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### **Hyperlinks and horizontal political communication on the WWW: The untold story of parties online**

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Dr Robert Ackland & Professor Rachel Gibson†

[robert.ackland@anu.edu.au](mailto:robert.ackland@anu.edu.au), [Rachel.gibson@manchester.ac.uk](mailto:Rachel.gibson@manchester.ac.uk)

This paper investigates political parties' use of a new form of political communication -online horizontal communication through hyperlinks. Specifically, we argue that hyperlinks facilitate a set of new and important communicative functions and have significant implications for parties' online visibility and prominence for voters. These propositions are empirically investigated with hyperlink data gathered from over one hundred parties from six democratic countries using a new research method (and associated software tool) that integrates web mining and data visualization techniques to collect and categorize link data from websites.

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# **Hyperlinks and horizontal political communication on the**

## **WWW: The untold story of parties online\***

Robert Ackland  
Centre for Social Research  
Research School of Social Sciences  
The Australian National University  
robert.ackland@anu.edu.au

Rachel Gibson<sup>†</sup>  
Centre for Social Research  
Research School of Social Sciences  
The Australian National University  
rachel.gibson@anu.edu.au

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<sup>†</sup> Corresponding author. Research School of Social Sciences (Coombs Building, 9), The Australian National University. CANBERRA ACT 0200, AUSTRALIA. Phone: +612 6125 3111.

## Abstract

This paper investigates political parties' use of a new form of political communication – online horizontal communication through hyperlinks. Specifically, we argue that hyperlinks facilitate a set of new and important communicative functions and have significant implications for parties' online visibility and prominence for voters. These propositions are empirically investigated with hyperlink data gathered from over one hundred parties from six democratic countries using a new research method (and associated software tool) that integrates web mining and data visualization techniques to collect and categorize link data from websites. Our findings reveal that left and particularly far left parties are most actively engaged in horizontal communication, forging international networks with civic advocacy and non-commercial organizations. Parties on the right favor more commercially and/or governmentally-oriented networks and those on the far right occupy the smallest and most self-referential networks. Also, contrary to the findings of 'normalization' from party website content analyses, study of hyperlinks reveal fringe parties on the left to be far more popular and well connected than their mainstream counterparts. The results are seen to underscore the importance of widening the top-down focus of studies in online political communication by parties and other actors to include a horizontal dimension.

*Keywords:* web mining, link analysis, political parties, web community, data visualization, organizational networking.

# 1 Introduction

Use of the internet by political parties has spread rapidly in democratic societies since the mid-1990s. While academic study of this process has examined a range of party systems at different points in time and a variety of new media applications, it has centered largely on two key questions: namely, why are parties using the new technology?; and what difference, if any, is it making to inter-party power relations? Debate on this latter question has settled essentially into an argument between the so-called “equalization” and “normalization” scenarios whereby the technology is either seen as putting smaller parties on a more level footing with their major counterparts in communicating with voters, or, simply replicating and reinforcing existing media biases. Building on this notion, some commentators have even envisioned a situation of extreme fragmentation or ‘accelerated pluralism’ in which aggregative actors such as parties are increasingly displaced by special interest groups (Bimber, 1998).

These more radical scenarios of erosion and decline notwithstanding, empirical investigation of parties' use of the net has continued apace. This work has focused on data drawn largely from websites and/or party officials themselves, with scholars devising web coding schemes and questionnaires to pinpoint and measure the extent to which certain functions (information provision, participatory engagement) are being performed. Stylistic and design-related elements of sites (text-only options and multimedia capabilities) have also been examined

and conclusions then drawn about how well major, minor and fringe players are performing and whether any obvious gap is emerging between them that would suggest a normalizing of inter-party power relations (Gibson and Ward, 2002; Gibson, Ward and Rommele, 2003; Margolis, Resnick and Wolf 1999; Margolis and Resnick, 2000; Norris, 2001; Roper, 1999).

These studies, while very useful in assessing parties' early utilization and commitment to the new media, have resulted in a tendency among scholars to focus on the vertical properties of parties' internet communication, i.e. that taking place from the organization down to voter and back up again, based on a series of static 'snapshots' of websites. Understanding of the more lateral or horizontal element of web-based political communication, embodied in hyperlinks, is less well-researched. Recent research on internet use by other political actors however, has suggested that this second dimension of online communication is of growing importance in understanding what parties and other organizations are doing online as well as their ability to reach and thereby affect the online audience. Specifically, it has been claimed that hyperlinks facilitate a range of significant new and old communicative functions such as information provision, organizational alliance building and message amplification (Park, Thelwall and Kluver, 2005) as well as determining the overall visibility and authority of individual sites (Hindman et al., 2003, Adamic and Glance, 2005).

In this paper we investigate these questions by analyzing the inbound and outbound hyperlinks of over one hundred parties in six democratic countries using a new custom-built

software tool. Our primary aim is to expand current scholarly understanding of how and why parties are using internet technologies, and to what extent this may be affecting inter-party relationships in terms of an equalization or normalization of existing patterns of power and dominance. In addition, from a methodological perspective, our analysis introduces an innovative adaptation of web information retrieval methods for social scientists to study online networking by a range of social and political actors. Given the range of countries and parties included, we anticipate that our data will be of value for other research in this area, and will also provide a benchmark for ongoing analysis of online party networks.

In broader terms we also consider the paper contributes to emerging and important theoretical and methodological debates about the role of hyperlinks in political communication more generally. Hyperlinks we argue, are not accidental nor value free. They provide a new range of communicative possibilities to parties as well as other organizations, and carry implications for their competitive performance. As such they are of increasing significance for social scientists seeking to understand how political actors gain functionality via their use of cyberspace.

## **2 Background**

### **2.1 Studies of parties online**

Political parties' use of the new media has expanded rapidly since the mid-1990s (Margolis et al., 1997, 1999; Davis, 1999; Gibson et al., 2003b, 2003c). This increasing use has led scholars to investigate its unique properties as a communication medium and how this might facilitate a range of new functional capabilities for parties, as well as other types of political organizations. The interactive and decentralized structure of the internet, combined with its global reach and capacity for carrying a huge volume of information at fast speed have been seen as highly useful to parties in allowing them to better perform existing tasks such as keeping in touch with members, targeting different voter groups, and raising funds. In addition, the internet offers new opportunities for dialogue and two-way contact with and between voters and members, opening up a new range of participatory opportunities (Gibson and Ward, 1998; Norris, 2001). Smaller parties have been seen as particularly strong beneficiaries from the new technology as it allows them to promote themselves more effectively (compared with previous existing media channels), and can assist in maintaining and coordinating their existing internal organizational network (primarily through email, discussion lists or chat rooms). While the latter activities have been of interest to scholars, their more private nature has made them difficult to study. Consequently much of the work

examining party communication online has centered on the more public face of their activity – that of website development.

Empirical analysis of party websites began in earnest from the late 1990s, taking place in several countries, usually in the lead-up to a national election, and focusing on a range of parliamentary as well as non-parliamentary players (Ward and Gibson, 1998; Margolis et al. 1997; Norris, 2001; Voerman, 1998). Coding schemes were developed and applied to sites to gauge how far parties were embracing the web's informational and participatory capabilities. Overall, this research provided considerable insight into parties' growing use of the web and emerging differences in the content of individual sites. It was found that party websites largely functioned as information repositories and as a means to disseminate an unedited message, rather than for conducting any dialogue with the wider public. From a normalization/equalization perspective, it seemed to be "politics as usual", with the major parties stepping up the sophistication of their online campaigns at successive elections to incorporate the latest digital media applications such as complex search facilities, RSS feeds and mobile phone updates (Ward, Gibson and Lusoli, 2005).

Attempts were made to explore the horizontal dimension of parties' web use in the form of hyperlink analysis. A case was made for links as networking tools and a simple classification scheme devised to demonstrate whether they facilitated intra-party or external networking with other kinds of political organizations (Gibson and Ward, 2000). In addition, inbound



link counts from Google were reported in addition to site quality measures as a means of assessing parties' online prominence and visibility (Margolis et al., 1999; Gibson et al., 2003a). Methodologically, however, these efforts faced significant limitations. Counting and categorizing outbound links was done manually and proved highly time consuming as well as being prone to error, since not all links would necessarily be listed neatly in one location on a site. The manual aspect of the coding also reduced the number of parties that could be compared within and across countries and thus the extent to which any generalizations could be drawn regarding their hyperlinking behavior. The reporting of inbound links using Google also proved problematic in that the numbers presented referred to were based on the total number of *pages* rather than *sites* that linked to a given political party website. Thus, where a party might be shown to have x inbound links, it was not possible to show exactly how many of these were links from unique sites, which is arguably a more valid indicator of web visibility or prominence.

The limitations inherent in the methodology used meant that the wider picture of horizontal connection and communication online among parties has gone largely unexplored. The key goal of this paper is to start to address this gap and provide a more comprehensive picture of the uses and implications of parties' hyperlinking activities. To do this we turn first to the literature that has begun to examine the role of hyperlinks among political actors.

## **2.2 Hyperlinking and political communication**

While the parties literature has not seen a great deal of analysis of the function and impact of hyperlinks, studies of other types of political actor have begun to pay attention to their role. In particular, studies by Foot et al. (2003), Park, Kim and Barnett (2000; 2004) and Park, Thelwall and Kluver (2005) have focused on the patterns of hyperlinks made by candidates and representatives in the U.S. and South Korea and revealed patterns of connectivity to external actors in the media as well as to more partisan/advocacy oriented groups that can be traced to individual and party level factors. For Park et al. (2005) such findings confirm that hyperlinks are driven by logic and design and the need for them to be given greater attention as new channels for communication. Further, Park et al (2005) argue that hyperlinks constitute a unique aspect of political communication online, drawing particular attention to their ‘relational’ quality to allow political actors an opportunity to build or ‘cement’ political alliances. Such alliances, as well as connecting previously disparate groups and their audiences can also create a sense of ‘critical mass’ or authority for the message that is lacking in the real world.

