ENGOs' role in the transition from conventional to informational governance, finding that while the

opportunities are available to spearhead the transition, ENGOs' pragmatic use of digital technology accepts more than challenges the conventional governance structure.

Sources for the review were selected through keyword searches that included 'environmental nongovernmental organizations', 'environmental NGOs', 'ENGOs', 'environmental interest group', 'environmental "activism', 'environmentalism' or 'environmentalists' and 'social media', 'ICT', 'digital', 'online', 'web', 'cyber'. The texts were then checked for their relevance in the area and ensured that all reviewed articles dealt - at least in part - with ENGOs and their uses of new technologies. The analysis presented here is a review of the literature, which appears to be growing as digital technologies become increasingly incorporated into the work of ENGOs.

New opportunities for ENGOs in the digital sphere

New technologies have opened up access to an unprecedented public sphere [5], providing a plethora of potential uses for ENGOs. Building off existing typologies regarding NGOs' practices [6,18,19], we can distinguish five ways ENGOs applied digital tools in their attempts to influence environmental policy: direct communication, information broadcast, media attention, appeal to action, and reinforcement. Each of these will be expanded on below.

Digital tools are used by ENGOs to engage in information flow directly with elite stakeholders (direct communication). Early digital tools such as emails have facilitated a change in governance by providing greater direct access to policymakers than had previously existed, allowing flows of information to more easily move towards centres of legislative power. This has been institutionally acknowledged in different countries where email has become the official or preferred form of public communication with policymakers [20,21] (a). The increased and institutionalized use of electronic mail and other digital tools such as policymakers' personal social media accounts [22] also encourage their adaptation among ENGOs, creating a cycle of reliance on such tools for direct information flow. Newer digital technologies provide even more interactive capacity to engage with policymakers in diverse ways and have also become institutionalized to some degree [23], suggesting that additional digital developments will increasingly be integrated in governance practices and within the repertoires of ENGOs. The widespread use of Web 2.0 platforms, which describes tools that are dialogic and facilitate increased digital interaction, fosters greater democratic deliberation within the information flow process. Additionally, digital media can be used to communicate ENGOs' actions to policymakers such as online petitions or e-protests. These and other tools which allow public communication, such as Twitter, tie together the web of information between the public, stakeholders, and policymakers.

Furthermore, digital tools provide a host of other ways in which ENGOs can facilitate the spread of information to publics via a broadcasting model (information broadcast). Organizational websites and social media profiles provide broad publics with easy-to-access portals to information, enabling the networking of a diverse range of actors across vast distances [24]. These technologies also allow for localized customisation through language features and country-specific websites. Such information flows, regarding environmental science, campaign or policy issues, can help shape public opinion and increase issue salience, two features that are seen as important in existing governance structures

[25,26,27]. At the same time the new information flows can influence organisations' internal governance structures as new information channels and platforms in digital space will also influence flows of information internally.

Using new digital channels, ENGOs can additionally address niche or specialized audiences including mass media outlets and thereby foster media attention. Media attention refers to the use of online tools to attract mass media coverage through the creation and publicity of press releases or communication directly or indirectly with media outlets and representatives over digital platforms [18,28]. This allows ENGOs to indirectly communicate with various audiences including policymakers and local, national, and international publics via a "mediating" platform, taking advantage of the fact that news media are increasingly using digital tools such as social media to gather information [29]. This further allows ENGOs to strengthen already existing relationships with the media through additional channels, and attracting the attention of news media outlets that operate solely in the digital realm, such as blogs and Internet-based video newscasts. As state institutions use the mainstream mass media to communicate information to the public, so too can ENGOs attempt to use such media outlets while simultaneously engaging with policymakers.

