

Supplemental Appendix for: Using Radical Environmentalist Texts
to Uncover Network Structure and Network Features

Introduction

In the supplementary material provided below, we first present descriptions of the complete set of United Kingdom (UK) environmental groups that are included in our radical environmentalist group list. Note that while some of these groups clearly speak to issues that fall outside of the environmental arena, we refer to each group as a radical environmental group here given their being listed as a key contact, and frequently referenced in the text, within the Do or Die (DoD) publications.

Following our presenting of each group, we examine the networks and network statistics associated with the UK environmental group networks derived from the 6 and 18-sentence sequence documents. We then similarly evaluate the group co-occurrence properties—and corresponding group network characteristics—that arise when we use an alternate starting point in constructing our 12-sentence sequence documents. This is followed by a list of example group pair discussions, taken from our primary 12-sentence sequence documents. We then present and discuss a series of structural topic model (STM) results obtained when using topic numbers of 10 and 20, as opposed to 15. Finally, we reevaluate our primary STM results while including an additional control for the temporal progression of our texts, and then present the topics and topwords for our group-level STM (which was used in the construction of our cosine similarity metric).

UK Environmental Groups in Sample

This section describes the 143 UK environmental groups that are included in our sample. Where possible, information on each group or organization’s background is taken directly from that group’s description within the DoD magazine. Specifically, the following UK environmental groups and organizations are included in our master list:

1. **1 in 12 Club** is a Bradford-based, anarchist-oriented social club, described by DoD as a “[l]ong-running autonomous social centre” (Do or Die, 2003, 377).
2. **56@ Infoshop** is a Walworth-based social centre described as an “[a]utonomous radical infoshop with excellent anarchist archive and much more” (Do or Die, 2003, 378).
3. **5th May Group** is a UK-based group of “Kurdish and Turkish anarchists in exile [who c]ampaign on local issues and compulsory military service” (Do or Die, 2000, 228).
4. **Advisory Service for Squatters** is a UK-based organization focused on providing legal assistance for the homeless.
5. **ALF Supporters Group** is a UK-based group that seeks to provide material and symbolic support to animal rights activists, and members of the Animal Liberation Front (ALF), that have been imprisoned in the UK; in addition to promoting a more general understanding of these activists’ activities. The group operates independently to the ALF.
6. **Anarchist Black Cross** is the UK-based arm of an international activist group that seeks to provide material and symbolic support to political prisoners.
7. **Anarchist Federation** is a UK federation of “[a]narcho-communists [dedicated to] the abolition of capitalism and the state” (Do or Die, 2003, 377) and publisher of both a regular newsletter and the *Organise!* magazine.
8. **Anarchist Teapot Action Kitchen** appears to be an earlier (or related) manifestation of the Anarchist Teapot Mobile Kitchen (see below). Not much information is available online, but this organization’s main activities appear to be oriented around providing free food and drink at gatherings, concerts, and protest events involving various extremist groups. The Anarchist Teapot Action Kitchen was maintained as a separate group from the Anarchist Teapot Mobile Kitchen (described below) in our analysis given that the DoD texts seemed to imply that these groups were distinct, wherein stories typically referenced each group without giving mention to the other.
9. **Anarchist Teapot Mobile Kitchen** is a Brighton-based social centre known for “[c]heesy pop music with cheap, organic vegan food for action camps, gatherings and radical events” (Do or Die, 2003, 377).
10. **Anarchist Youth Network** is a UK-based youth organization that is known as “[t]he only revolutionary youth network in the UK. Set up independently by young people, for young people, not as a recruiting ground for saddo lefties” (Do or Die, 2003, 377).
11. **Anarcho-Primitivist Network** is a radical primitivism group that opposes modern civilization and seeks to promote these, and related radical ecological viewpoints, through information dissemination and other activities.
12. **Anti-Fascist Action** is a UK-based group focused on serving as a “[p]olitical and physical confrontation to the far right” (Do or Die, 2003, 377), in addition to publishing the *Fighting Talk* magazine.
13. **Arun Valley EF!** is the autonomous UK EF! group associated with the Arun Valley regional area.
14. **Autonomous Centre of Edinburgh** is a social centre that “[d]raws together many campaigns for social and ecological issues into revolutionary struggle to overthrow capitalism” (Do or Die, 2000, 228).
15. **Avon Gorge EF!** is the autonomous UK EF! group associated with the Avon Gorge regional area.
16. **Bath EF!** is the autonomous UK EF! group associated with the Bath regional area.
17. **Beal Valley Rescue** is an Oldham-area group. Very little information about this group was available, but they may be oriented towards protesting the construction of the Beal Valley golf course.

18. **Blackburn EF!** is the autonomous UK EF! group associated with the Blackburn regional area.
19. **Blatant Incitement Collective** is a Manchester-based group that “[e]ncourages people to organize themselves ecologically and without hierarchy by sharing skills, knowledge and inspiration” (Do or Die, 2003, 377).
20. **Brighton Against Benefit Cuts** is a Brighton-based organization whose focus is on the “[r]esistance to all attacks on benefits” (Do or Die, 2003, 377), in addition to disseminating related information.
21. **Bristol EF!** is the autonomous UK EF! group associated with the Bristol regional area.
22. **CAGE**, based in Nottingham, is a “relatively new group/network resisting all manifestations of the prison state” (Do or Die, 2000, 228)
23. **Cambourne EF!** is the autonomous UK EF! group associated with the Cambourne regional area.
24. **Cambridge EF!** is the autonomous UK EF! group associated with the Cambridge regional area.
25. **Campaign Against Runway 2** a network of ecological direct action groups that sought to prevent the expansion of the Manchester Airport.
26. **Campaign Against The Arms Trade** A UK-based nongovernmental organization (NGO) described by DoD as a “[b]road coalition of people seeking an end to the UK’s role in the international arms trade” (Do or Die, 2003, 377).
27. **Campaign to Close Campsfield** is an Oxford-based human rights group whose efforts are focused on “[r]egular demonstrations and other events to close Campsfield immigration detention centre” (Do or Die, 2003, 377).
28. **Cardiff EF!** is the autonomous UK EF! group associated with the Cardiff regional area.
29. **Cardigan Bay EF!** is the autonomous UK EF! group associated with the Cardigan Bay regional area, primarily formed to oppose drilling by Chevron off the coast of Wales.
30. **Cheltenham EF!** is the autonomous UK EF! group associated with the Cheltenham regional area.
31. **Chiapas Link** a a Bristol-based group whose efforts are focused on the provision of “[e]xcellent information about, and radical support for, the Zapatista struggle in Mexico” (Do or Die, 2003, 377).
32. **Chichester EF!** is the autonomous UK EF! group associated with the Chichester regional area.
33. **Class War** are a group of “[i]nfamous anarchists of the 80s” (Do or Die, 2003, 228)
34. **Class War Federation** is a UK-based far-left political-anarchist group that “exists to promote class consciousness and working class control. Produces newspaper of the same name” (Do or Die, 2003, 377). Note that this group was referred to as “Class War” in pre-2003 issues of DoD. Class War Federation was kept as separate group entries here given the potentially changing nature of the underlying group.
35. **Dartmoor EF!** is the autonomous UK EF! group associated with the Dartmoor regional area.
36. **Direct Action against the War** is a UK-based “[e]mail list for exchanging information about direct action resistance to the war” (Do or Die, 2003, 377).
37. **Disabled Action Network** is a UK-based group focused on the provision of “[d]irect action by and for disabled people” (Do or Die, 2003, 377-378).
38. **East Devon EF!** is the autonomous UK EF! group associated with the East Devon regional area.
39. **English Collective of Prostitutes** is a UK-based “network of women working at various levels in the sex industry” (Do or Die, 2003, 378).
40. **Environmental Ploughshares** is an Oxford-based ecological non-violent direct action group.
41. **Exeter Environmental Network** is a UK ecological direct action group.
42. **Faslane Peace Camp** is a permeant peace camp situated in Argyll and Bute, Scotland, “[r]ight across the road from the nuclear sub base [whose members] stop convoys and generally make the military’s life awkward” (Do or Die, 2003, 378).
43. **Fife EF!** is the autonomous UK EF! group associated with the Fife regional area.
44. **Forest Action Network** is a Norwhich-based environmental group focused on forest-issues.
45. **Friends of People Close to Nature** is a Hertfordshire-based “[i]ndependent group working to support the struggles of indigenous peoples against development” (Do or Die, 2003, 378).
46. **Friends, Families and Travellers** is a Brighton-based group known for “[w]orking towards a society where travellers can live on the road without fear of prosecution or harassment” (Do or Die, 2003, 378).
47. **Genetic Engineering Network** is a network of UK-based activists known for the provision “[i]nformation for action, updated details of test site locations and support for local groups” (Do or Die, 2003, 378) focused on opposing genetic engineering.
48. **Glasgow EF!** is the autonomous UK EF! group associated with the Glasgow regional area.
49. **Grampian EF!** is the autonomous UK EF! group associated with the Grampian regional area.
50. **Green Anarchist Network** is an Oxford-based ecological anarchist movement promoting local autonomy, with efforts directed against industry and pollution, amongst other activities.
51. **Guildford EF!** is the autonomous UK EF! group associated with the Guildford regional area.
52. **Gwendraeth Valley EF!** is the autonomous UK EF! group associated with the Gwendraeth Valley regional area.
53. **Gwynedd and Mon EF!** is the autonomous UK EF! group associated with the Gwynedd and Mon regional area.
54. **Haringey Solidarity Group** is a well established London-based radical organization of community activists, and publisher of the *Haringey Community Action* newsletter.
55. **Head State Support Group** is a UK-based support group focused on providing support and assistance to radical, ecological, and related activists who have been sectioned under the Mental Health Act in response to their protest activities.
56. **Hereford Earth Action** is a UK ecological direct action group.