The notion of hyperlinks as a means of message amplification is one that has also gained currency in the online extremism literature, with Gerstenfeld et al. (2003), drawing on the work of Perry (2000) and Whine (2000), to argue that the use of links helps far right hate groups “...forge a stronger sense of community and purpose...” convincing “...even the most

ardent extremist that he is not alone, that his views are not, in fact, extreme at all.” (p. 40).

They go on to note that making international links via the web may be of particular importance to these right-wing extremists groups since in many countries they face prohibitions to their circulation of material.

Studies of sub-groups or variants of right-wing extremist groups have also focused on what links can reveal about the extent of their inter-connectedness and particularly their international profile (Burris, 2000; Gerstenfeld et al., 2003). While some of these analyses have been conducted as simple descriptive reports of the extent and types of sites linked to, others have taken a more sophisticated approach, adapting social network analysis techniques to examine the inter-connections between candidates’ or organizations’ sites.

The above studies have focused on hyperlinks as tools for inter-organizational communication and networking among a given set of actors, be they the far right or members of parliament. A second stream of research has taken a more holistic or contextual approach to studying political organizations’ use of hyperlinks, focusing on how they link and integrate them into the wider web and other non-political actors. Hindman et al. (2003) for instance analyzed the pattern of links between thousands of web pages covering a diverse range of U.S. political topics including the Presidency and Congress as well as gun control, abortion, and capital punishment. Their findings confirmed the existence of a ‘power law’ on the web, with a small number of sites receiving the lions share of links pointing toward them. Adamic

and Glance (2005) analyzed the linking behavior of “A-list” political bloggers and found a high degree of ideological insularity, with the two groups rarely linking to one another.

In short, therefore, it appears that the role and significance of hyperlinks is becoming increasingly recognized among political scientists. Not only do they appear to confer significant communicative benefits on political actors by acting as sources of information and fostering organizational connections (a feature of particular relevance for marginal groups who lack ‘on the ground’ structural resources in the offline world), they also significantly affect their online profile and visibility, a factor which is perhaps of even greater importance than site quality in determining questions of normalization and equalization in power relations.

## **2.3 Measuring hyperlink functionality and online visibility**

The central contention of this paper is that investigation of the horizontal communication possibilities presented by the web is a significant new area of study for scholars interested in parties’ use of the internet. In particular, it is important to consider the effect of the online environment on (1) party functionality and (2) levels of inter-party competition and in this section we present empirical measures for studying these phenomena.

### ***2.3.1 Party functionality***

Building on the work of Park et al. (2005) hyperlinks are seen to promote a number of new

and existing party functions:

1. The building of organizational alliances and networks.
2. More efficient and immediate sharing of audiences and potential supporters among like-minded groups.
3. Information provision – hyperlinks can point visitors toward additional sources of information.
4. The forging of indirect or implicit connections between groups that can help to strengthen or reinforce their identity.
5. Message amplification or ‘force multiplication’ (particularly useful for marginal groups with a low offline profile) whereby links convey a distorted sense of the extent of worldwide support for their message to users (Gerstenfeld et al. 2003; Whine, 2000).

While functions one to four are to varying extents already practiced by parties in the offline environment, function five appears to be a new and unique capability made possible by the web. We use two basic empirical measures to gain an understanding of how these five party functions are being conducted via the web.

1. Quantity of outbound links to unique sites: This is a basic measure of the level of party inter-connectivity and the scope of the networks being built online (function 1) and also provides a useful indicator of the level of audience sharing that parties undertake through hyperlinks (function 2).

2. Identity or destination of outbound links: As discussed further below, these were categorized in three basic ways:

- type of destination site as indicated by the “generic” top-level domain (TLD) (i.e. .com, .gov...);
- geographic location of destination sites, as indicated by the “country code” TLD (i.e. .au, .uk...);
- identity as a party or non-party site

These categorizations of outbound links are used to measure the extent to which the remaining three functions - information provision, indirect message reinforcement and force multiplication – are being performed by the parties.

Specifically, generic TLDs are used to establish what basic types of further information parties are making available to their audience through their sites (function 3). We argue that a predominance of .gov and .edu links indicates a preference for more institutionalized and established additional sources of information, while a greater incidence of .org links indicates that visitors to the site are more likely to face more politicized and partisan-oriented material.

A high incidence of .coms suggests that parties favor more commercially and business oriented sources of information.

Generic and country code TLDs of link sites are also useful interpreting a party's online image (function 4). Links that are more internationally focused and centered around non-profit or NGO groups send out a different message about an organizations' identity and message than do those favoring more 'home grown' domestic sites and more conventional or commercial interests. Based on expectations derived from the offline world one might expect left-wing parties to favor links of the former kind, and right-wing parties, the latter. However, whether a party's identity in the offline world is mirrored by its connections in the online world is an open question and one that we intend to explore here. Finally, the extent of link-back to other party sites and particularly to sites within the same ideological family provides one means of assessing the extent to which parties are engaging in force multiplication through their hyperlinking (function 5). Such self-referencing allows like-minded parties (and particularly extremists on the right) to create a stronger impression of their overall presence online.

For purposes of methodological clarity it is important to note two basic assumptions about the role and logic of parties' hyperlinks that underpin these measures. First, we consider links to be authentic reflections of parties' preferences as organizations. While it is acknowledged that some sites may be maintained by an outside contractor (most likely for the larger

parties), or by an individual member (most likely for the fringe parties, reliant on volunteer labor), the content of websites is open to continuous scrutiny by party members and/or staff, not to mention more recently the media and opposition parties. Links that are clearly inconsistent or antithetical to the parties' goals, therefore, would be expected to be rare, identified quickly and subject to swift removal. Second, parties' links are interpreted to be positive or promotional in nature, meaning that they represent a genuine desire to offer the visitor an opportunity to view the contents of the site pointed to. Parties are competitive entities and while they may mention a rival or 'enemy' in the text of their website we consider it highly unlikely that they would offer access via a hotlink as part of a negative campaign strategy.

### ***2.3.2 Online visibility***

As Hindman et al. (2003) have pointed out using number of inbound links from a search engine database constitutes a useful predictor of web traffic to a given site and can be seen as a valid indicator of site visibility and online 'stature' on three main grounds: first, by definition there are more online paths to heavily-linked sites; second, higher-quality sites tend to attract more links; and finally search engines generate a large proportion of web traffic and most modern search engine algorithms tend to return heavily-linked sites first.<sup>1</sup> As

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<sup>1</sup>Note that it is clear from this that the number of inbound links does not necessarily cause higher levels of traffic to the site, but is positively correlated with traffic levels.



such, it is important to include data on a site's visibility when assessing its comparative performance. A small party may be found to have a very sophisticated 'state of the art' site, but if it is essentially hidden from view then can it really be said to have any equalizing or leveling effect? To assess parties' visibility in this paper we used a count of the number of inbound links from unique sites as reported from the Google search engine/database.<sup>2</sup>

As well as looking at more basic questions of online presence and visibility, data on inbound links also allow us to examine a related question about whether any 'link multiplier' effect can be detected for parties. In essence, is there a relationship between parties' extent of outbound links and inbound, such that those parties that seek to connect more widely on the web receive more links back to their sites? And does this hold for all parties or do some have to work much harder than others to gain prominence?

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<sup>2</sup> As discussed further below, a key innovation in our approach is that rather than just using the raw counts of inbound links to a page provided by Google, we used the Google API to actually identify each of the pages linking to a given political party homepage; this allows us to firstly get more accurate estimates of the numbers of unique pages linking to a party homepage (the raw count provided by Google is only a rough estimate and has a tendency to include duplicate pages) and second, it allows us to ascertain the number of unique *sites* (and not just pages) linking to a party homepage, which is arguably a better measure of visibility.

### 3 Data and methodology

In order to investigate these questions we use a new research methodology which is embodied in purpose-built software that is provided as part of the Virtual Observatory for the Study of Online Networks (VOSON) software environment (<http://voson.anu.edu.au>).<sup>3</sup> This software combines web mining and data visualization techniques with traditional quantitative social science research methods to construct a *political connectivity database* (PCD) that records and categorizes the addresses of the web pages that either link to or are linked to by a given set of political party homepages. The fields (or columns) in the PCD are meta data collected using automatic methods. For purposes of this analysis these data are the domain names of the internet sites that are hosting the pages.<sup>4</sup> Each domain name consists of a series

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<sup>3</sup>These methods were first outlined in Ackland and Gibson (2004) and are further developed in Ackland and Gray (2005). Hindman et al. (2003) present a methodology for studying political web pages that also uses web crawlers to extract hyperlink information. Our approach has been developed independently to that of Hindman et al. (2003) and also differs in several key respects. In particular, we focus on studying the networks formed by political parties and our ‘seed set’, which is the starting point for our data collection process, contains political party homepages. In contrast, the seed set used by Hindman et al. (2003) consists of web pages (returned by search engines) that “contain content about longstanding, controversial political issues: abortion, gun control and capital punishment” (Hindman et al. 2003, p. 15).