Digital technology also allows ENGOs to make requests of group members or the general public to take action regarding an issue or policy (appeal to action). This facilitates information flow about campaigning events to policymakers and other stakeholders through online or offline actions [30]. Appeals to action can take different forms from the signing of online petitions, to calls for communicating with policymakers, to spreading messages that may potentially go viral, to attending an online or physical protest [5,31,32,33,34]. Digital technologies used for online mobilization by ENGOs have proven popular [11,35,36] and been said to allow those unable or unwilling to put themselves in bodily risk to participate actively in campaigns, reducing the costs of taking action [37,38*]. However, there have also been concerns regarding the simultaneous reduction of physical activism as some decide to only engage in action by digital means [29,33]. This reduction in physical engagement may adversely impact the role of ENGOs in facilitating information flow to stakeholders. Conversely, others have found digital technologies spurred physical activism by informing people outside of physical ENGO networks about physical actions [37,39].

Finally, reinforcement refers to the use of digital communication tools to maintain commitment to an ENGO or campaign. The Internet creates more links between individuals and ENGOs as it offers existing supporters new opportunities to engage with the organisation and its other supporters through interactive features. Reinforcement can be further achieved by directing information toward those already actively engaged, or those that participated in previous actions. This communication may consist of information about the organization itself but can work to strengthen or solidify identification with the group and encourage future engagement [40]. For example, communication directed to already engaged individuals can remind individuals of the organization and its work, and provide incentives reserved for members. Such incentives can include updated information on member benefits and even exclusive digital spaces reserved for members [41]. Some ENGO representatives view their uses of digital communication as purely for reinforcement since their communication was directed primarily

toward those already engaged or interested in their campaigns [41, 42**], an important critique to the power of digital technology in facilitating the information flow.

The Uses of Digital Technology among ENGOs

Although ENGOs have been early to adopt digital technologies into their work, more recent research has found a hesitance on the part of ENGO leaders and staff members to fully embrace digital technologies and utilize the latest digital tools. This partially grew out of concern that online interaction would not produce physical action [41], along with other worries regarding surveillance, alienation from nature, and a general overreliance on communicating in a digital space [3,43**]. Nevertheless, essentially all ENGOs utilize some form of digital technology [41], particularly larger established ENGOs [44].Some general preferences can also be seen in their digital practices, including new media pragmatism and monologic technologies [45**] and a convergent use of online and offline practices.

Monologic communication refers to the one-directional use of technology which does not allow for user interaction [45**]. Monologic communication has been predominant within traditional broadcast media as well as Web 1.0. Web 2.0 applications allow for two-way communication and have emerged in the last decade with platforms such as Facebook and Twitter. Although these new media now allow for two-way or 'dialogic' communication, it seems that many ENGOs have not made great use of those features, keeping largely to a more traditional broadcast approach [45**].

Likewise, ENGOs often take a pragmatic approach to using digital tools, weighing their use against physical activities while paying attention to the particulars of a campaign or action. For example, lobbying ENGOs found that physical lobbying was more important to the organizations than the use of digital tools [21,41,43**], often due to the perception that in-person communication fostered greater levels of trust [41]. While organizations directly trying to lobby policymakers found it more expensive to employ lobbyists than to lobby via digital technology, this form of digital activism was seen to have poor returns [41,46], suggesting that digital tools are not a panacea for enabling the flow of information directly from ENGOs to policy gatekeepers.

The pragmatic approach often entails fitting digital tools into predetermined strategic choices for addressing the broader aims of the ENGOs [21,32,43**,cf. 46] similarly to other strategic choices [47]. Many environmental organizations often did not employ digital tools beyond email and Internet [21] and were found to prefer digital tools that extended rather than supplemented their physical campaigning. Supplementary forms of digital technology that expanded the functions and repertoires of organizations, including the use of digital gaming and mapping software [48,49], were used occasionally to broadcast information, but tools that extended existing forms of physical tools into the digital sphere, such as e-newsletters or email [41,43**], were more readily used [21,50] and often alongside or following physical actions. Likewise, lobbying groups found digital information flow more successful after face-to-face lobbying had developed networks that could later be engaged online [41].