57. **Hereford EF!** is the autonomous UK EF! group associated with the Hereford regional area.
58. **Hillfort EF!** is the autonomous UK EF! group associated with the Hillfort regional area.
59. **Hull on Earth** is a UK ecological direct action group.
60. **Hunt Saboteurs Association** is a “nationwide network of groups using direct action to stop fox hunting” (Do or Die, 2003, 378), and publisher of the *Howl* magazine.
61. **I-Contact Video Network** is a Bristol-based group focused on facilitating “[a]utonomous and independent video production by activists” (Do or Die, 2003, 378).
62. **Industrial Workers of the World** refers to the UK-based arm of the Industrial Workers of the World (IWW), a radical labor union whose UK club is described by DoD as a “[r]evolutionary union whose aim is to gain control of workplaces and eliminate the bosses” (Do or Die, 2003, 378).
63. **Intercourse: Talking Sex** is an Edinburgh-based “non-hierarchical organization devoted to encouraging people to develop comfortable and positive ways of thinking and talking about sex and sexuality” (Do or Die, 2003, 378).
64. **Irwell Valley EF!** is the autonomous UK EF! group associated with the Irwell Valley regional area.
65. **Justice?/Schnews** is a Brighton-based weekly publication (Schnews) and related group (Justice) that reports on anarchist, environmental and social issues. Though we refrain from including publications within our master list of groups, *Justice?/Schnews* was included within DoD’s more general UK contact-group list in some issues (likely owing to the Justice-group that prints Schnews), and is hence included here. We do however limit our co-occurrence search queries to “Justice?/Schnews,” as opposed to individually including an entry and reference to the publication “Schnews” in our co-occurrence and group lists.
66. **Kate Sharpley Library** is a UK-based library, known for having “[t]he most extensive collection of anarchist material in the UK” (Do or Die, 2003, 378).
67. **Kebele Community Centre** is a Bristol-based radical social centre.
68. **LAMB** is a Manchester-based UK group/network-contact listed by DoD.
69. **Lancaster Anarchist Group** is a Lancaster-based anarchist organization that is known to be “active in many struggles” (Do or Die, 2003, 378).
70. **LEAF** is a UK ecological direct action group.
71. **Leeds EF!** is the autonomous UK EF! group associated with the Leeds regional area.
72. **Legal Defence and Monitoring Group** seeks to provide legal backup to UK (primarily London) based demonstrations, by monitoring police activities during protests and providing support to those arrested and/or facing trial for protest activities.
73. **Liverpool EF!** is the autonomous UK EF! group associated with the Liverpool regional area.
74. **London Animal Action** is a London-based group whose focus is on animal rights and the broader networking of, and information dissemination for, UK animal rights groups.
75. **London GreenPeace** is an environmental anarchist collective known for its anti-war, anti-nuclear, and anti-McDonald’s protest efforts.
76. **London Reclaim the Streets** is the London-based chapter of this UK ecological direct action group, which is primarily oriented around protesting automobiles and globalization.
77. **Lune EF!** is the autonomous UK EF! group associated with the Lune regional area.
78. **Making Waves** is a Sheffield-based UK-group/network that was listed as a contact in some issues of DoD.
79. **Manchester EF!** is the autonomous UK EF! group associated with the Manchester regional area.
80. **McSpotlight** arose out of the British McLibel Trial and is a UK-based group associated with the international Anti-McDonald activist network of the same name.
81. **Menwith Womens Peace Camp** is a women-only direct action group, and associated protest-camp, that was established to promote peace and to protest the siting of cruise missiles at the US military base in Newbury.
82. **Mid-Somerset EF!** is the autonomous UK EF! group associated with the Mid-Somerset regional area.
83. **Movement Against the Monarchy** is a UK-based anarchist organization described by DoD as “[r]oyal hating class struggle anarchist ruffians” (Do or Die, 2003, 378).
84. **Newcastle EF!** is the autonomous UK EF! group associated with the Newcastle regional area.
85. **Newham Monitoring Project** is a UK-based “[c]ommunity group giving support, advice and campaigning on issues of racial harassment and civil rights” (Do or Die, 2003, 378).
86. **No M66** is a group-led anti-roads campaign in North East Manchester.
87. **No Opencast** is a UK-based anti-mining group known for “[c]ampaigning against opencast mining and networking information between similar groups” (Do or Die, 2003, 378).
88. **No Platform Anti-Fascist Network** is a Leeds-based “[n]etwork of anti-fascist socialists, anarchists and anti-capitalists united by the policy of ‘no platform for fascists’” (Do or Die, 2003, 378).
89. **Norfolk and Waveney EF!** is the autonomous UK EF! group associated with the Norfolk and Waveney regional area.
90. **Norfolk EF!** is the autonomous UK EF! group associated with the Norfolk regional area.
91. **Norwich Direct Action Forum** is a UK ecological direct action group.
92. **Nottingham EF!** is the autonomous UK EF! group associated with the Nottingham regional area.
93. **Oldham EF!** is the autonomous UK EF! group associated with the Oldham regional area.
94. **OPM Support Group** is a UK-based group promoting “[p]ractical solidarity with the indigenous people of West Papua” and producer of an occasional newsletter detailing these efforts (Do or Die, 2000, 229).
95. **Oxford EF!** is the autonomous UK EF! group associated with the Oxford regional area.
96. **Parents Action Network Brambles Housing Co-op** is a Sheffield-based support group.

97. **PaRTiZans** is a UK-based anti-mining group known for fighting “against the mining activities of the corporation RTZ [and a g]ood information resource” (Do or Die, 2003, 378).
98. **Peat Alert!** is a group of Leeds-based environmental activists known for their “[e]xcellent and pretty successful campaign to halt peat extraction in the north England” (Do or Die, 2003, 378).
99. **Portsmouth Anarchist Network** is a UK-based anarchist group known for discussing and organizing “support for prisoners, anti-militarism and workers in struggle” (Do or Die, 2003, 378).
100. **Primal Seeds** is a Manchester-based group of anti-biotech activists, known for being “[a]ctively engaged in protecting biodiversity and creating local food security” (Do or Die, 2003, 378).
101. **Primitivist Network** is a short-run UK primitivist group aligned with the Green Anarchist Network, and also publisher of the *Missing Link* journal.
102. **Radical Routes** is a Leeds-based leftist organization and network of housing co-ops. Known as a provider of information on government-sponsored housing.
103. **Reading Roadbusters** is a UK ecological direct action group.
104. **Reclaim Europe!** is a London-based group focused on protesting globalization and UK-Europe politics.
105. **Reclaim the Streets** is a UK ecological direct action group, primarily oriented around protesting automobiles and globalization.
106. **Reclaim the Valleys** is a South Wales-based UK ecological direct action group, known primarily for protesting open-cast mining and environmental destruction within the South Wales region.
107. **Rising Tide** is a UK-based “network of independent groups and individuals taking local action, and building an international movement, against climate change” (Do or Die, 2003, 378).
108. **Road Alert!** is a UK ecological support group, based in Newbury.
109. **Save the Hillgrove Cats** is a UK animal rights group whose efforts were focused on protesting and opposing the Oxfordshire-based Hill Grove Farm, a commercial breeder of laboratory cats.
110. **Sexual Freedom Coalition** is a UK-based leftist group that actively “[c]ampaigns against laws restricting all adult consensual activity” (Do or Die, 2003, 378).
111. **Sheffield EF!** is the autonomous UK EF! group associated with the Sheffield regional area.
112. **Simon Jones Memorial Campaign** is a social justice campaign centered around the death of Simon Jones (a casual worker that was killed on his first day of work) that also seeks to protest the UK casual labour economy more generally.
113. **Solidarity Federation** is a Manchester-based leftist group, described by DoD as a “[a]ll network of anarcho-syndicalists” (Do or Die, 2003, 379).
114. **Solidarity South Pacific** is a Brighton-based leftist organization known for promoting “[s]olidarity activity for tribal peoples and the ecology of the Pacific Rim” (Do or Die, 2003, 379).
115. **South Devon EF!** is the autonomous UK EF! group associated with the South Devon regional area.
116. **South Downs EF!** is the autonomous UK EF! group associated with the South Downs regional area.
117. **South Somerset EF!** is the autonomous UK EF! group associated with the South Somerset regional area.
118. **Southampton EF!** is the autonomous UK EF! group associated with the Southampton regional area.
119. **Stop Huntingdon Animal Cruelty** is a UK-based animal rights group whose aim is “to close down Huntingdon Life Sciences, Europe’s biggest animal testing laboratory” (Do or Die, 2003, 379).
120. **STROPP**, also known as Stop The Road On Peaks Parnham, is a network of groups formed to oppose the Peaks Parkway project through Grimsby.
121. **SWAN Network** is the UK arm of the Social Work Action Network (SWAN).
122. **Swansea People EF!** is the autonomous UK EF! group associated with the Swansea regional area.
123. **TAPOL** is a UK-based human rights NGO whose focus is on publicizing human rights in Indonesia and East Timor.
124. **The Campaign to Free Vanunu** is a UK-based organization focused on supporting and freeing Mordechai Vanunu, an anti-nuclear whistle blower who was imprisoned by Israel after leaking details of the Israeli nuclear program to the British press.
125. **The Ecologist** is a more mainstream UK environmental journal. Though we refrain from including publications within our master list of groups, *The Ecologist* was included within DoD’s more general UK contact list in some issues, and is hence included here.
126. **The Flat Oak Society** is a network of ecological activists that oppose the A299 Thanet Way bypass in Kent, among other activities.
127. **The Land is Ours** is a UK direct action land-rights group that advocates access to the land, its resources, and the planning process.
128. **Third Battle of Newbury** is a Newbury-based environmental and anti-roads group focused on “[c]ontinued resistance to road construction” (Do or Die, 2003, 379).
129. **Trident Ploughshares 2000** is an activist anti-nuclear weapons group, specifically focused on disarming the UK Trident Nuclear Weapons system.
130. **Tyneside Action for People and Planet** a Newcastle-based UK ecological direct action group, often self described as an awareness-raising non-violent direct action group.
131. **UK Subs** is, to the best of our knowledge, an English Punk Band. Nevertheless, the group is listed under the general UK group contact list for DoD (Issue 7), as well as under similar contact lists for Earth First! action updates, and is hence included here.
132. **Undercurrents** is a former leftist video magazine producer, and later online-video/pirate-TV operator, located in Oxford.
133. **Upper Nene EF!** is the autonomous UK EF! group associated with the Upper Nene regional area.
134. **URGENT** is also known as the green field housing network, and is a UK support group.
135. **Warwick EF!** is the autonomous UK EF! group associated with the Warwick regional area.