<sup>4</sup> Resources on the internet such as web sites are identified via unique numeric *IP (internet protocol) addresses* that consist of 4 numbers (between 0 and 255) separated by dots. The Domain Name System (DNS) translates easier-to-remember character-based *domain names* into IP addresses (for example, the domain name

of character strings ('labels'), separated by dots, with the rightmost label in a domain being referred to as its 'top-level domain' (TLD). There are several types of TLDs within the DNS – we focus here on what are known as 'generic' TLDs (e.g. .com, .edu) and 'country code' TLDs (e.g. .au, .uk).<sup>5</sup> As described below, we also know for a given page  $i$  in our database, what other pages page  $i$  links to (via hyperlinks) and what pages (in our database) link to page  $i$ . We are thus able to construct a *web graph* with web pages represented as nodes and hyperlinks represented as directional edges.<sup>6</sup>

### 3.1 The seed set: 118 political party homepages

The construction of the PCD first involved the identification of an initial sample of political

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www.example.com might translate to 198.105.232.4). The DNS is managed and coordinated by the Internet Corporation for Assigned Names and Numbers (<http://www.icann.org/>).

<sup>5</sup> The '.com' domain is intended for commercial entities (that is, companies), '.gov' is used by government agencies; '.edu' is reserved for educational facilities; '.net' is used by many types of organizations and individuals globally but was historically intended for use by internet service providers; and '.org' is intended for use by the non-commercial or non-government sector. See <http://www.iana.org/domain-names.htm> for more details.

<sup>6</sup>A *graph* consists of a set of vertices or nodes (representing, for example, people) and edges or arcs connecting the nodes (representing, for example, relationships between people). In a *directional graph*, the direction of an edge connecting two nodes is important, for example person  $i$  may have heard of person  $j$ , but not vice-versa, and hence there will be a single directional edge from node  $i$  to node  $j$ . The WWW can be modeled as a directional graph, with web pages represented as nodes and hyperlinks represented as directional edges.

party homepages - these form the *seed set* of the database. The parties included in the analysis are from six established Western democracies where many major and minor parties have established a web presence - Australia, Austria, France, Germany, Italy and the UK. The party homepages were located using a variety of general search engines and specialized politics and parties indices available on the web.<sup>7</sup> In **Table 1** 124 parties that were identified using this process are listed. However, for six of these parties we could not find a functioning homepage (these parties are denoted by an asterisk in Table 1) - since the data collection process involves using the homepage as a starting point for finding links from the party website, these six parties were dropped from the analysis, leaving 118 party homepages in the seed set.

[Table 1 about here]

### 3.2 Classification of parties

Since our analysis involves identifying patterns in linking behavior by parties it was necessary to provide a basis for comparison that would prove meaningful across a range of countries. We opted for a classification scheme that divided parties according to their

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<sup>7</sup>The primary source was <http://www.electionworld.org>. Additional sources included

<http://www.electionresources.org>; <http://psephos.adam-carr.net>; and the portal sites for the national government in each country. A Google search was also performed for parties that were listed in these sources but did not have homepages listed.

ideological or policy family: far right, right, centre, left, far left, ecologist and regionalist.

While these categories are not entirely exhaustive, they were considered comprehensive enough to cover the parties of Western Europe and Australia. The details of how we classified the parties are provided in the Annex. In **Table 2**, a summary of the distribution of the 118 across countries and party types is shown.

[Table 2 about here]

### 3.3 Construction of the political connectivity database

Having identified the seed set consisting of 118 party homepages, the PCD was constructed using a two-step procedure.<sup>8</sup> First, a purpose-build web crawler was used to crawl each of the pages in the seed set to find *outbound hyperlinks from* the political parties.<sup>9</sup> Each page returned by the crawler was checked against two criteria: the page must not already be in the PCD (i.e. it must be a ‘new’ page) and the page must be ‘non-intrinsic’ (i.e. not share the same domain name) to the seed page being crawled. These criteria ensure that each page in the connectivity database is unique and they further ensure that the PCD is not dominated by

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<sup>8</sup>The data collection was conducted in early October 2005.

<sup>9</sup>A web crawler is a program that automatically traverses a web site by first retrieving a web page (for example, a political party homepage) and then recursively retrieving all web pages that are referenced (e.g. following hyperlinks throughout the site).

the pages of very large websites.<sup>10</sup> Pages satisfying these criteria were placed into the *1st ring* of the PCD. The 1<sup>st</sup> ring of the PCD was then augmented by using a Google “link:” query via the Google web API<sup>11</sup> to find *inbound hyperlinks* to the 118 seed pages, with all new pages returned from the Google API being placed into the PCD.<sup>12</sup>

Figure 1 shows the structure of the PCD from the perspective of how the data were collected.

In the centre is the seed set, containing the 118 political party homepages. The 1<sup>st</sup> ring is divided into three subsets. Set 1A contains pages found via the web crawler that are linked to by the seed pages and do not link back to pages in the seed set (note: because we have not crawled the pages in set 1A we do not know exactly what pages they link to, however, we know from using the “link:” query via the Google API that these pages do not link to the seed pages). Set 1B contains pages that are found via the Google API and link to the seed pages (but are not linked to by any of the seed pages). Set 1C is the intersection of sets 1A and 1B – it contains pages that both link to and are linked-to by the seed pages. In Figure 1, a selection of the pages connected to the homepage of the Australian Labor Party (ALP),

[www.alp.org.au](http://www.alp.org.au), are shown. The ALP homepage links to the homepage of the New Zealand

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<sup>10</sup>Note that in order to prevent the size of the PCD from exceeding available computing and data storage resources, the crawler was also programmed to stop crawling a given site if it had either looked at 100 intrinsic pages or else had returned 1000 new external pages.

<sup>11</sup>The Google API enables software programs to directly query the Google databases (i.e. without use of a web browser). See <http://www.google.com/apis/> for more details.

<sup>12</sup>Note that again there was a limit of 1000 on pages returned by the Google API.

Labour Party ([www.labour.org.nz](http://www.labour.org.nz)) and is linked to by the personal page of the Labor Member of Parliament, Peter Garrett ([www.petergarrett.com.au](http://www.petergarrett.com.au)). The ALP also links to another seed page, the homepage of the UK Labour Party ([www.labour.org.uk](http://www.labour.org.uk)) which in turn links to the official page of the UK Prime Minister ([www.number-10.gov.uk](http://www.number-10.gov.uk)) which is located in set 1C because in addition to being linked to by at least one seed page, [www.number-10.gov.uk](http://www.number-10.gov.uk) also links back to at least one seed page, the homepage of the Ulster Unionist Party ([www.uup.org](http://www.uup.org)).

[Figure 1 about here]

### 3.4 Pages and page groups

The PCD contains 21,545 observations, with each observation representing a unique web page. There are 118 pages in the seed set and the remaining 21,427 pages are in the 1st ring (with 43.2 percent in set 1A, 56.3 percent in set 1B and 0.5 percent in set 1C).

Given that our focus is on the organizations or entities that political parties are linking to, it is appropriate to aggregate web pages that come from the same organization or functional grouping within an organization into *page groups* (or ‘sites’).<sup>13</sup> This was achieved by placing all pages sharing the same domain name into the same page group. For example, the PCD

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<sup>13</sup>See Thelwall (2002, 2004b) for more on aggregating pages into groups or clusters using alternative document models (ADMs) based upon directories, domains and multi-domain sites.

contains 690 pages from the BBC site [news.bbc.co.uk](http://news.bbc.co.uk) – these were aggregated into a single page group. Such automated aggregation is theoretically and methodologically justified in that it allows us to more accurately and efficiently estimate the extent of organizational linkage taking place. One cost to this approach, however, is that some of the independent sites that are commercially hosted are put into a single page group representing the hosting company, and not counted separately. For example, the PCD contains 129 pages that are hosted by the commercial free web hosting service [www.geocities.com](http://www.geocities.com) and these have been aggregated into a single page group even though these pages are from a large number of diverse and unrelated websites. Thus, the page from a personal website which is “intended to make communist, anti-capitalist and historical texts available on-line and to link to texts on other sites”, has been placed in the same page group as the page [www.geocities.com/CapitolHill/6708/mensreso.html](http://www.geocities.com/CapitolHill/6708/mensreso.html) which is from the New Zealand Equality Education Forum and provides “International resources on Men's Rights, Fathers' Rights, and Racial Equality”.<sup>14</sup>

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<sup>14</sup>Pages accessed on 11<sup>th</sup> January 2006.



While this aggregation may result in some independent sites not being counted, the selective disaggregation of pages sharing the same domain name within such a large dataset was considered an overly labor-intensive task for the purposes of this paper. This was particularly so since it was not anticipated the decision would impact disproportionately on the findings for links made by or to particular party types, with parties from across the spectrum being considered equally likely to link to such commercially hosted pages.

After imposing the automated aggregation of pages into domain names, the PCD is reduced by over 60 percent to 8,282 page groups. There are 118 page groups in the seed set and the remaining 8,164 page groups are in the 1st ring (with 48.7 percent in set 1A, 45.7 percent in set 1B and 5.6 percent in set 1C).<sup>15</sup>

### **3.5 Connectivity structure of PCD**

While there was only one iteration of collection of inbound and outbound links, the depth of inbound or outbound links for a given seed page can be much greater than one. This is demonstrated in Figure 2 which shows, using the LGL layout algorithm of Adai et al (2004), the shortest path from the ALP homepage to 3970 other page groups in the PCD. In this map, nodes are colored according to country code TLD, with the following scheme: Australia –

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<sup>15</sup>Note that where a page group contains pages from different rings, the group will be assigned to the ring closest to the seed set. For example, the page group for the ALP contains one page in the seed set (the party's homepage) and another page from set 1A - this page group is therefore allocated to the seed set.

red, UK – light green, Austria – yellow, Italy – blue, Germany – olive, France – pink. The LGL layout algorithm can be similarly used to map the shortest paths from 3073 page groups to the ALP homepage.