Often ENGOs preferred specific types of digital tools. For example, campaigns frequently included tools with limited interactive capacities. Dialogic channels of communication were found to be underutilized [51] partially because they required increased dedication of resources to digital technologies and knowhow [31] and partially because ENGOs preferred to maintain control over their brand, and therefore publicly accessible content. Open commenting and message boards were seen by some practitioners as potentially harmful if individuals posted information that would undermine or attack the organization and therefore such platforms were not utilized by some ENGOs [41]. This means that ENGOs' role in deliberative informational processes was limited by their desire for control over informational content being delivered to stakeholders and publics. Nevertheless, more recently the use of dialogic tools has been seen to increase [42**,52], even in non-post-industrialized countries. For example, a recent survey of Turkish ENGOs found that 75% had at least the capability for user-response [45**]. This suggests that the increased use of dialogic digital tools is now being reflected in use by ENGOs, but generally they were no longer digital trailblazers.

For ENGOs, the pragmatic approach to digital technology eventually led to a convergence of online and offline tools [41]. A survey of ENGO representatives found that 63% would increase their virtual activism if they could [41], even though it was not perceived as an organizational priority [21], suggesting that ENGOs assess the value of digital tools in the flow of information as not negligible. Even where an ENGO began its life purely in the digital realm, growth prompted the addition of a physical component to its work [43**]. While ENGOs prefer to use a mixture of physical and digital tools, a consensus on the balance between effective digital or physical practices has not been reached [4*,43**].
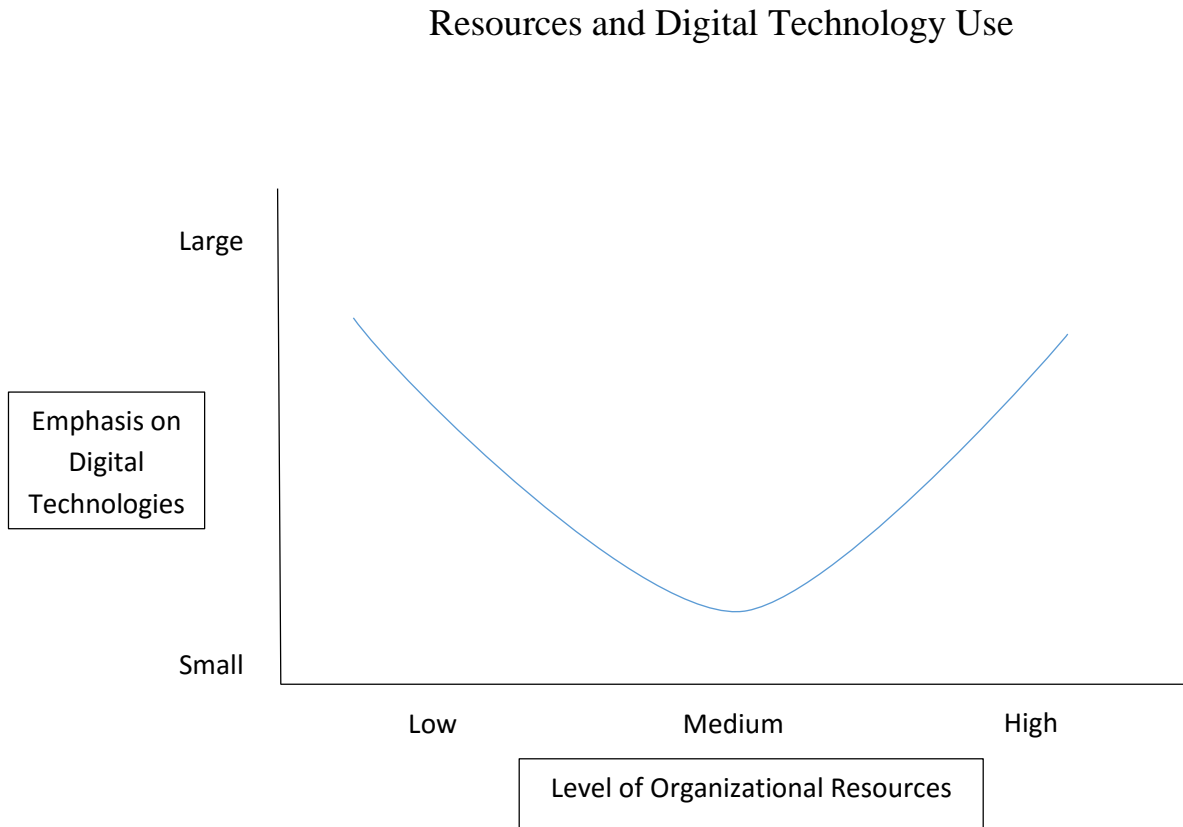
These insights from the literature point to a fairly conservative use of digital technologies by ENGOs, suggesting a hesitance to use these tools to directly challenge existing governance structures in favour of a new informational governance framework that would likely broaden their influence. This appears to stem from strategic decision-making [47] on the part of ENGOs where various processes and determinants help to develop a context for interpreting the value of these technologies on organisational work.