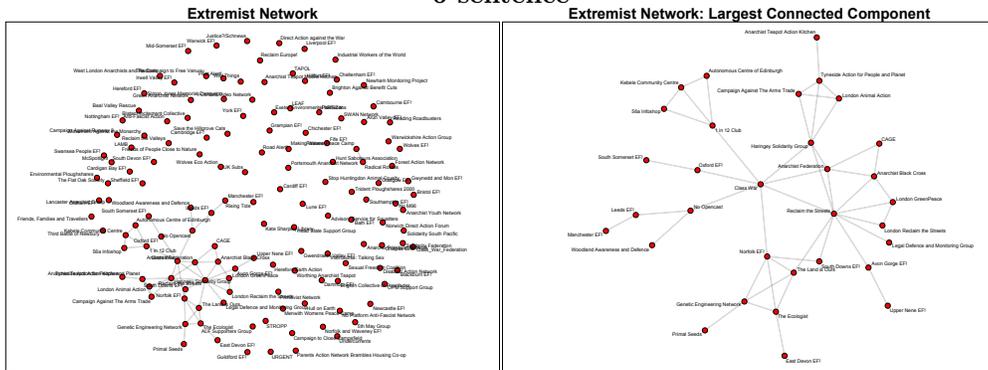
- 136. **Warwickshire Action Group** is a UK ecological direct action group.
- 137. **West London Anarchists and Radicals** is a “[l]ocal class struggle anarchist/communist group” (Do or Die, 2000, 229) that also publishes a bi-monthly newsletter.
- 138. **Wild Things** is a Nottingham-based initiative, described by DoD as an “[e]xcellent and radical eco-education project” (Do or Die, 2003, 379).
- 139. **Wolves Eco Action** is a UK-based ecological direct action group.
- 140. **Wolves EF!** is a UK ecological direct action group.
- 141. **Woodland Awareness and Defence**, also known as WAND, is a Dunbar-based UK ecological direct action group.
- 142. **Worthing Anarchist Teapot** is a Worthing-based social centre known for providing “free tea and coffee plus radical literature from squats and town centre stalls” (Do or Die, 2003, 379).
- 143. **York EF!** is the autonomous UK EF! group associated with the York regional area.

Six and 18 Sentence Network Diagrams & Clusters

This section presents our six and 18 sentence-derived network diagrams and dendrograms. These auxiliary network diagrams and dendrograms appear in Figures 1-2 below. Recall that our primary analysis focused on 12-sentence sequences. Hence, an examination of the network statistics derived from shorter (six-sentence) and longer (18-sentence) document lengths provides one with a sense of how stable our network results are to this modeling decision, and aids in our selection of 12-sentence documents as optimal for our primary analysis.

Turning to Figures 1-2, one can first notice that the connected components of our networks, as well as the resultant dendrograms, appear highly stable across our six, 12, and 18 sentence sequent document choices. Indeed, in all three cases, our clustering approach identifies three fairly similar clusters of connected-component groups. Together these results suggest that our general approach, and the insights derived from it, are robust to the choice of sentence sequence. Even so, there is some variance that arises within the six and 18 sentence connected network components that could be characterized as being undesirable, such as what appear to be an excess number of links in the 18 sentence case. While some of these additional links may be valid, these excess linkages, when combined with the potential for higher rates of false positives within 18 sentence sequence documents (discussed in the main paper) lead us to err on the side of caution and choose the 12-sentence sequence documents. These 12-sentence sequence documents, in turn, also appear more valid than the six-sentence sequence documents given the former’s identification of more connected component links between what are known to be actively coordinating groups (e.g., the various regional EF! groups).

6-sentence



18-sentence

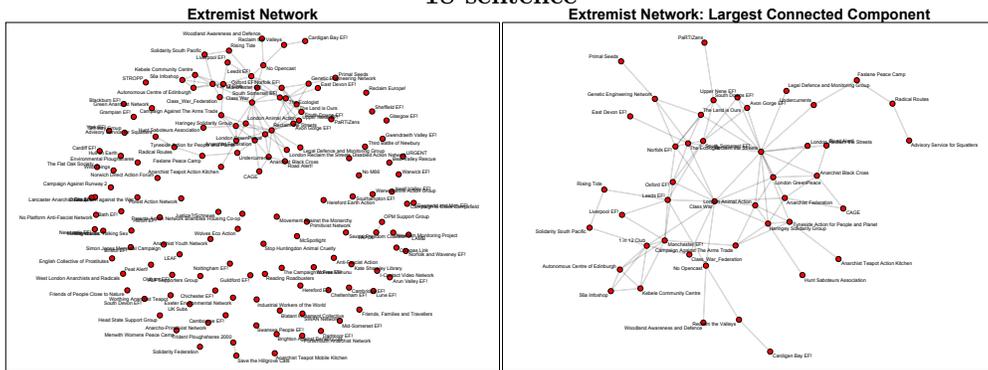
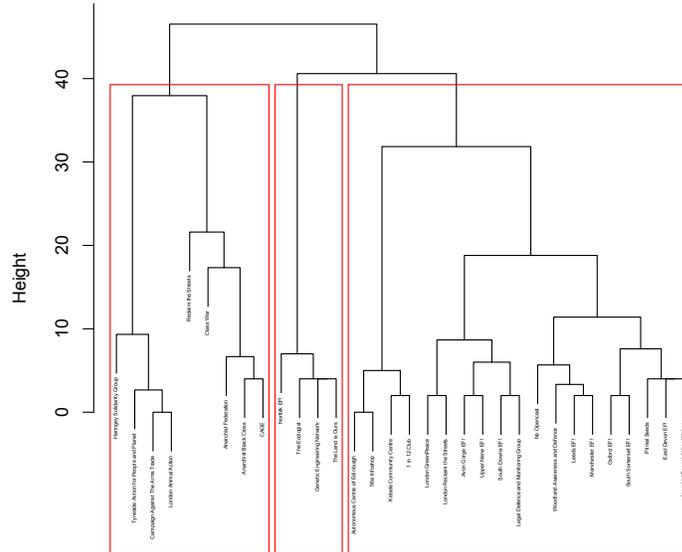


Figure 1: Network plot for 6 and 18-sentence results. Graph plotted using Fruchterman and Reingold's force-directed placement algorithm.