**[Figure 2 about here]**

## **4 Results**

In this section we present the results of our analysis of the hyperlinks surrounding the 118 parties in our database. Specifically we use our two basic measures of those links – quantity of outbound links; identity or destination of outbound links – to compare the extent to which the five communicative functions listed above are being performed. We then compare the quantity of inbound links they each receive in order to understand the extent of equalization and normalization taking place in party competition in cyberspace.

### **4.1 Hyperlink Functionality**

#### ***4.1.1 Organizational networking and audience sharing (functions 1&2)***

Table 3 reports the quantity of hyperlinks found on each of the parties sites by ideological

type and by country. From this measure we can form some basic understanding of the extent of organization networking and audience sharing being undertaken by the political parties in the web environment. The figures reported are the averages for a party within the particular category – thus the top left hand cell of the table shows that on average, far left parties in Australia made 41 links from their site.

**[Table 3 about here]**

On average, a party makes 82 outbound links to external sites; however, this does differ across party type. Parties on the left and ecologist groups are more prone to use links than those on the right and particularly the far right and regionalist parties. Far left, left and ecologist parties make on average over 100 links from their sites, while far right and regionalist parties make only 38 and 28 respectively. This pattern is in evidence in most countries, although some deviation can be observed. The German Greens record only one outbound link (subsequent manual checks confirmed this) while Italian far right parties are among the most active hyperlinkers within their respective party system. German parties appear to be the least well connected with only 34 links on average per party, while French parties are the most connected, with around 100 more links per party.

These results suggest that left-wing and ecologist parties are the most active networkers online whereas parties on the right and particularly those with a more nationalistic or extremist agenda are less likely to use the web to form connections to other actors. In so

doing, their capacity for audience sharing is also reduced. While these distinctions appear to hold across countries, there are some clear exceptions, with one of the most prominent global environmentalist parties (The Greens) not displaying any inclination to build connections online to other groups or share its audience with them. Conversely, the Italian far right is highly active in forging cyberlinks and offering its visitors the opportunity to see other sites.

#### ***4.1.2 Information provision (function 3)***

To assess the extent to which parties are using their links as a means of extending the information provision function of their sites, we looked at the distribution of generic TLDs. The focus here was on the extent to which link sites were likely to include more TLD's such as .gov and .edu compared with other types of domain that are more likely to include groups with a commercial or advocacy based focus, i.e. .com's, .net's and .org's. While both types of sites can be considered to offer additional information, that supplied by the latter is seen as more likely to be of the 'propaganda' variety and the former, more neutral and objective in quality. The results reported in Table 4 show the top three generic TLDs being linked to according to party type and country. Where a generic TLD was not present the label 'unknown' was supplied.

**[Table 4 about here]**

The results reveal an interesting story in that none of the parties show a strong inclination to

link to the more neutral information-oriented sites, although right and centre parties proved most likely to do so, with 12 percent of their links going to a .gov site. A divide did emerge, however, between left and right parties regarding preferred generic TLD. While left wing parties and ecologists are most likely to include other .org's in their networks, right-wing parties and regionalists feature .com's more heavily. Thus, it would seem that both sides of the political spectrum favor providing more access to specialized rather than generalized information through their links, but that leftist parties are more oriented toward linking to activist groups and non-profits (the far left and ecologists particularly so) whereas the right are more concerned with providing access to commercially produced and/or oriented information.

The averages for all 118 parties reflect those for the individual party types; overall, .orgs and .coms emerge as the most commonly linked to type of sites. These figures should be treated with some caution, however, given that TLD identifiers were absent for over 70 percent of outbound links from German, Austrian and Italian parties. The Australian and British parties proved most likely to include sites with identifiable TLDs. Such a finding points to a possible relative bias among English speaking sites toward using generic TLDs in their domain names. Future iterations of the analysis may require some revision and linguistic adaptation before being used in studies of websites from non-English speaking countries.

### ***4.1.3 Image creation and reinforcement (function 4)***

Here we are concerned with establishing how hyperlinking patterns communicate a more indirect or symbolic message about a party's identity and overall outlook. To examine this, in addition to the information reported above on generic TLDs, we consider the national and international focus of outbound links, by party type and country. Table 5 reports the extent to which parties favored sites within their own country (as indicated by country code TLDs) as opposed to those with an overseas address.

#### **[Table 5 about here]**

The results show that parties generally favored linking to sites from the same country rather than those in other countries. Centrist and right-wing parties were most likely to do so with around two thirds of their country-identified links taking visitors to domestically-based sites. Conversely, far left and mainstream left-wing parties were most likely to make international connections, with 16 percent of outbound links being made to identifiable foreign sites. The high frequency of 'unknowns' is no doubt in part related to the large numbers of American sites that do not use a country identifier (i.e. .us). Across the countries it is interesting to note that while German parties are clearly the most nationalistic in their linking habits (78 percent link to .de sites), parties in the French system are among the least (23 percent link to other .fr sites).

Combining these results with those regarding the distribution of generic TLD links reported in Table 4 helps us to understand the image being created or reinforced by the parties via their link practices. In particular it appears that parties on the left, and particularly the far left, are more likely to associate themselves with other non-governmental, non-profit types of organizations and promote a higher profile internationally than other types of party. Parties in the centre and on the right, however, as well as those with a regionalist agenda have created a more commercially oriented network, and are also somewhat more likely to favor safe or ‘establishment’ sites (such as .govs). In addition, they are slightly more isolationist in their linkage behavior, showing a stronger preference for groups that have domestic origins, as opposed to those overseas.

#### ***4.1.4 Force multiplication (function 5)***

The final communicative function of hyperlinks we assessed is their capacity for amplifying or exaggerating the power of an organization’s message by connecting like-minded but previously disparate groups. To examine this we looked at the extent of ‘link-back’ taking place within the various party families in our analysis, i.e. the number of times parties from the same ideological group hyperlinked to others in their group. Table 6 reports the results for each party grouping. The figures reported in the first column are the total number of parties within a particular party family that made an outbound link to another party. The figures in the second column are the total number of unique outbound links made by these

parties to other parties. The figures that follow are the distribution of these outbound links across party types. The final column reports the proportion of the links made that were ‘link-backs’ within the same ideological grouping.

**[Table 6 about here]**

Thus, taking the far left as an example, eight of the 21 far left parties made links to 33 other parties from across the ideological spectrum. Of these links, 23 or 69 percent were to other far left parties, the others going to leftist parties and one even going to a far right party.<sup>16</sup>

Right-wing parties presented a very similar pattern to those on the left with a similar proportion (68 percent) of their links back to the party seed set going to other right-wing parties. Regionalist parties emerged as the real isolates of the party system, however, none of them linked to any other parties in the database. Such results might be expected given the highly focused and somewhat exclusionary nature of their political agenda. Centre and Left-wing parties emerge as the most ideologically pluralistic in their linking patterns, a finding that again is not overly surprising (particularly for centrist parties) given the middle ground

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<sup>16</sup> Subsequent investigation revealed this was a hotlink to the British National Party embedded in an archived 2003 newsletter of the Communist party of Great Britain (CPGB). The article referred to the growing threat of BNP candidates being fielded in the upcoming 2003 local elections. The link was included without any direct comment and appeared to be done as an ‘fyi’. Overall, the very limited extent of cross-linkage by parties from clearly opposing ideological positions is seen to lend support to our interpretation of links as ‘promotional’ in nature rather being a form of attack or negative advertising.



they occupy between the mainstream parties – although most appear to lean more toward the left than the right side of the spectrum. It is the ecologist and far right parties, however that prove the most likely to link back to their own party family members. Indeed all of the party links made by the ecologist parties are to other environmentalists.

Thus, consistent with expectations, it does appear that far right parties have a greater proclivity toward multiplying their presence online through adopting a more self-referential strategy in their link practices. Indeed given the generally smaller nature of their networks one can argue that their message is among the most concentrated and self-promoting.

Ecologist parties are also more inclined toward inter-linking on the web, however, their networks are much larger and thus the force multiplication effect may be somewhat diluted.

## ***4.2 Inter-party competition: normalizing or equalizing?***

To examine questions about whether the internet is bringing about any changes in the level of party competition we compared the number of unique sites linking to each of our seven party types. For purposes of this section we considered left and right parties as major parties and the rest as minor parties. The results are reported in Table 7.

[Table 7 here]

Table 7 indicates that the average party had around 137 different sites linking toward them on the WWW. While the mainstream left and right both hovered around this average, the

ecologist parties enjoyed the highest prominence, with 246 links into their sites on average while the far right and centre parties are among the least well positioned, receiving only 70 and 92 links on average, respectively. Far left parties proved to be slightly higher than average, with 154 links to each party. Most countries follow this pattern to a large degree. A couple of exceptions here are the Austrian far right, which has a higher than average level of inbound connectivity than other parties in the Austrian party system (69 inbound links compared with an average of 60 for all Austrian parties) and the mainstream right-wing in the UK (an average of 312 inbound links per party, compared with the average of 203 for all UK parties). The higher profile of the Austrian far right may result from the fact that the party in question – the Austrian Freedom Party – has proved to be one of the most prominent far right parties in Europe.