Processes and Determinants of the Use of Digital Tools

ENGOs' digital practices were tied to several factors: resources, digital competencies, geography, and geopolitics. Resources played an important, but non-linear, role in explaining digital technology use [18,20,21,31,43**,53]. Resources and the importance of digital technology use in an organization can be pictured as a parabolic curve (see Figure 1). Fewer resources are associated with a reliance on cheap digital technologies such as free blogs, free easy-to-use websites and open-source software [21,54*]. Organizations with greater resources often develop their physical campaigning abilities, organizational capacity (e.g. office space, staff) and conventional media use [46], with limited time and resources to dedicate to advanced digital technology training or the hiring of digital specialists [17]. The Taiwan Environmental Information Association is an example of this convergence process in reverse, with the association starting off as an organization that existed solely in the digital realm and increasing its investment in and attention to offline organizational work as it grew [43**]. Usually only ENGOs with

very high levels of resources (e.g. Friends of the Earth, Greenpeace [42**]) can employ staff that specialize in digital technologies, as well as invest in digital resources that may otherwise seem superfluous to smaller organizations.

Figure 1

Resources and Digital Technology Use

Furthermore, digital technology use appeared to fluctuate with the scale of the campaign and its geographic epicentre. Partly that fluctuation can be explained by the lack of connectivity in certain regions, making online mobilization and digital communication considerably difficult [32], but other geopolitical differences also intersect with geography in the use of digital tools. While NGOs in poor countries have seen digital technology in a particularly positive light, noting the 'Zapatista effect' of digital tools strengthening the informational power of organizations built by and for poor and marginalized people [55], lack of resources and competencies can restrict the use of these technologies. In these contexts, larger, more financially endowed organizations that often get support from international bodies have more digital connectivity, allowing them to attract greater attention and exacerbating the gap between them and poorer NGOs with less connectivity [55,56]. However, the increasing availability of internet may spur organizations' interests in utilizing online tools and social media [57], fostering a development of competencies among smaller ENGOs. Until this time however, the use of digital tools in facilitating information flow remains the ability of the relatively privileged.

Additional differences in digital technology use could be seen across geographies. For instance, a survey of ENGOs in Western Australia in 2008 found that less than a third hosted websites and fewer than 10% had blogs [21] while survey data of Canadian ENGOs published in 2009 had found that over 90% had websites and 63% were utilizing blogs and allowing members to subscribe to updates [31]. One important distinction appeared to be a rural / urban divide. Local rural groups utilized digital tools infrequently [21,38*,58]. However, such groups can attempt to 'jump scale' to national and international levels of importance and policy interest by using digital technologies, disseminating information internationally, heightening international scrutiny of policies, and building international pressure [17,59,60]. Local organizations can also jump scale by using digital tools to form networks that can facilitate information flow between various groups across local areas and across countries (e.g. AirportWatch [61]; and Global Anti-Incineration Alliance [62]). This is made less difficult by the borderlessness of these new technologies [32], although other barriers such as language can still limit digital campaigning and information flow across linguistic borders [17]. However, the dynamism of the digital sphere provides an opportunity to overcome even these barriers through the improvement of increasingly adequate translation software.