6-sentence

Cluster Dendrogram



18-sentence

Cluster Dendrogram

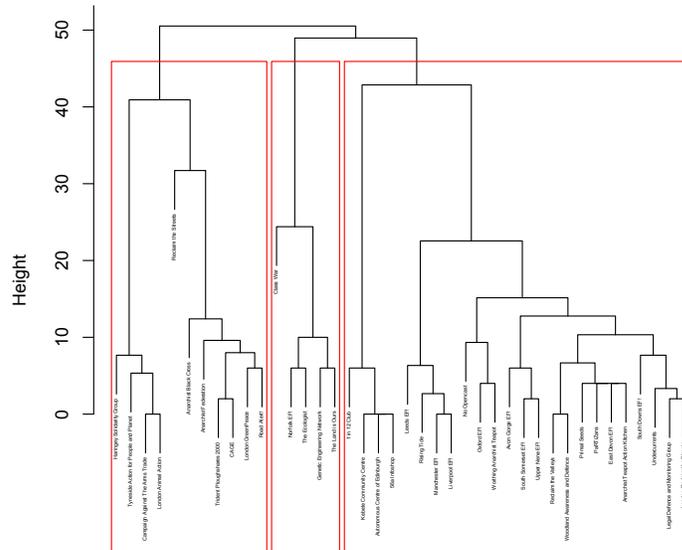


Figure 2: Cluster dendrogram for 6 and 18-sentence results.

Alternate 12-Sentence Sequence Network Diagrams & Cluster

This section provides a presentation of our alternate 12-sentence-derived network diagrams and dendrograms. These auxiliary network diagrams and dendrograms appear in Figures 3-4 below. Recall that our primary analysis focused on 12-sentence sequences that were constructed based upon a fixed (rather than rolling) window for each sequence, and when using a single starting point in building these sentence sequences. One concern that may arise with our fixed window approach is that the “single shot” nature of our resultant document construction (and thus our co-occurrence indicator and network) may be sensitive to our choice of starting point in constructing our 12-sentence sequence documents. To address this concern, we adjust the starting point for document sequencing and then construct an entirely new set of 12-sentence sequence documents. We then extract our co-occurrences and network from this new set of documents, and compare these to our original 12-sentence sequence network.

Beginning first in comparing the raw group pair co-occurrences from (i) our original 12-sentence sequence documents and (ii) the alternative 12-sentence sequence documents, we can note that in both cases, the overall co-occurrences identified appear highly similar. Indeed, we find in this case an average co-occurrence frequency of 0.00798 across all possible group-pairs for the former and an average of 0.00738 for the latter. If one instead examines the number of group-pairs identified as having at least one co-occurrence across all documents, we find that our primary 12-sentence sequence documents yield 66 group-pairs, and our alternate documents yield 63 group pairs. To then evaluate whether the *specific* group pairs identified are similar across both sets of co-occurrences, we extract the alternate sentence sequence and cluster dendrogram network in full, which we present in Figures 3-4. A visual inspection of these figures—in relation to those presented for our primary network in the main paper—demonstrates that the networks and clusters appear largely similar across our alternate and primary 12-sentence sequences. Further, we can perform a graph correlation test of the networks (Anderson et al., 1999), where we obtain a value of 0.847 (significantly similar under a Conditional Uniform Graph test for both order and density at $p < .001$). Hence, a variety of comparison metrics demonstrate in this case that our alternative 12-sentence sequence network is extremely similar to our original network, which accordingly underscores the overall stability of our fixed window approach.

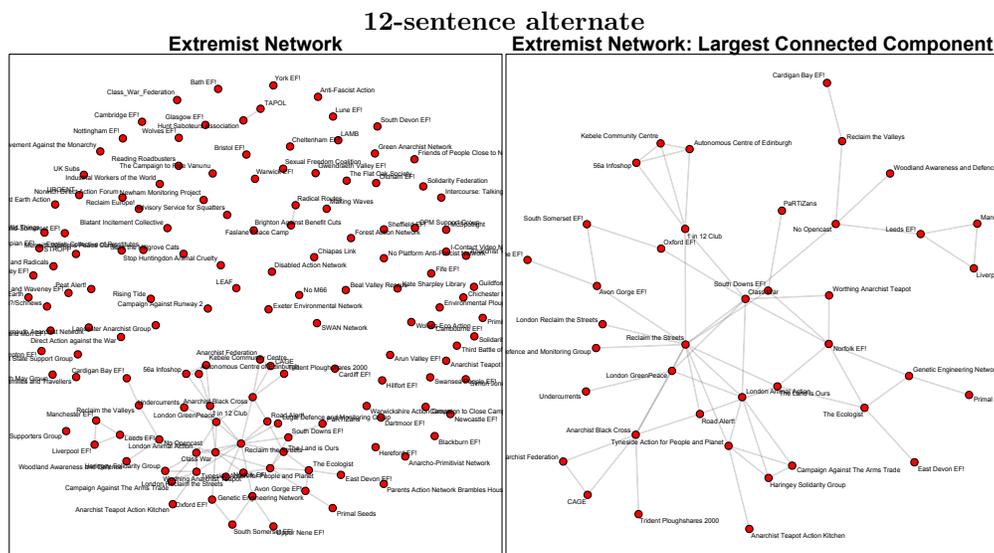


Figure 3: Network plot for 12-sentence alternate results. Graph plotted using Fruchterman and Reingold’s force-directed placement algorithm.

12-sentence alternate

Cluster Dendrogram

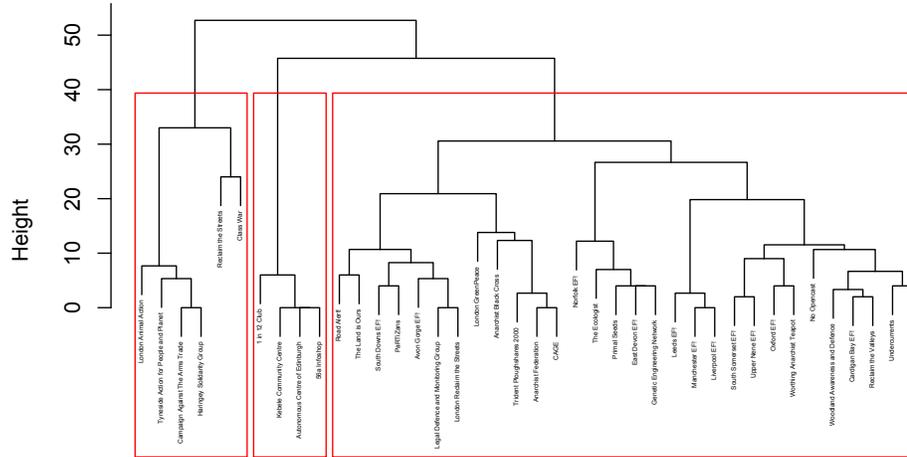


Figure 4: Cluster dendrogram for 12-sentence alternate results.

Example Co-Occurrence Sentences

In our main paper, we contend that our co-occurrence approach will allow us to recover a network of environmental groups that collaborate with one another. We further propose that in many—but not all—cases this collaboration will take the form of group coordination on actual direct action or related protest activities. This section seeks to validate these claims by examining the texts of our primary 12-sentence sequence documents in greater detail.

In these regards, we have extracted a set of roughly one dozen quotes from our 10 issue DoD corpus. Each of these quotes was drawn from an actual 12-sentence sequence document that was analyzed within our primary analysis. Further, each quote was chosen from the subset of all 12-sentence sequence documents that were recorded as actually containing an identified group pair co-occurrence (based upon our co-occurrence indicator). In choosing which quotes to highlight, we also endeavored to provide representative variation in our chosen quotes across (i) DoD Issue and (ii) the context with which co-occurring groups were actually discussed. In reporting the quotes below, we underline the appearances of our identified group names.

Turning to these quotes, we find that our co-occurrence approach largely (though not exclusively) identifies discussions of groups that are in the process of explicitly or implicitly coordinating over a given direct action or protest campaign. In these regards, note that we do not expect that every co-occurrence will correspond to such coordination activities: groups are likely to be jointly discussed across a wide range of contexts in our corpus, and we rely on our subsequent STM analysis to identify those group pairs that are reliably discussed as sharing tactics in the context of various protest activities. Nevertheless, our identification of numerous instances where our identified co-occurrences do correspond to implicit or explicit coordination in protest strategies indicates that our co-occurrence approach is indeed able to identify groups' instances of actual protest collaboration.

For example, one subset of our selected example quotes clearly corresponds to instances in which groups are *explicitly* discussed as directly coordinating with one another over various protest or direct action activities. Here, a number of these identified quotes clearly relate to groups coordinating on the planning of protest events, such as the following quote involving three explicit groups found within our primary group

list:

The first I heard of the idea of there being a big global day of action on May 1st 2000 was during the summer after June 18th, There was much discussion about what to do next, and at that year's Earth First! Summer Gathering after the idea had been proposed and enthusiastically responded to by a large number of the people at the large 'Where Now After June 18th?' meeting, a small informal sub meeting was got together with some people from EF!, London Greenpeace, Reclaim the Streets and the Anarchist Black Cross (ABC). Out of some of these discussions a happy coincidence emerged...it turned out that London ABC people had been considering doing some Bradford 98 style May Day event in London anyway, and unbeknownst to them the Canadian Union of Postal Workers, who were the North American convenors for the international Peoples' Global Action (PGA) network, had proposed May 1st as the date of a global general strike and day of action. (Do or Die, 2000).