Overall the results do present something of a challenge to the findings of increasing normalization found in the existing website analysis literature that relies on comparing site quality. Looking at online communication from a horizontal perspective, the voices of the mainstream do not appear to be dominating those of the fringe. Within a given party system, ecologist parties emerge as the most extensively networked and thereby arguably more accessible to web users than most of the major left or right-wing parties. However, this finding this does not hold for all non-mainstream players. Those on the far right are manifestly less visible than other types of party and receive around half as many links in as

do the major right-wing parties.<sup>17</sup>

As well as examining the visibility for these different party types we examined the number of inbound links they receive as proportion of the number of outbound links they make (Table 8). This ratio provides a sense of how hard a political party has had to ‘work’ (in terms of linking to other organizations) to gain some visibility for itself.

**[Table 8 about here]**

The results show that the average party receives around 2 inbound links for every outbound link they made. Overall, therefore, parties appear to be enjoying a reasonable return on their investment in hyperlinking. Most of the parties, with the exception of the regionalists, appear to be positioned close to this average, with the centre and left-wing parties being slightly below and the right-wing parties slightly above. Thus, while some parties have to work slightly harder than others to raise their profile with other organizations on the web, the findings do suggest that some kind of ‘link multiplier’ effect may be in operation, whereby a party making more of an effort to network with other groups and share their audience

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<sup>17</sup> For purposes of this analysis each of the inbound links is treated with equal weight since as noted in the methodology section, overall volume of links is regarded as a good proxy for online visibility. It is acknowledged, however, that some inbound links from sites with a high volume of traffic (BBC news for example) would generate more traffic than a link coming from a low profile ‘hobby’ site put up by a single individual. Questions of inbound links’ “authoritativeness” or weight is, therefore, a task for future research.

through hyperlinks are likely to see a reward in terms of a doubling in the number of sites pointing back to them. How well this ratio compares to that of other political groups and/or institutions is an issue for future research.

## 5 Discussion

This analysis has demonstrated that political parties do differ in their use of hyperlinks and thus horizontal communication more generally. Specifically, we have shown that distinctions can be drawn between parties from different ideological families in terms of the scope and types of links they seek to foster across cyberspace. These differences, we have argued, affect parties' performance of a range of communicative functions online – namely network building, audience sharing, information provision, image creation and force multiplication.

Overall, our analysis shows that parties on the left and those with an environmental agenda are forging the largest networks on the web, and do so predominantly with other types of advocacy groups and organizations as indicated by their non-profit non-commercial (.org) status. Leftist parties also tend to be more likely to favor international links than other parties and are more open to linking to a variety of other parties from different sides of the political spectrum. Ecologists appear to be much more inclined toward preserving the purity of their message, however, linking only to other ecologist parties. Far right parties, on the rare occasions they link to other parties, appear to follow a similarly insular logic.

Parties on the right, as well as those with a regionalist focus, are not so active in exploiting this lateral aspect of web communication, maintaining smaller networks that are more nationally focused and also commercially and government oriented. From an information provision perspective, the results suggest that leftist parties are more inclined toward audience sharing and to use their links to supply visitors with access to more partisan information, while the right tends toward supplying more neutral sources. From an image-building or symbolic perspective, the findings suggest that parties are indeed bringing their offline identities into the online environment. Left-wing and particularly far left communist groups are traditionally seen as more internationalist in their outlook, building global alliances between workers and the disadvantaged against the forces of capitalism. Conversely right-wing parties are typically seen as more inclined to promoting national identity, as supportive of existing institutions as well as commercial and financial interests. An unexpected finding is that the performance of the far right parties is so weak compared to that of other parties. Given the extent to which the web has been celebrated as ‘their’ medium, it is surprising that they are not using it more extensively. However they do appear to cultivate the ‘force multiplication’ aspect of hyperlinks, suggesting that what they lack in quantity they may make up in quality. Their networks, while smaller, may be more homogeneous and consistent in the message they deliver.

Our results on inbound links show that while the mainstream left and right perform reasonably well in terms of the numbers of other web sites pointing toward them, far left

parties are just as popular and ecologist parties much more so. Far right and centrist parties, however, do not register very strongly in this regard. Such findings indicate that while the major players may be outstripping their minor counterparts in the content of their sites, when it comes to actually gaining access to the sites, at least some of the smaller parties may have an advantage over them. As such one can argue that these results indicate the potential of the web to at least re-balance, if not equalize, the playing field of inter-party competition. It is notable that far right parties perform poorly in the visibility stakes, being among the least linked to party sites on the WWW. These findings further challenge the perception of right-wing extremists as highly prominent online force. As the findings on inter-linkage indicate, however, it may be that their influence is exercised more strategically, through isolated and strongly inter-linked sub-communities on the web.

## **6 Conclusion and plans for future research**

In this paper, we have presented a new methodological approach, adapted from the fields of web mining, data visualization and statistics that involves the collection and categorization of large volumes of hyperlink data, rendering it useful to investigate ongoing questions about the impact of the internet on political organizations. In particular the questions we have explored are the extent to which parties in democratic systems are using their hyperlinks to network, share audiences and information as well as sending out different messages about

their outlook and purposes through their choice of network partners. Our findings have shown that parties from all sides of the political spectrum are building networks and sharing audiences through hyperlinks, however, it is the far left and the Greens that are most active in this regard. In addition, the images that parties are creating online largely mirror their offline ideological outlooks. Finally, although far right parties are found to occupy the smallest networks this may well be due to a preference for keeping their connections within their own ideological 'family', and linking to like-minded sites. Our analysis has also questioned the growing orthodoxy in the online parties literature that inter-party relations are undergoing a normalization process. While the major parties may increasingly be offering the best sites they are not as frequently cited on the web as their fringe counterparts, particularly those on the far left.

In forming these conclusions we have opened up a new set of questions requiring further investigation. In particular it would be useful to have a more detailed picture of the types of issue-networks that sit beneath the .org and .com labels on the left and right. Among far right parties such probing would be of particular interest since it would allow us to explore the existence of a more homogeneous extremist sub-network. Finally, in resolving questions of normalization and equalization, while the number of inbound links from unique sites on the web offers a valid measure of online visibility, the status or visibility of these link sites themselves needs some consideration. Building in a second and even third layer of outbound links from these connecting sites and exploring the inter-linking patterns between them with

some network analysis tools would constitute a next step to establishing measures of party sites centrality or marginality on the web. The extension to the PCD that such steps would require, however, demand a greater computational and data storage resources than were available for the purposes of this project. In addition, in adding further layers of linkage to the database, one also introduces the potential problem of “topic drift” - the inclusion of pages that are not relevant to a study of political party networking.<sup>18</sup>

Notwithstanding all these possible reforms and future expansions to the data retrieval and categorization process, we consider the existing database to be relevant and useful to address the questions posed in this analysis and also that its utility will increase over time. The automated information retrieval approach employed means that repeat data collection can be undertaken. Thus, the evolution of parties’ online networks becomes a topic for future and ongoing study. Also while we have chosen to look at political parties’ networking activities, these methods can obviously be applied to a range of other actors both within and outside of political science. We would hope, therefore, to expand the focus of our analysis to other types of social and political organizations thereby mapping the emerging and shifting nature of group allegiances and ideological clusters in the broader online environment.

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<sup>18</sup>One possible approach is the Support Vector Machine method employed by Hindman et al. (2003).



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## **Annex: Classification of parties**

The party classification system was developed after consultation with a range of sources from the literature on party classification. The foundation of the scheme was based on that put forward by Vandermotten and Lockhart (2000) who used survey data of voters, as well as political histories and programs to classify parties into three basic groups - left, right and extreme right - each of which had sub-categories. After consulting Day (2002), Jacobs (1989), Luther and Müller-Rommel (2002), Katz and Mair (1992) and Carter (2001), as well as personal correspondence with Professor Richard Katz (23/08/04), we decided that this schema was overly reductionist and should be expanded to include the far left and ecologists as separate categories and we also added a 'regionalist' party category (Winter and Cachafeiro, 2002). Following Vandermotten and Lockhart (2000), secondary classifications are possible, however only the seven primary classifications were used in this paper.<sup>19</sup>

To assign parties to one of these ideological families, we consulted the party websites and, in addition to the sources noted above, further literature including Evans (2003), Bull and Newell (1997) and Broughton and Donovan (1999). Additional guidance was provided by the "expert judgement scores" of political parties provided by Huber and Inglehart (1995) and

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<sup>19</sup> The secondary classifications are: Far Left (Communist, Anarchist, Revolutionary Marxist); Left (Socialist and Social Democratic Parties) Centre (Liberals and those forming alliances/coalitions); Right (Liberal Conservatives, Christian Democratic Parties); Far right (Populist and neo-nazi parties.)

Lubbers (2000), bearing in mind the limitations to their use (see Budge, 2000).<sup>20</sup>Following the logic of Huber and Inglehart, economic policies were used as the main criteria for assigning mainstream left and right labels. Thus, discussion of markets, lower taxes, and controlling inflation were regarded as classic right-wing statements and government ownership, social welfare provision and addressing unemployment, as left wing. Far left parties included all Communist, Anarchist, Revolutionary and Marxist parties. Far right included neo-nazi/fascist organizations, as well as the new radical right-wing populists originally identified by Betz (1994) (but see also Ignazi, 2003 and Norris, 2005). Parties articulating predominantly environmental or regional autonomy concerns were classified as ecologist or regionalist. Finally, classical Liberal parties (favoring minimal government intervention and freedom of the individual) and those that typically formed alliances or coalitions were given their own category - Centre.

The provisional assignment of parties was then referred to a panel of country experts and based on this feedback, a final decision was made by the authors as to parties' classification. Note that while each expert sought to revise the classification scheme to better fit their country, none rejected the basic seven-fold categories they were asked to apply.