Other determinants of digital media use include geopolitical concerns regarding surveillance. While digital entrepreneurs attempt to expand and transform digital capabilities, authorities also utilize digital tools to control the behaviour of publics. ENGOs in areas with severe digital restrictions are wary of the spatial surveillance and control of digital technologies by political regimes. Authoritarian governments have often surveilled online activities [4*,43**] and taken steps to build barriers to access [32]. On the other hand, it is often in these contexts that digital spaces represent a safer alternative to physical forms of lobbying or claims-making on states [4*]. Digital information flow becomes a politicized and policed practice in these contexts. Even in countries with greater freedoms in the digital sphere, the recent exposure of governments' digital data dragnet suggests that digital information leaks are persistent, even when information is meant to be private. This, however, is more likely to affect the work of environmentalists using illegal tactics than the work of ENGOs.

Resources, digital competencies, geography, and geopolitics play a role in how ENGO leaders interpret the utility of digital technologies relative to offline tools. Where finances and digital competencies are limited, campaigns are smaller in scale (either of membership or of political target), and legal restrictions to such technologies are high, ENGOs often but not always [4*, 43**] reduce their use of digital technologies. This is in contrast to large, relatively resource-rich international organizations that remain innovative in their use of such tools, facilitating information flow across networks in ways that may hasten a challenge to conventional governance structures.

Discussion

ENGOs are using digital technologies as a new means of communicating. This use of new ICTs is also helping to shape a new form of governance that places greater authority on information, and on organisations that produce and distribute information. By expanding the use of digital technologies, ENGOs can become central to information distribution concerning sustainability and reduce the reliance

on information from conventional centers of political decision-making. However, this process is being stagnated by ENGOs' relatively constrained use of digital technology, and their reliance on using these tools to extend existing physical practices rather than implementing new digitalized practices. Even in cases where digital technologies were actively utilized, many ENGO representatives hesitated to attribute too much effectiveness to them relative to offline activities, partially due to an acceptance of conventional governance structures. It is important to note that many studies cited here are already outdated despite their recent publication, largely due to the speedy development of new technologies. However the governance relations between state authorities and civil society are likely to adapt slowly to the rapid changes taking place within the digital arena.

While ENGOs' uses of digital technologies currently have a limited role in the flow of information that impacts on governance, critical variables in determining the future of that role may be dependent on the expansion of the digital sphere to additional publics, the public's reliance on digital tools for information flow, and policymakers' use and institutionalization of these tools within existing governance structures and institutions. On the other hand, the digital sphere's dynamism provides great possibilities for change in use once basic infrastructure is in place, generating a much greater level of uncertainty regarding the stability of conventional governance processes. Shifts in accessibility and cost may mean that smaller ENGOs could increasingly benefit from new digital technologies due to their traditionally confined options for information flows with decision-makers, allowing them to jump scale and broaden competition for recognition within the digital domain. This too could hasten a transition to informational governance.

For the time being, other structural, intersecting factors are also inhibiting the transformation of governance and shaping ENGOs' current use of digital technologies, including low levels of digital competencies, restrictive financial and human resources, and various geographic and geopolitical factors. Thus, while the digital age has brought new opportunities for ENGOs aiming to increase their influence on policymaking regarding environmental sustainability, it has also brought new challenges. Informational governance is still dependent on various factors and although the digital age has theoretically opened space for ENGOs to play a key role, ENGOs are not at the forefront of digital users or in challenging conventional governance via digital technologies.

Endnotes

a. Governments have also utilized digital tools to influence and gain information from environmentalists and the public on issues of sustainability [4*,63,64].

b. This difficulty is exacerbated by publics that choose not to engage with digital technologies for reasons that include 'material and cognitive deficiency', 'technophobia' or 'ideological refusers' [58].

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