Similarly, a 12-sentence sequence document contained in an earlier DoD issue also reports coordination on the planning of protests, in this case involving coordination between London Greenpeace and Reclaim the Streets:

Then during a hot summer's day in June 1998, a conversation occurred between a Reclaim the Streets (RTS) activist and someone from London Greenpeace (LGP - the anarchist collective not linked to Greenpeace International) who had been involved in the Stop the City demonstrations during the '80s. It turned out that they had been thinking similar thoughts about having an 'event' in the City that year to bring all the 'single issue' campaigns together around the common enemy of capital, and a date had already been set for a public meeting. LGP felt that the time was right to take on such an audacious target (Do or Die, 1999).

In these respects, we also find explicit accounts of co-occurring groups collaborating within the same direct action campaigns (albeit while at times pursuing their own autonomous direct action activities under the auspices of these larger campaigns), as the following two quotes highlight:

In all the talk and publicity leading up to June 18th a huge emphasis was put on the importance of groups and individuals organising their own autonomous actions to be carried out on the morning in the City of London. In the end there were around 20 of these actions that took place in and around the square mile of the City, as well as a number outside the capital. Groups that took action in the City that morning included Campaign Against the Arms Trade, a selection of Earth First! groups, International Solidarity with Workers in Russia, Haringey Solidarity Group the Association of Autonomous Astronauts, London Animal Action and Tyneside Action for People and Planet" (Do or Die, 1999)

Since 1995, however, EF!ers have been addressing the wider ecological effects of opencasting. One of the first groups to do this - Leeds EF! - took action in early 1995 targeting an opencast site in Yorkshire, and at about the same time Welsh activists were setting up camps at Selar and Brynhenllys sites near Swansea.² These actions, amongst others, led to an increasing alliance between EF!ers and the No Opencast campaign - which raises some questions I will attempt to address later (Do or Die, 1998b)

where, with respect to the latter quote, we can note that earlier portions of this same story further underscore the explicitly collaborative nature of these groups' coordinated actions in this instance:

No Opencast is a campaign run by the National Union of Mineworkers (NUM) and supported by Women Against Pit Closures and members of the Miners Support Groups. Since early 1995 there has been an informal co-operation between the No Opencast campaign and Earth First!ers. This has culminated, so far, in the action in Derbyshire on Friday 31st October 1997. On this action an opencast site, owned by HJ Banks mining company, was visited early in the morning by around 250 activists. Within two hours the mine was put out of operation[...] (Do or Die, 1998a)

As a final example of explicit coordination, the quote below demonstrates an instance where we instead observe explicit coordination between two co-occurring groups in the reconnaissance efforts associated with planned actions, rather than the action itself:

In Britain, Earth First! showed solidarity by targeting the largest manufacturer of disposable paper products in the UK, Scott Paper. Its twee green advertising disguises the fact that 25% of the pulp it uses is supplied direct from Vancouver Island by MacBlo. As a result of this deception, British consumers unknowingly flush away a million bog rolls of temperate rainforest a day. A month before the demo, reconnaissance on Scotts' Kentish mill on Crete Hall Road, Northfleet, was carried out by Oxford EF! and activists from Gravesend and Dartmouth Class War who knew the area and had inside contacts (Do or Die, 1992).

In other cases, as alluded to above, our identified groups are depicted as coordinating with one another in a comparably explicit fashion to the cases presented above, but appear to do so along dimensions that are distinct from coordination over protest or direct action activities. For instance, the following quote appears to suggest that the Legal Defence and Monitoring Group is collaborating with protesters associated with Reclaim the Streets via the provision of legal support:

As of mid August 1999 there have been around 43 further arrests, with one person held on remand. For more details of this and how you can support these people contact Reclaim The Streets in London (see page 341 for their contact details.) Did you witness an arrest or injury at the J18 events in London? If so (or if you were one of those arrested or injured) please send details of the incident (time, location and description/names of the people involved) together with your name, address and a contact telephone number to: Legal Defence and Monitoring Group, c/o BM Haven, London, WC1N 3XX, UK. In the event of further arrests remember to give only a name, address and date of birth and then no comment to everything else. Nobody Talks - Everybody Walks! (Do or Die, 1999).

Likewise, we find in the quote below that the group Radical Routes offers a similar form of auxiliary support to the Faslane Peace Camp in the latter group's efforts to sustain its protest camp activities in the face of opposition and scrutiny:

Faslane Peace Camp celebrated its 18th year of opposing the nuclear submarine base, and is again under threat of eviction. A fortnight of actions in August 2000, in which there were 90 arrests in the first week, has raised the profile of the camp, meaning that there is again pressure on the Council to evict. Faslane, to combat this, has now joined the co-operative network Radical Routes and become a housing co-operative with a plan to buy a piece of land in the area and so maintain a constant and permanent presence. There are always ongoing actions against the base, from regular leafletting and talking to people at the gates, through to convoy actions every few months (Do or Die, 2000)

Thirdly, we also encounter a number of instances where our target groups appear to coordinate more implicitly with one another, rather than explicitly. In these regards, our identified quotes appear to represent instances where a broader direct action or protest campaign has been instituted against a specific target—and our co-occurring groups jointly participate in this campaign—but where we see no direct evidence to indicate that these groups are physically working together in a particular activity therein. Our identification of these cases as co-occurrences, we believe, underscores the utility of our overall approach in identifying what are often very nuanced coordination activities. For example, the following quote suggests that two regional UK EF! groups coordinated to pursue (separate) actions against the same target:

Liverpool EF! scored a notable victory when, combining with other local groups, they stopped a monster incinerator from being built at the University hospital. This would have spewed out dioxins by the shedload onto the people of the City. The company that was going to build it, AEG (a subsidy of Norwest-Holst), identified Liverpool as a place where there would be the most apathy to their heinous plans. How wrong they were. AEG then tried to get an equally big poison generator built at Manchester Royal Infirmary. Manchester EF!, again within an alliance, sent the bastards packing in January (Do or Die, 1994)

Finally, as our final three example quotes highlight, a number of our additional identified co-occurrences highlight similar implicit coordination efforts under (i) the Farmageddon protest initiative,

A second trespass will be on July 5th. Contact [South Downs EF!](#) Sometime in August there will be a large action against industrial agriculture, talk to [Norfolk EF!](#) If we concentrate our energies in places where our actions will have most effect; and if we succeed in uniting campaigners from different 'issues' into a solid front against industrial agriculture, then we can really start to become a threat. The objectives of the Farmageddon campaign should be primarily to halt... (Do or Die, 1998a)

(ii) protest blockades;

That month the EF! Action Update also reported under the headline '[Reclaim the Streets](#)' a small roadblock done by [South Downs EF!](#) More was to be heard of [Reclaim the Streets](#)...Tilbury was followed by a 400 strong protest at Liverpool docks (Do or Die, 2003)

and, perhaps less convincingly, (iii) protests against the UK oil industry and associated actors:

In February, [Leeds EF!](#) occupied the top floor offices of the European Bank of Reconstruction and Development (EBRD) in the City of London, interrupting an executive meeting about the BTC pipeline. They refused to leave until they had spoken to those responsible for signing off the project. In response the very eager-to-appease Public Relations, Environment and Economics directors attempted to 'dialogue' with the group for four hours. The discussion confirmed that the EBRD had already promised BP the money and were now just working out how to justify it! When asked to name one oil pipeline ever that had delivered the benefits promised to affected communities, they couldn't. An invitation to return has not yet been taken up! Documents were also found with the Bank's prepared answers to criticisms. Also in February, Oxford [Rising Tide](#) greeted and gave out leaflets to BP shareholders outside BP HQ on the day the quarterly results were announced (Do or Die, 2003).

Alternate Topic Number STM Discussion

While STMs impose no predetermined coding scheme, they do require that the analyst choose a specific number of topics for STM estimation. We chose 15 topics in our primary analysis based upon (i) the number of topics identified within similar corpora by extant research (Bagozzi and Schrodt, 2012; Roberts et al., 2012; Bagozzi and Berliner, 2017), (ii) qualitative comparisons to comparable STMs that instead use 10 and 20 topics, and (iii) a more quantitative comparison of a set of relevant model fit statistics across our final 10, 15, and 20-topic models. For the latter two tasks, our goal was to identify a topic number that produced topics that were relevant, coherent, and distinct. Relevance in this case corresponds to the requirement that our identified topics reflect meaningful radical environmentalist issues. By coherent, we mean that the majority of topwords for a given topic reflect a shared underlying concept. Finally, "distinct" corresponds to the ideal of there being as little conceptual overlap as possible among the estimated topics. As elaborated upon below, our comparisons of the estimated topics obtained from the 10, 15, and 20 topic models provides strong evidence to suggest that the 15-topic model offers the best balance of these three criteria.