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<sup>20</sup>Expert scores run on a left to right scale from 0 to 10 and we used them to confirm the general orientation of parties as left and right and centrist rather than their placement in our discrete categories of far right, right etc.

**Table 1: Political party classification data**

<i>URL</i>	<i>Party name</i>	<i>Party name (English)</i>	<i>Country</i>	<i>Type</i>
<a href="http://www.oevn.at/">http://www.oevn.at/</a>	Osterreichische Volksnartei	Austrian People's Party -OVP	AUT	R
<a href="http://www.spoe.or.at/">http://www.spoe.or.at/</a>	Sozialdemokratische Partei Osterreiches	Social Democratic Party of Austria	AUT	L
<a href="http://www.fpoe.at/">http://www.fpoe.at/</a>	Freiheitliche Partei Osterreichs	Freedom Party of Austria	AUT	FR
<a href="http://www.gruene.at/">http://www.gruene.at/</a>	Die Grunen	The Greens	AUT	E
<a href="http://www.liberales.at/">http://www.liberales.at/</a>	Liberales Forum	Liberal Forum	AUT	R
<a href="http://www.kpoe.at/">http://www.kpoe.at/</a>	Kommunistische Partei Osterreiches	Communist Party of Austria	AUT	FL
<a href="http://www.slp.at/">http://www.slp.at/</a>	Sozialistische LinksPartei	Socialist Left Party	AUT	L
* <a href="http://www.leninist-current.org/rkl">http://www.leninist-current.org/rkl</a>	Revolutionar Kommunistische Liga	Revolutionary Communist League	AUT	FL
<a href="http://members.chello.at/leopartei/">http://members.chello.at/leopartei/</a>	Liste der EU-Opposition	List of the EU-Opposition	AUT	L
<a href="http://www.arbeiterinnenstandpunkt.net/">http://www.arbeiterinnenstandpunkt.net/</a>	Gruppe ArbeiterInnenstandpunkt	Workers' Standpoint Group	AUT	FL
<a href="http://www.sozialliberale.net/">http://www.sozialliberale.net/</a>	Die Sozialliberalen	The Social Liberals	AUT	L
<a href="http://www.die-demokraten.at/dd/index.htm">http://www.die-demokraten.at/dd/index.htm</a>	Die Demokraten	The Democrats	AUT	R
<a href="http://members.magnet.at/cwg/frameset.htm">http://members.magnet.at/cwg/frameset.htm</a>	Christliche Wahlergemeinschaft	Christian Voters' Community	AUT	FR
<a href="http://www.nationaldemokraten.net/">http://www.nationaldemokraten.net/</a>	Nationaldemokratisches Aktionsburo	National Democratic Action Bureau (quest)	AUT	FR
<a href="http://www.u-m-p.org/">http://www.u-m-p.org/</a>	Union pour un Mouvement Populaire	Union for the Popular Movement	FRA	R
<a href="http://www.parti-socialiste.fr/">http://www.parti-socialiste.fr/</a>	Parti Socialiste	Socialist Party	FRA	L
<a href="http://www.udf.org/">http://www.udf.org/</a>	Union pour la Democratie Francaise	Union for the French Democracy	FRA	R
<a href="http://www.pcf.fr/accueil.php">http://www.pcf.fr/accueil.php</a>	Parti Communiste Francais	French Communist Party	FRA	L
<a href="http://www.planeteradicale.org/asp/index.asp">http://www.planeteradicale.org/asp/index.asp</a>	Parti Radical de Gauche	Left Radical Party	FRA	L
<a href="http://www.lesverts.fr/">http://www.lesverts.fr/</a>	Les Verts	The Greens	FRA	E
* <a href="http://www.rpf-ie.org/">http://www.rpf-ie.org/</a>	Le Rassemblement	The Rally	FRA	R
<a href="http://www.mpf-villiers.com/">http://www.mpf-villiers.com/</a>	Mouvement pour la France	Movement for France	FRA	R
<a href="http://www.m-n-r.net/">http://www.m-n-r.net/</a>	Mouvement National Republicain	National Republican Movement	FRA	FR
<a href="http://www.lutte-ouvriere.org/">http://www.lutte-ouvriere.org/</a>	Lutte Ouvriere	Workers' Struggle	FRA	FL
<a href="http://notre.republique.free.fr/amispole.htm">http://notre.republique.free.fr/amispole.htm</a>	Pole Republicain	PeRepublican Pole	FRA	C
<a href="http://mrc-france.org/">http://mrc-france.org/</a>	Mouvement Republicain et Citoyen	Republican and Civic Movement	FRA	L
<a href="http://www.lcr-rouge.org/">http://www.lcr-rouge.org/</a>	Ligue Communiste Revolutionnaire	Revolutionary Communist League	FRA	FL
<a href="http://www.cpnt.asso.fr/">http://www.cpnt.asso.fr/</a>	Chasse -Pêche -Nature -Traditions	Hunting -Fishing -Nature -Traditions	FRA	R
<a href="http://www.frontnational.com/accueil.php">http://www.frontnational.com/accueil.php</a>	Front National	National Front	FRA	FR
<a href="http://www.cap21.net/">http://www.cap21.net/</a>	Citoyennete Action Participation pour le 21 eme siecle	Citizenship Action Participation for the 21st Century	FRA	E
<a href="http://www.generation-ecologie.com/">http://www.generation-ecologie.com/</a>	Generation Ecologie	Ecology Generation	FRA	E
<a href="http://www.mei-fr.org/">http://www.mei-fr.org/</a>	Mouvement Ecologiste Independent	Independent Ecologist Movement	FRA	E
<a href="http://www.partiradical.net/">http://www.partiradical.net/</a>	Parti Radical	Radical Party	FRA	L
<a href="http://www.alliance-royale.com/">http://www.alliance-royale.com/</a>	Alliance Royale	Royal Alliance	FRA	C
<a href="http://www.alternativelibertaire.org/">http://www.alternativelibertaire.org/</a>	Alternative Libertaire	Libertarian Alternative	FRA	FL
* <a href="http://www.d-l-c.org/">http://www.d-l-c.org/</a>	Droite Liberale Chretienne	Christian Liberal Right	FRA	R
<a href="http://www.democratie-socialiste.net/">http://www.democratie-socialiste.net/</a>	Democratie Socialiste	Socialist Democracy	FRA	L
<a href="http://federation-anarchiste.org/">http://federation-anarchiste.org/</a>	Federation Anarchiste	Anarchist Federation	FRA	FL
<a href="http://grcio.org.free.fr/">http://grcio.org.free.fr/</a>	Gauche Revolutionnaire	Revolutionary Left	FRA	FL
<a href="http://www.alternatifs.org/">http://www.alternatifs.org/</a>	Les Alternatifs	The Alternatives	FRA	FL
<a href="http://www.partiblanc.fr/">http://www.partiblanc.fr/</a>	Parti Blanc	NEW NAME: Blank Vote Party	FRA	C
<a href="http://www.pns.asso.fr/">http://www.pns.asso.fr/</a>	Parti Neo-Socialiste	Neo-Socialist Party	FRA	L

Table 1: Political party classification data (cont.)

URL	Party name	Party name (English)	Country	Type
<a href="http://www.spd.de/">http://www.spd.de/</a>	Sozialdemokratische Partei Deutschlands	Social Democratic Party of Germany	GER	L
<a href="http://www.cdu.de/">http://www.cdu.de/</a>	Christlich-Demokratische Union	Christian-Democratic Union	GER	R
<a href="http://www.csu.de/">http://www.csu.de/</a>	Christlich Soziale Union in Bayern	Christian Social Union in Bavaria	GER	R
<a href="http://www.gruene.de/index.htm">http://www.gruene.de/index.htm</a>	Bundnis 90/Die Grunen	Alliance 90/The Greens	GER	E
<a href="http://www.fdp-bundesverband.de/aktuell/aktuell.php">http://www.fdp-bundesverband.de/aktuell/aktuell.php</a>	Freie Demokratische Partei	Free Democratic Party	GER	R
<a href="http://sozialisten.de/">http://sozialisten.de/</a>	Partei des Demokratischen Sozialismus	Party of Democratic Socialism	GER	FL
<a href="http://www.dkp.de/">http://www.dkp.de/</a>	Deutsche Kommunistische Partei	German Communist Party	GER	FL
<a href="http://www2.rep.de/">http://www2.rep.de/</a>	Die Republikaner	The Republicans	GER	FR
<a href="http://www.npd.de/">http://www.npd.de/</a>	Nationaldemokratische Partei Deutschlands	National Democratic Party of Germany	GER	FR
<a href="http://www.pbc.de/">http://www.pbc.de/</a>	Partei Bibeltreuer Christen	Party of Bible Loyal Christians	GER	R
<a href="http://www.neuedemokratie.de/">http://www.neuedemokratie.de/</a>	Neue Demokratie	New Democracy	GER	R
<a href="http://www.liberal-demokraten.de/">http://www.liberal-demokraten.de/</a>	Liberalen Demokraten	Liberal Democrats	GER	C
* <a href="http://www.deutschepartei.de/">http://www.deutschepartei.de/</a>	Deutsche Partei	German Party	GER	R
<a href="http://www.akustisch-nicht-verstanden.de/dpp/">http://www.akustisch-nicht-verstanden.de/dpp/</a>	Deutsche Power Partei	German Power Party	GER	C
<a href="http://www.dvu.de/">http://www.dvu.de/</a>	Deutsche Volksunion	German People's Union	GER	FR
<a href="http://www.forza-italia.it/">http://www.forza-italia.it/</a>	Forza Italia	Go Italy	ITA	R
<a href="http://www.dsonline.it/">http://www.dsonline.it/</a>	Democratici di Sinistra	Democrats of the Left	ITA	L
<a href="http://www.alleanzanazionale.it/an/">http://www.alleanzanazionale.it/an/</a>	Alleanza Nazionale	National Alliance	ITA	FR
<a href="http://www.margheritaonline.it/">http://www.margheritaonline.it/</a>	La Margherita - Democrazia e Libertà	Margherita - Democracy and Freedom	ITA	C
<a href="http://www.ccd.it/">http://www.ccd.it/</a>	Unione dei Democratici Cristiani e Democratici di Centro	Christian Democratic Centre	ITA	R
<a href="http://www.leganord.org/">http://www.leganord.org/</a>	Lega Nord	Northern League	ITA	FR
<a href="http://www.rifondazione.it/hp/index.html">http://www.rifondazione.it/hp/index.html</a>	Rifondazione Comunista	Communist Refoundation	ITA	FL
<a href="http://www.comunisti-italiani.it/">http://www.comunisti-italiani.it/</a>	Partito dei Comunisti Italiani	Party of Italian Communists	ITA	FL
<a href="http://www.verdi.it/">http://www.verdi.it/</a>	Federazione dei Verdi	Federation of Greens	ITA	E
<a href="http://www.socialisti.org/">http://www.socialisti.org/</a>	Socialisti Democratici Italiani	Italian Democratic Socialists	ITA	C
<a href="http://www.nuovopsiarezzo.com/">http://www.nuovopsiarezzo.com/</a>	Nuovo Partito Socialista Italiano	New Italian Socialist Party	ITA	C
<a href="http://www.svpartei.org/">http://www.svpartei.org/</a>	Südtiroler Volkspartei	South-Tyrolean People's Party	ITA	Reg.
<a href="http://www.unionvaldotaine.org/">http://www.unionvaldotaine.org/</a>	New: Union Valdotaïne	Valdostian Union	ITA	Reg.
<a href="http://www.antoniodipietro.it/">http://www.antoniodipietro.it/</a>	Lista di Pietro Italia dei Valori	List Di Pietro Italy of Values	ITA	C
<a href="http://www.sergiodantoni.org/">http://www.sergiodantoni.org/</a>	Democrazia Europea	European Democracy	ITA	C
<a href="http://www.msifiammatric.it/">http://www.msifiammatric.it/</a>	Movimento Sociale Fiamma Tricolore	Social Movement Three Colour Flames	ITA	FR
* <a href="http://www.alleanza-popolare.it/">http://www.alleanza-popolare.it/</a>	Alleanza Popolare Udeur [Unione Democratici per l'Europa]	Popular Alliance Udeur	ITA	C
<a href="http://www.democraticiperlulivo.it/">http://www.democraticiperlulivo.it/</a>	Democratici	Democrats	ITA	C
<a href="http://www.linodulio.it/">http://www.linodulio.it/</a>	Partito Popolare Italiano	Italian People's Party	ITA	C
<a href="http://www.geocities.com/CapitolHill/8483/">http://www.geocities.com/CapitolHill/8483/</a>	Destra Riformista	Reformist Right	ITA	R
<a href="http://www.rinascita.info/">http://www.rinascita.info/</a>	Rinascita Nazionale	National Renaissance	ITA	R
<a href="http://www.radicali.it/">http://www.radicali.it/</a>	Radicali Italiani	Italian Radicals	ITA	C
<a href="http://www.labour.org.uk/">http://www.labour.org.uk/</a>	Labour Party	Labour Party	UK	L
<a href="http://www.conservatives.com/">http://www.conservatives.com/</a>	Conservative Party	Conservative Party	UK	R
<a href="http://www.libdems.org.uk/">http://www.libdems.org.uk/</a>	Liberal Democrats	Liberal Democrats	UK	C
<a href="http://www.uup.org/">http://www.uup.org/</a>	Ulster Unionist Party	Ulster Unionist Party	UK	R

Note: \* denotes that the website for the party was either not valid or not functioning during the period of the data collection. Key: AUS - Australia, AUT - Austria, FRA - France, GER - Germany, ITA - Italy, GBR - United Kingdom; C - Centre, E - Ecologist, FL - Far Left, FR - Far Right, L - Left, R - Right, Reg. - Regionalist.



Table 1: Political party classification data (cont.)

<i>URL</i>	<i>Party name</i>	<i>Party name (English)</i>	<i>Country</i>	<i>Type</i>
<a href="http://www.snp.org.uk/index.html">http://www.snp.org.uk/index.html</a>	Scottish National Party	Scottish National Party	UK	Reg.
<a href="http://www.dup.org.uk/">http://www.dup.org.uk/</a>	Democratic Unionist Party	Democratic Unionist Party	UK	R
<a href="http://sinnfein.org/">http://sinnfein.org/</a>	Sinn Fein	Sinn Fein	UK	L
<a href="http://www.plaidcymru.org/">http://www.plaidcymru.org/</a>	Plaid Cymru	Party of Wales	UK	Reg.
<a href="http://www.sdlp.ie/">http://www.sdlp.ie/</a>	Social Democratic and Labour Party	Social Democratic and Labour Party	UK	L
<a href="http://www.independenceuk.org.uk/">http://www.independenceuk.org.uk/</a>	United Kingdom Independence Party	United Kingdom Independence Party	UK	R
<a href="http://www.greenparty.org.uk/">http://www.greenparty.org.uk/</a>	Green Party of England and Wales	Green Party of England and Wales	UK	E
<a href="http://www.bnp.org.uk/">http://www.bnp.org.uk/</a>	British National Party	British National Party	UK	FR
<a href="http://www.socialist-labour-party.org.uk/">http://www.socialist-labour-party.org.uk/</a>	Socialist Labour Party	Socialist Labour Party	UK	L
<a href="http://www.party.coop/index.asp">http://www.party.coop/index.asp</a>	Cooperative Party	Cooperative Party	UK	L
<a href="http://www.n9s.org/">http://www.n9s.org/</a>	British Nazi Party	British Nazi Party	UK	FR
<a href="http://www.comunist-party.org.uk/">http://www.comunist-party.org.uk/</a>	Communist Party of Britain	Communist Party of Britain	UK	FL
<a href="http://www.cpgb.org.uk/">http://www.cpgb.org.uk/</a>	Communist Party of Great Britain	Communist Party of Great Britain	UK	FL
<a href="http://www.natfront.com/">http://www.natfront.com/</a>	National Front	National Front	UK	FR
<a href="http://www.white.org.uk/">http://www.white.org.uk/</a>	White Nationalist Party	White Nationalist Party	UK	FR
<a href="http://www.alp.org.au/">http://www.alp.org.au/</a>	Australian Labor Party	Australian Labor Party	AUS	L
<a href="http://www.liberal.org.au/">http://www.liberal.org.au/</a>	Liberal Party of Australia	Liberal Party of Australia	AUS	R
<a href="http://www.npa.org.au/">http://www.npa.org.au/</a>	National Party of Australia	The Nationals Queensland	AUS	R
<a href="http://www.democrats.org.au/">http://www.democrats.org.au/</a>	Australian Democrats	Australian Democrats	AUS	C
<a href="http://www.greens.org.au/">http://www.greens.org.au/</a>	Australian Greens	Australian Greens	AUS	E
<a href="http://www.onenation.net.au/qld/qld.html">http://www.onenation.net.au/qld/qld.html</a>	Pauline Hansons One Nation	One Nation Queensland Division	AUS	FR
<a href="http://www.clp.org.au/">http://www.clp.org.au/</a>	Northern Territory Country Liberal Party	Northern Territory Country Liberal Party	AUS	R
<a href="http://www.wa.greens.org.au/">http://www.wa.greens.org.au/</a>	The Greens (WA)	The Greens (WA)	AUS	E
* <a href="http://www.progressivealliance.org.au/">http://www.progressivealliance.org.au/</a>	Australian Progressive Alliance	Australian Progressive Alliance	AUS	C
<a href="http://www.cdp.org.au/main.asp">http://www.cdp.org.au/main.asp</a>	Christian Democratic Party	Christian Democratic Party	AUS	R
<a href="http://www.nucleardisarmament.org/">http://www.nucleardisarmament.org/</a>	Nuclear Disarmament Party	Nuclear Disarmament Party	AUS	FL
<a href="http://www.ozemail.com.au/~irgeo/amp.htm">http://www.ozemail.com.au/~irgeo/amp.htm</a>	Australian Mens Party	Australian Mens Party	AUS	C
<a href="http://www.cecaust.com.au/">http://www.cecaust.com.au/</a>	Citizens Electoral Council	Citizens Electoral Council	AUS	FR
<a href="http://www.cpa.org.au/">http://www.cpa.org.au/</a>	Communist Party of Australia	Communist Party of Australia	AUS	FL
<a href="http://www.familyfirst.org.au/">http://www.familyfirst.org.au/</a>	Family First Party	Family First Party	AUS	R
<a href="http://freetradeparty.tripod.com/">http://freetradeparty.tripod.com/</a>	Free Trade Party	Free Trade Party	AUS	R
<a href="http://www.iso.org.au/">http://www.iso.org.au/</a>	International Socialist Organisation	International Socialist Organisation	AUS	FL
<a href="http://www.ldp.org.au/">http://www.ldp.org.au/</a>	Liberal Democratic Party	Liberal Democratic Party	AUS	R
<a href="http://ncpp.xisle.info/">http://ncpp.xisle.info/</a>	Non-custodial Parents Party	Non-custodial Parents Party	AUS	R
<a href="http://www.progressivelabour.org/">http://www.progressivelabour.org/</a>	Progressive Labour Party	Progressive Labor Party	AUS	L
<a href="http://www.shootersparty.org.au/">http://www.shootersparty.org.au/</a>	Shooters Party	Shooters Party	AUS	R
<a href="http://www.socialist-alliance.org/">http://www.socialist-alliance.org/</a>	Socialist Alliance	Socialist Alliance	AUS	FL
<a href="http://www.knowledgecollegetutors.com/sd.htm">http://www.knowledgecollegetutors.com/sd.htm</a>	Socialist Democracy	Socialist Democracy	AUS	FL
<a href="http://www.sep.org.au/">http://www.sep.org.au/</a>	Socialist Equality Party	Socialist Equality Party	AUS	FL
<a href="http://www.socialistpartyaustralia.org/">http://www.socialistpartyaustralia.org/</a>	Socialist Party of Australia	Socialist Party of Australia	AUS	FL
<a href="http://ausfirst.alphalink.com.au/">http://ausfirst.alphalink.com.au/</a>	Australia First Party	Australia First Party Sydney Branch	AUS	FR
<a href="http://www.users.bigpond.com/AAFI.htm">http://www.users.bigpond.com/AAFI.htm</a>	Australians Against Further Immigration	Australians Against Further Immigration	AUS	FR