Beginning first with our qualitative comparisons, the 10 and 20 topic STMs are estimated using a comparable approach to that of our primary 15 topic STM: we employ different starting parameter values to estimate a set of 50 STM initializations for both our 10 and 20 topic models, and select a best performing "final" STM for each topic number from these initializations based jointly upon exclusivity and semantic coherence statistics. We then extract and report the top 20 words, as based upon frequency exclusivity scoring metrics, for our 10 and 20 topic STMs in Figures 5-6. Based upon these reported topwords, we generally find that the topics identified by our 10 and 20 topic STMs are highly consistent with the 15 topics identified and discussed within the main paper. These similarities suggest that we are indeed identifying stable and coherent topics in our primary analysis. Yet, our qualitative assessments of the 10 and 20 topic STM topwords also suggest that these topic models yield suboptimal topics relative to our 15 topic model.

Comparing the 15-topic topword results (presented in the main paper) to the 10-topic topword results (Figure 5), we can note several similarities. Namely, the 10-topic model, like our primary 15-topic STM,

exhibits latent topics that correspond to the **Anti-Capitalist Left** (Topic 1), **Violent Protest** (Topic 2), **Neocolonialism** (Topic 3), **Direct Action/Ecotage** (Topic 4), **Occupation/Camps** (Topic 7), **Eco-Literature** (Topic 9), and **Admonishments** (Topic 10). At the same time, we lose any semblance of a topic pertaining to **International Terror**, with a number of the words associated with this topic in the 15-topic model now bleeding into Topic 1 and Topic 5. The latter topic also appears to draw words from the 15-topic model’s **Neocolonialism** topic, so as to roughly correspond to a range of issues related to multinational corporations, genetically modified organisms, and food security. Distinct topics related to species conservation, land conservation, and sustainability are also noticeably absent from the 10-topic Model. Finally, a number of words previously identified as corresponding to general interest news stories now fall within the **Violent Protest** topic, including “football.” Based on these issues, we conclude that the 15-topic model offers more relevant, coherent, and distinctly estimated topics than does the 10-topic STM.

Topic	Top 20 Words
1	social, class, revolut, capitalist, revolutionari, capit, pirat, struggl, labour, ideolog, polit, radic, power, worker, oppress, globalis, counter, slave, movement, histori
2	cop, street, polic, confer, march, riot, crowd, squat, arrest, football, june, parti, citi, mask, demo, meet, rts, reclaim, charg, demonstr
3	indigen, militari, armi, mine, kill, zapatista, indian, papua, western, bougainvill, american, govern, death, peasant, west, indonesian, territori, villag, land, famili
4	oil, industri, crop, genet, corpor, sea, fish, shell, compani, engin, market, product, agricultur, test, econom, profit, farmer, farm, chemic, research
5	direct, action, campaign, media, group, involv, activist, tactic, network, act, success, defend, issu, opencast, sabotag, earth, target, anti, focus, eco
6	forest, speci, habitat, woodland, restor, log, wildlif, peat, wild, bird, river, reserv, conserv, ecosystem, natur, biodivers, wilder, plant, extinct, highland
7	camp, evict, car, site, quarri, road, lock, guard, sit, tunnel, night, build, climb, secur, visit, minut, rout, hour, hous, set
8	know, dont, want, realli, just, lot, get, say, that, thing, think, anyth, bit, there, women, sure, ask, someone, bad, theyr
9	prison, book, box, isbn, usa, publish, http, zine, letter, read, magazin, send, email, write, copi, press, web, guid, mail, sentenc
10	must, mean, need, experi, learn, desir, can, understand, often, question, rather, chang, cultur, differ, real, sens, role, individu, space, live

Figure 5: Topwords for 10-Topic Model.

Comparing the results of the 20-topic model (Figure 5) to our primary 15-topic STM results, several new topics now appear in the former model results, and several topics from the 15-topic model have now become distorted into separate topics. A close consideration of many of these new topics, however, leads us to conclude that the additional topics in the 20-topic model do *not* offer substantial gains in offering coherent, distinct, and relevant topics. Topics 3 and 16, for example, overlap considerably in the concepts that they capture, as do Topics 1 and 7, and topics 6 and 13. Similar to the 10-topic model results above, the 20-topic STM seems to have collapsed what were previously distinct topics of species and land conservation into a single topic (Topic 5). General interest news-stories on the other hand, have now been split into multiple, semi-coherent topics (Topics 2, 10, and 17). Importantly, of the four topics from the 15-topic model results that we concluded to reflect specific group tactics, we continue to find topics that remain highly similar in the 20-topic model results, although we no longer see a clear **International Terror** topic. Taken together, we believe that these patterns reinforce our decision to focus on a 15-topic model, as opposed to a 10 or 20-topic model, in our primary analysis.

Topic	Top 20 Words
1	action, direct, group, media, involv, network, activist, issu, tactic, act, success, campaign, target, larg, discuss, foe, public, take, support, sabotag
2	polic, cop, arrest, footbal, came, arriv, mask, crowd, van, team, went, block, night, saw, charg, branch, head, hour, station, hundr
3	crop, indigen, farmer, genet, land, peasant, agricultur, farm, zapatista, dam, govern, indian, region, mine, test, chiapa, mexico, villag, terra, engin
4	dont, think, know, want, realli, thing, that, lot, say, sure, there, get, someone, just, your, cant, sort, theyr, kind, bit
5	forest, speci, habitat, wildlif, log, peat, ecosystem, restor, biodivers, bird, woodland, extinct, conserv, plant, river, reserv, hotspot, highland, soil, natur
6	struggl, class, revolutionari, milit, movement, polit, radic, revolut, counter, liber, anarchist, resist, mov, libertarian, union, oppress, oppos, palestinian, repress, socialist
7	car, phone, offic, window, lock, sab, secur, damag, august, director, machineri, hit, machin, light, visit, truck, store, tarmac, smash, home
8	prison, sentenc, panther, bomb, black, jail, imprison, conspiraci, usa, trial, murder, sent, fbi, frame, africa, judg, box, convict, support, charg
9	seem, feel, actual, much, certain, reason, littl, even, whether, rather, enough, time, sometim, often, danger, perhap, though, role, someth, bad
10	work, space, deal, open, squat, new, worker, job, employ, centr, benefit, manag, offer, unemploy, etc, legal, negoti, exampl, privat, squatter
11	evict, camp, site, road, quarri, twyford, council, tunnel, tree, opencast, local, hill, valley, construct, built, sit, newburi, wale, bypass, bristol
12	earth, fight, first, anim, voic, die, defend, right, let, never, put, thank, law, one, serious, person, terrorist, call, fear, ignor
13	econom, global, market, increas, europ, economi, major, third, capit, globalis, world, growth, trade, countri, nation, product, rate, rise, european, profit
14	cultur, societi, human, desir, natur, civilis, must, relationship, life, learn, planet, understand, valu, can, ecolog, environ, ideolog, wild, alien, exist
15	oil, compani, fish, shell, environment, corpor, industri, busi, pollut, chemic, pipelin, research, environmentalist, climat, sea, impact, wast, consult, million, fund
16	pirat, militari, papua, bougainvill, armi, coloni, indonesian, slave, ship, french, war, soldier, centuri, guerrilla, shepherd, american, west, african, colombia, crew
17	women, children, hunt, school, young, care, famili, men, stay, mother, travel, eye, male, food, eat, woman, live, church, aid, cloth
18	social, violenc, non, power, organis, structur, becom, popular, organi, challeng, within, opinion, instead, autonom, individu, compromis, respons, necessari, activ, principl
19	book, isbn, publish, articl, zine, http, copi, read, guid, press, web, review, magazin, page, pamphlet, send, journal, edit, list, email
20	street, june, confer, march, citi, reclaim, parti, rts, event, meet, pragu, czech, london, banner, bank, attend, squar, day, deleg, demonstr

Figure 6: Topwords for 20-Topic Model.

Our qualitative comparisons of the topwords associated with our 10, 15, and 20-topic models together imply that our choice of 15 topics for our primary STM is defensible, in terms of the relevance, coherence, and distinctness of the identified topics and topwords across each aforementioned model. To validate these conclusions more precisely, we next reassess our 10, 15, and 20-topic model comparisons while using a selection of commonly used model fit diagnostics. Specifically, we compare the exclusivity and semantic coherence of our final 10, 15, and 20-topic models, which themselves were each identified as being the best performing model for a given k based upon the starting parameter values that yielded a Pareto optimal set of semantic coherence and exclusivity scores for that k across 50 initializations. Hence, the 10, 15, and 20-topic models evaluated here correspond the *best performing* model for our chosen k 's of 10, 15, and 20. Using these final “best performing” models, we next derive each model’s corresponding mean and median semantic coherence and exclusivity measures—across each model’s k topics—and compare our models based upon these commonly used model comparison metrics (Roberts et al., 2014; Bagozzi and Berliner, 2017).