Note: \* denotes that the website for the party was either not valid or not functioning during the period of the data collection. Key: AUS - Australia, AUT - Austria, FRA - France, GER - Germany, ITA - Italy, GBR - United Kingdom; C - Centre, E - Ecologist, FL - Far Left, FR - Far Right, L - Left, R - Right, Reg. - Regionalist.

**Table 2: Political parties in sample by party type and country**

	Far Left	Left	Centre	Right	Far Right	Ecologist	Regionalist	All
Australia	7	2	2	9	4	1	0	25
Austria	2	4	0	3	3	1	0	13
France	6	7	3	4	2	4	0	26
Germany	2	1	2	5	3	1	0	14
Italy	2	1	8	4	3	1	2	21
UK	2	5	1	4	4	1	2	19
All	21	20	16	29	19	9	4	118

**Table 3: Number of outbound hyperlinks by party type and country**

	Far Left	Left	Centre	Right	Far Right	Ecologist	Regionalist	All
Australia	41	67	55	49	24	274	NA	54
Austria	230	128	NA	121	17	103	NA	114
France	193	195	65	84	6	99	NA	133
Germany	23	196	9	25	28	1	NA	34
Italy	98	118	77	100	120	145	20	89
UK	89	36	226	71	27	42	35	57
All	111	125	73	67	38	107	28	82

**Table 4: Generic TLD of outbound links, by party type and country**

Party Type	1st	2nd	3rd	Other	Unknown	Total
Far Left	.org	com	net			
	34	15	7	3	41	100.0
Left	org	com	edu			
	23	22	8	8	39	100.0
Centre	org	com	gov			
	19	18	12	7	44	100.0
Right	com	org	gov			
	22	15	12	6	45	100.0
Far Right	com	org	net			
	20	16	5	4	55	100.0
Ecologist	org	com	net			
	31	19	6	3	42	100.0
Regionalist	com	org	net			
	39	28	7	4	22	100.0
Country						
Australia	org	com	gov			
	38	35	12	10	5	100.0
Austria	com	org	gov			
	11	8	4	6	71	100.0
France	org	com	net			
	32	23	8	7	31	100.0
Germany	org	com	net			
	7	4	1	0.5	88	100.0
Italy	org	com	net			
	12	10	14	3	72	100.0
UK	org	com	gov			
	33	30	20	5	11	100.0
	org	com	gov			
All	23	20	5	9	43	100.0

**Table 5: National/international identity of outbound links, by party type and country**

Party type	National	International	Unknown	Total
Far Left	37	16	47	100.0
Left	36	16	49	100.0
Centre	69	2	30	100.0
Right	58	7	34	100.0
Far Right	57	4	39	100.0
Ecologist	42	10	49	100.0
Regionalist	30	4	67	100.0
Country				
Australia	49	6	45	100.0
Austria	57	19	24	100.0
France	23	10	67	100.0
Germany	78	10	12	100.0
Italy	69	4	27	100.0
UK	44	15	41	100.0
All	49	10	42	100.0

**Table 6: Inter-linkage between political parties (seed set) by party type**

	Total no. of parties linking	Total no. of links made	Far Left	Left	Centre	Right	Far Right	Ecol.	Reg.	% of links within party family
Far Left	8	33	23	6	0	2	1	1	0	69
Left	7	12	1	6	3	1	1	0	0	50
Centre	5	10	0	4	5	0	0	1	0	44
Right	9	21	0	2	1	15	1	2	0	68
Far Right	6	5	0	0	0	1	4	0	0	80
Ecologist	2	6	0	0	0	0	0	6	0	100
Regionalist	0	0	0	0	0	0	0	0	0	NA
All	37	87	24	18	9	19	7	10	0	68.5

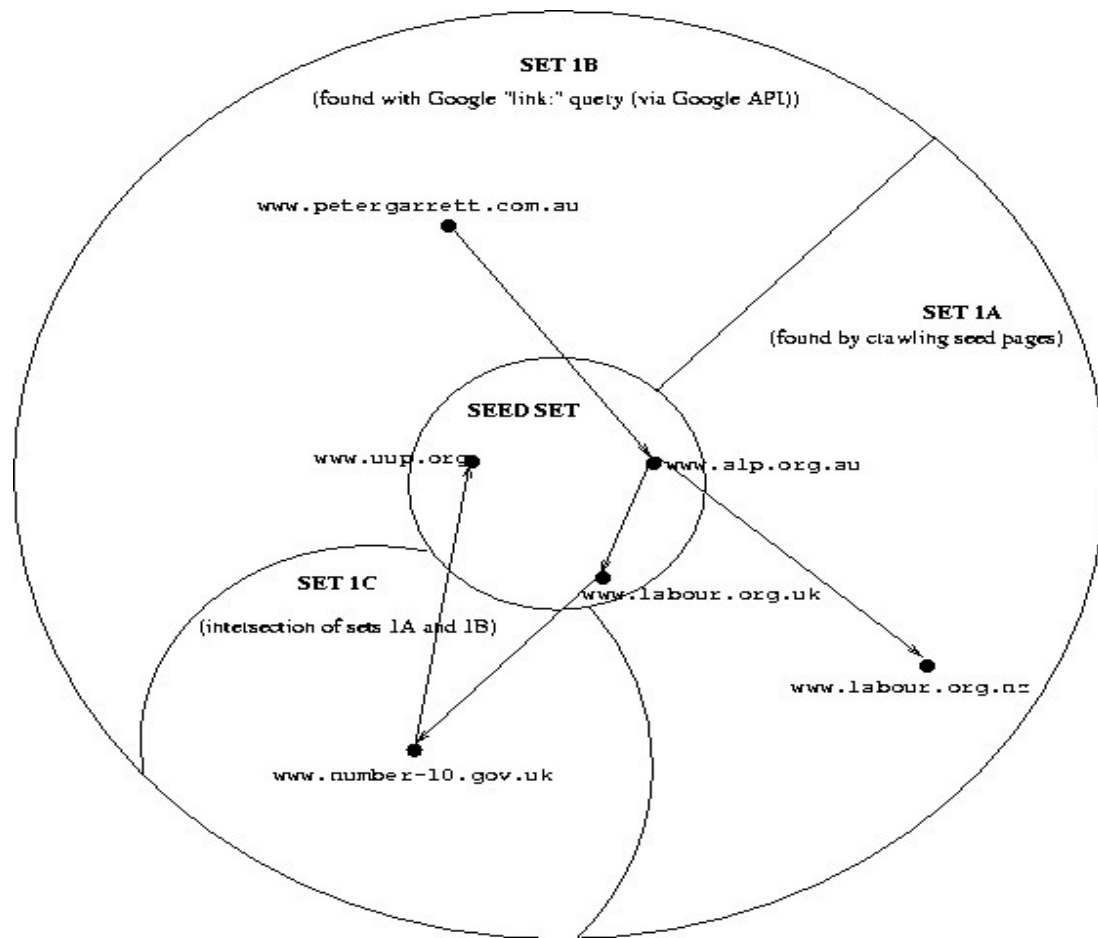
**Table 7: Number of inbound hyperlinks by party type and country**

	Far Left	Left	Centre	Right	Far Right	Ecologist	Regionalist	All
Australia		136137	112	79	31	385	NA	107
Austria	48	18	NA	80	69	170	NA	60
France	187	117	15	92	39	58	NA	103
Germany	192	344	4	259	59	714	NA	208
Italy	286	396	115	131	163	282	51	156
UK	54	179	282	312	64	429	320	203
All	154	140	92	151	70	246	185	137

**Table 8: Ratio of inbound to outbound hyperlinks by party type and country**

	Far Left	Left	Centre	Right	Far Right	Ecologist	Regionalist	All
Australia	3.3	2.0	2.0	1.6	1.3	1.4	NA	2.0
Austria	0.2	0.1	NA	0.7	4.1	1.7	NA	0.5
France	1.0	0.6	0.2	1.1	6.4	0.6	NA	0.8
Germany	8.3	1.8	0.4	10.3	2.1	714.0	NA	6.1
Italy	2.9	3.4	1.5	1.3	1.4	1.9	2.5	1.8
UK	0.6	5.0	1.2	4.4	2.4	10.2	9.1	3.5
All	1.4	1.1	1.3	2.2	1.9	2.3	6.7	1.7

**Figure 1: Structure of PCD – data collection perspective**



**Figure 2: LGL cybermap for the ALP (outbound links)**