The steps described above provide us with two semantic coherence metrics and two exclusivity metrics for each reference model. As mentioned in the main paper’s text, semantic coherence reflects the external consistency of a given topic, via the co-occurrence of topwords within one’s identified topics (Roberts et al., 2014), where more positive values represent higher semantic coherence and thus better model fit. Exclusivity measures how exclusive one’s topwords are to each topic based upon each topword’s posterior probabilities of association across topics, where more positive exclusivity values imply better performing models. For each STM evaluated, we report and evaluate both mean and median versions of these model fit metrics in order to ensure that our comparisons are not overly influenced by any single outlier topic.

The semantic coherence and exclusivity measures for each of our three comparison models are provided in Table 1 below. These metrics generally support our earlier qualitative conclusions in favoring our 15-topic STM over the 10 and 20-topic STMs in terms of both coherence and exclusivity. With respect to semantic coherence, the 15-topic STM obtains the second highest values among the three k 's evaluated, for both the median and mean semantic coherence measures. The 10-topic model consistently ranks first in these respects, whereas the 20-topic model performs significantly worse—relative to both the 10-topic STM and the 15-topic STM—on semantic coherence. Indeed, whereas the 15-topic STM generally performs one to three points worse than the 10-topic STM in terms of semantic coherence, the 20-topic STM performs roughly 13 points worse. Turning to our mean and median exclusivity measures, we find in this case that the 20-topic STM is now the best performing model, followed closely by the 15-topic STM. By comparison, the 10-topic STM performs substantially worse than either the 20 or 15-topic STM based upon the mean and

median exclusivity scores reported in Table 1. Hence, while our 15-topic model does not achieve superior performance to the 10 or 20-topic STMs on either of the metrics evaluated here, it “splits the difference” in uniquely performing commensurately along *both* relevant dimensions, leading us to favor the 15-topic STM over the 10 and 20-topic STMs for this reason. By comparison, the 10 and 20-topic STMs each perform poorly along at least one of our relevant dimensions of evaluation.

Table 1: Model Fit Diagnostics for $k = \{10, 15, 20\}$ STMs

Topic Number	Mean Exclusivity	Median Exclusivity	Mean Semantic Coherence	Median Semantic Coherence
10	9.69	9.71	-72.08	-72.13
15	9.79	9.81	-75.95	-73.36
20	9.84	9.85	-85.55	-85.33

Robustness of STM Results to Temporal Controls

An additional useful feature of the STM is its allowance for temporal controls. As such, the present section seeks to evaluate the robustness of our primary STM results while holding constant the temporal dimension of our text-corpus. Before turning to these robustness models, we can first note that controlling for time within our application is not without its challenges. Although DoD was published over a fairly long period of time (i.e., from 1993-2010), there were only ten issues produced over the course of this entire period. Moreover, the timing of each publication within this period was often inconsistent. These features—and the fact that we only have ten possible “time” points—severely limit our ability to model our topics over fine grained points in time (e.g., over years or months). In addition, much of the information discussed in each issue is retrospective, which limits our ability to confidently associate our text with each issue’s corresponding date of publication.

The above challenges notwithstanding, we endeavor to examine the robustness of our main STM results to additional controls for the temporal dynamics of our sample below. We specifically do so by constructing a 10-period time counter variable—that begins at “1” with DoD Issue 1 and counts upwards to 10 for DoD Issue 10. We then mapped this variable onto each of our 12-sentence sequence documents. As such, this time counter increases by one unit when a 12-sentence sequence document “turns over” to a sentence of text associated with the subsequent Do or Die issue. After merging this time count variable to our final dataset, we re-ran our primary 15-topic STM model while including our time counter as an additional control. In doing so, we continued to include all other covariates mentioned in the main paper. We then extracted a comparable topwords table, a comparable set of group-pair effects plots, and a comparable set of cluster-based effects plots to those reported in the main paper. Each of these robustness plots appears below, in Figures 7-9. Turning to these figures, we find in these cases that each topic identified (as based upon its top 20 words), each set of group-pair associations, and each set of cluster associations appear virtually identical to the results reported in the main paper. Hence, our decisions with respect to our controlling for temporal dynamics do not appear to adversely affect the primary STM findings and conclusions that are discussed in the main paper.

Topic	Top 20 Words	Labels
1	one, anoth, made, time, everi, mani, side, hand, turn, left, open, enough, togeth, around, reach, given, great, strong, run, wait	Inspirational Language
2	role, polit, organis, ideolog, non, activ, idea, movement, radic, mainstream, question, organi, opinion, individu, engag, revolutionari, violent, space, problem, potenti	Group Identity Debates
3	oil, compani, crop, mine, farmer, indigen, fish, papua, corpor, genet, govern, shell, mexico, zapatista, western, bougainvill, industri, engin, peasant, indonesian	Neocolonialism
4	book, isbn, publish, box, http, zine, magazin, guid, copi, write, press, articl, send, email, read, list, web, review, mail, contact	Eco-Literature
5	women, law, case, footbal, men, legal, game, evid, court, school, terrorist, privat, famili, terror, properti, intellig, record, deal, agenc, team	News and Culture
6	speci, habitat, restor, wildlif, peat, bird, ecosystem, biodivers, plant, soil, extinct, woodland, highland, conserv, hotspot, moor, natur, garden, biolog, wild	Species Conservation
7	let, will, back, earth, away, voic, danger, first, keep, etc, look, mother, put, take, eye, die, sound, hear, ever, show	General Concern
8	log, protect, forest, water, mountain, environment, dam, nativ, area, east, island, north, region, rainforest, timber, land, ago, northern, river, urban	Land Conservation
9	polic, arrest, crowd, cop, march, demo, banner, offic, vehicl, window, confer, smash, riot, hour, demonstr, mask, bank, pragu, car, director	Violent Protest
10	action, direct, campaign, group, involv, network, sabotag, tactic, reclaim, anti, success, meet, sab, event, act, target, rts, issu, opencast, media	Direct Action/Ecotage
11	camp, evict, site, road, quarri, twyford, tunnel, sit, council, tree, squat, set, climb, fenc, hill, tarmac, hous, build, built, trash	Occupation/Camps
12	cultur, must, societi, life, exist, learn, desir, civilis, live, understand, human, relationship, skill, can, experi, process, sens, domin, alien, planet	Sustainable Societies
13	pirat, prison, sentenc, black, panther, bomb, murder, ship, jail, kill, imprison, shepherd, africa, sent, gun, white, frame, death, fbi, trial	International Terror
14	dont, know, want, realli, thing, that, lot, think, get, someth, sure, there, someone, say, just, bad, theyr, didnt, thought, ive	Admonishments
15	capit, capitalist, labour, revolut, class, struggl, global, economi, union, counter, worker, social, elit, resist, globalis, econom, autonomi, spanish, wage, democraci	Anti-Capatalist Left

Figure 7: Topwords for 15-Topic Model, Controlling for Time-Counter

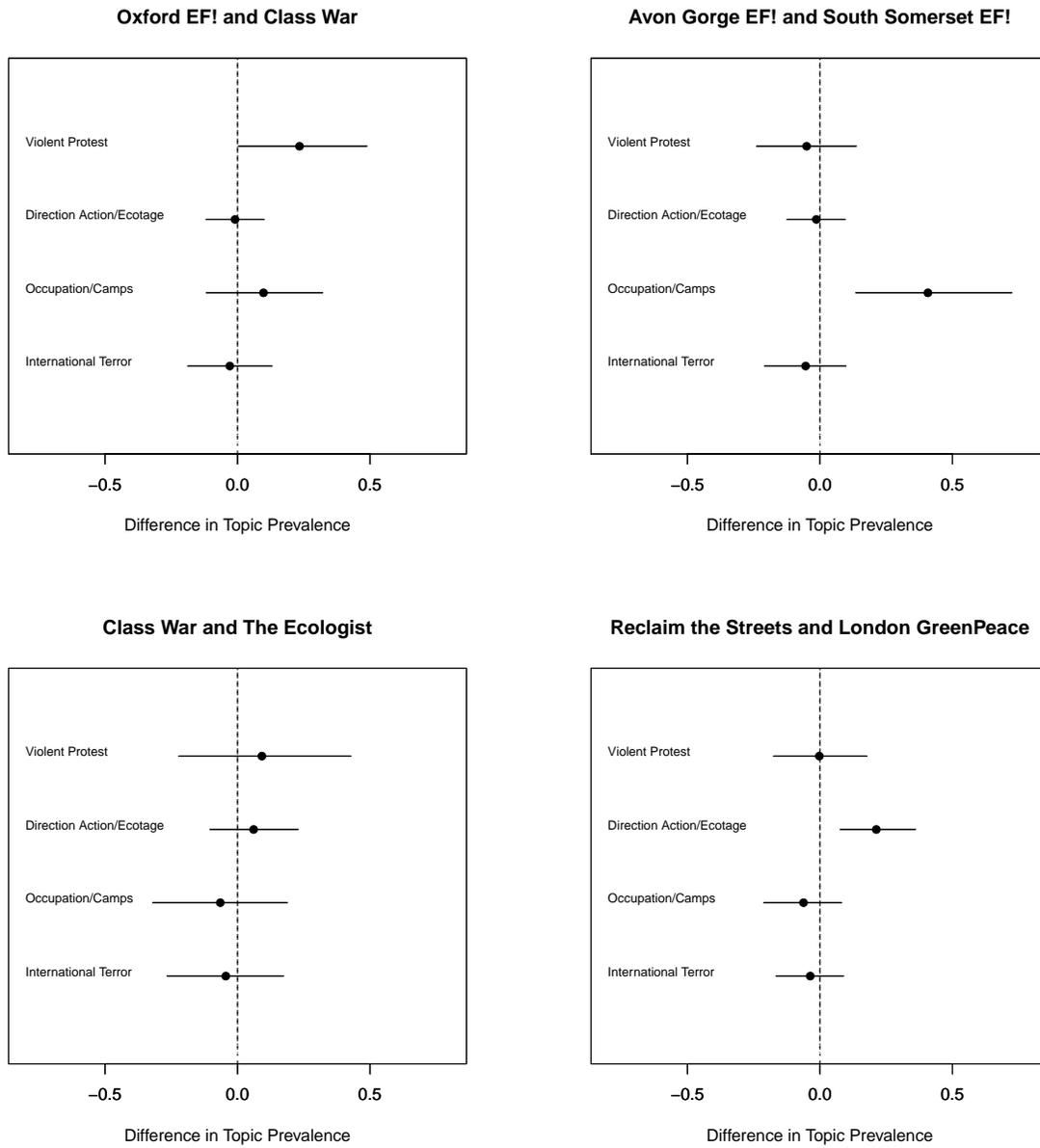


Figure 8: Estimated Associations Between Tactics and Group Ties, Controlling for Time-Counter

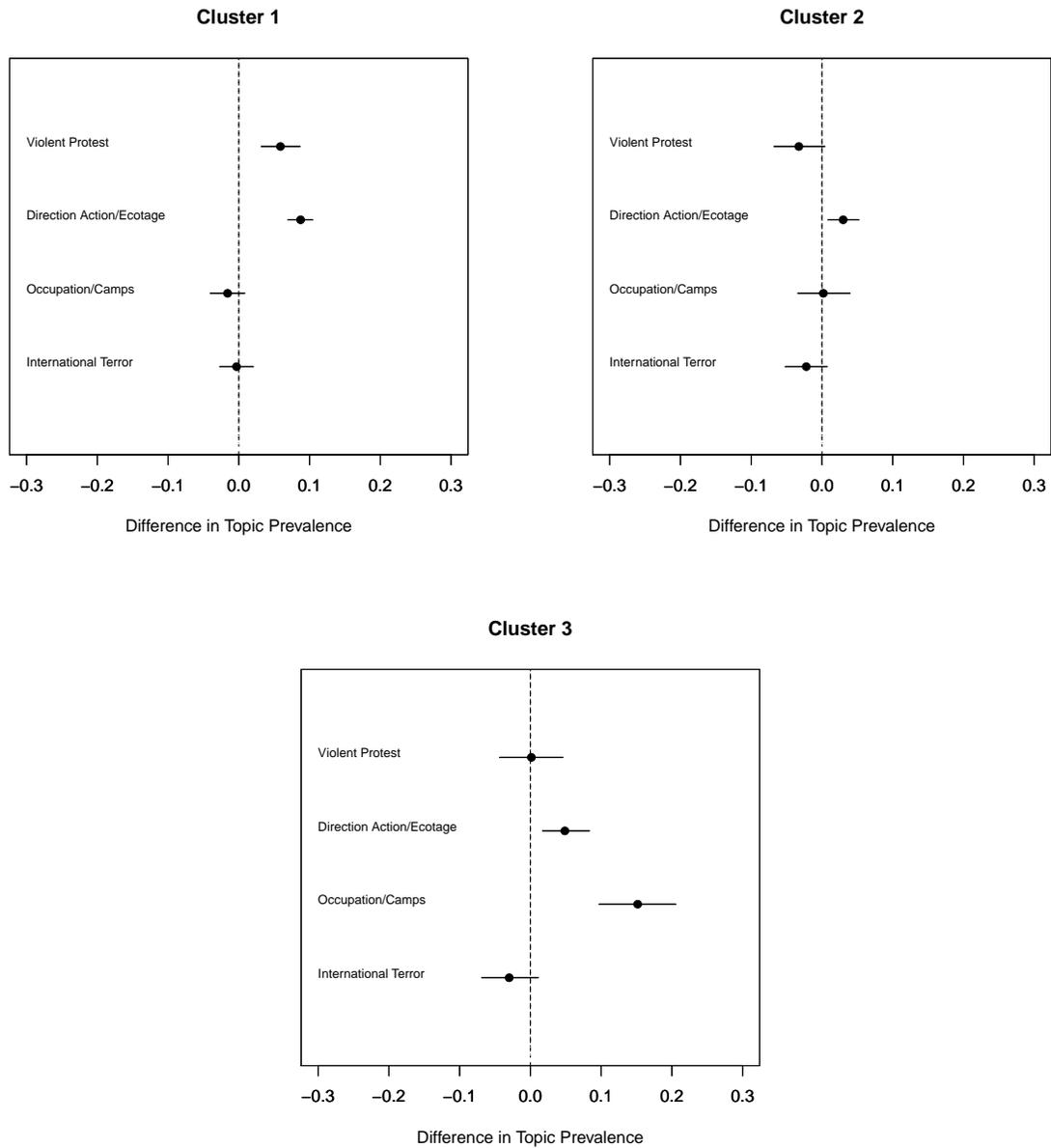


Figure 9: Estimated Associations Between Tactics and Clusters, Controlling for Time-Counter

Group-Level STM Model Results

In our main paper’s Network Discovery/Classification via Topic Models section, we constructed a cosine similarity metric to control for topic similarity in the Exponential Random-family Graph Models. To do so, we first extracted a set of *group specific* occurrence measures in a similar fashion to the manner in which we extracted our *group-pair* co-occurrence indicators from our 12-sentence sequence documents, and then estimate a new 15-STM that included these group-specific document occurrence indicators rather than our group co-occurrence indicators. As mentioned in the main paper, we present the topics obtained from this modified STM in Figure 10 below, so as to verify that these topics are virtually identical to those discussed for our primary STM model.

Topic	Top 20 Words	Labels
1	one, made, anoth, everi, side, time, hand, mani, turn, left, open, togeth, enough, around, given, reach, great, strong, run, join	Inspirational Language
2	role, polit, organis, ideolog, non, activ, idea, movement, radic, mainstream, question, organi, opinion, individu, media, violent, problem, engag, potenti, posit	Group Identity Debates
3	oil, compani, mine, crop, farmer, fish, indigen, papua, corpor, genet, govern, zapatista, shell, bougainvill, peasant, mexico, engin, industri, western, indonesian	Neocolonialism
4	book, isbn, publish, box, http, zine, magazin, guid, press, copi, write, articl, send, email, read, page, list, web, review, mail	Eco-Literature
5	women, law, case, footbal, men, legal, game, evid, court, school, terrorist, privat, famili, properti, terror, intellig, record, team, agenc, custom	News and Culture
6	speci, habitat, restor, wildlif, peat, bird, ecosystem, biodivers, plant, soil, extinct, woodland, highland, conserv, hotspot, moor, natur, garden, biolog, wild	Species Conservation
7	let, away, will, back, voic, danger, keep, put, take, look, etc, earth, thank, mother, first, ever, fill, eye, die, sound	General Concern
8	forest, protect, log, water, environment, mountain, dam, north, nativ, area, east, island, region, rainforest, timber, ago, urban, northern, land, river	Land Conservation
9	polic, arrest, cop, crowd, march, banner, vehicl, window, offic, smash, demo, confer, riot, hour, demonstr, mask, bank, pragu, car, camera	Violent Protest
10	action, direct, campaign, group, involv, network, sabotag, anti, reclaim, tactic, meet, success, event, sab, act, target, rts, opencast, media, aim	Direct Action/Ecotage
11	camp, evict, site, road, quarri, twyford, tunnel, sit, council, tree, climb, squat, set, hill, fenc, hous, build, tarmac, built, trash	Occupation/Camps
12	cultur, must, societi, exist, life, learn, live, desir, civilis, understand, human, relationship, skill, can, experi, planet, process, sens, domin, alien	Sustainable Societies
13	pirat, prison, sentenc, black, panther, bomb, murder, jail, ship, imprison, kill, shepherd, sent, africa, gun, white, death, frame, fbi, trial	International Terror
14	know, dont, realli, want, thing, that, think, lot, someth, get, someon, sure, there, say, just, bad, they, didnt, ask, thought	Admonishments
15	capit, capitalist, labour, revolut, class, struggl, global, economi, union, counter, worker, social, econom, elit, resist, globalis, autonomi, wage, spanish, market	Anti-Capatalist Left

Figure 10: Topwords for 20-Topic Model using Group-Level (rather than Group Pair-Level) Covariates.

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