11
The History of the Internet Search Engine: Navigational Media and the Traffic Commodity

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Summary This chapter traces the economic development of the search engine industry over time, beginning with the earliest Web search engines and ending with the domination of the market by Google, Yahoo! and MSN. Specifically, it focuses on the ways in which search engines are similar to and different from traditional media institutions, and how the relations between traditional and Internet media have changed over time. In addition to its historical overview, a core contribution of this chapter is the analysis of the industry using a media value chain based on audiences rather than on content, and the development of traffic as the core unit of exchange. It shows that traditional media companies failed when they attempted to create vertically integrated portals in the late 1990s, based on the idea of controlling Internet content, while search engines succeeded in creating huge "virtually integrated" networks based on control of Internet traffic rather than Internet content.

11.1 Introduction

In 1999, the political economist Dan Schiller wrote that "[W]e must locate the Internet within the evolving media economy. We must learn to see how it fits within, and how it modifies, an existing force field of institutional structures and functions." (Schiller 1999). In his early study, Schiller cites examples from Internet search engines such as Yahoo! and Infoseek among other cases. This chapter presents an investigation of the search engine market, in terms of its history, its ownership and its structure. It also examines the wider relationships between the search industry, the media industry, and the technology industry. This chapter seeks to deepen avenues of analysis suggested by Schiller by focusing specifically on the case of Internet search engines as they have developed over time. We ask: in what way are search engines similar to and different from traditional media institutions? In what ways are traditional media institutions involved in the search engine business and vice versa? Thus, how have search engines evolved over time to be part of the media economy?

This chapter uses a political economy of communication framework to investigate the centralisation of the search engine industry, which began as competitive market composed of many companies, into an oligarchic market structure composed of

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three dominant suppliers. It highlights the relation of those suppliers to the huge media conglomerates, telecommunications companies, and software giants who have each at times sought to take a stake in the market. It also examines the role of strategic alliances and distribution agreements in securing market position with a network and further consolidating the oligarchic structure of the market.

The chapter builds upon the insight that in order to analyse the search engine industry, we must look at the *value chain for audiences* rather than for content (e.g., news stories or television productions) as is common in analysis of media. Online, it is relatively simple to produce content – what is considerably *more* challenging is to attract audience. With the transformation of the value chain we can understand the history of search – for example, the otherwise puzzling failure of the large media conglomerates to dominate the search engine industry as they attempted to do.

The chapter takes the format of a chronology of the search business, which is divided into three periods: first, the creation of the first search engines and the period of technological entrepreneurs in the mid-1990s, resulting in a competitive market of relatively small companies; second, a period of portals and vertical integration in the late 1990s which saw many search engine acquisitions by traditional media and telecoms; and third, a period from 2001 onwards characterised by the exit of traditional media and telecoms and a period of consolidation. Today's search engines are not vertically integrated, but have developed an immense network of alliances both forward and backward along the audience value chain which form a strong, stable, and flexible base from which to defend their business position given the rapidity of technical change – a kind of "virtual" integration which nevertheless poses strong barriers to entry into navigational media.

This chapter tells the story of the emergence of navigational media as a global industry. As more and more of our global cultural heritage becomes digitized and distributed in fragmentary form, this form of media will become increasingly important. Elements of the new system – its oligarchic structure, global extent, and centralisation in the US – are familiar to students of media history. Other elements – the importance of localized innovation systems and venture capital – are familiar to technology researchers. Yet other elements, such as public service issues and the role of the state, are yet missing from the debate.

11.1.1 Internet Search Engines and Media Theory

Search engines are highly technical constructs. So, it may be appropriate, particularly in a book focusing on multidisciplinary perspectives on Web searching, to interrogate the focus on *media* rather than, for example, technology studies. Are search engines really "media" in the same way as television or radio or newspapers?

The social theorist and media John Thompson defines "mass communication" as "the institutionalized production and generalized diffusion of symbolic goods via the transmission and storage of information/communication." (Thompson 1990: 219). This definition seems clearly to contain entities such as search engines, which certainly transmit and store symbolic goods, are produced by large institutions, and

are diffused not only in the United States but around the world. In fact, the search providers Google, MSN, and Yahoo! are the top three Websites worldwide, but the list of the top 15 also includes the smaller search provider Ask and major search distributors[140] AOL (Time Warner), Lycos, and Wanadoo (see Table 11.1).

But just as clearly, search engines don't produce the type of content that Thompson was considering. They don't, in effect, produce narratives or stories – as Google's CEO, Eric Schmidt, said, "Google is simply an aggregator of information," (Sullivan 2006, time 11:02). This is true, for the most part; nonetheless, search engines do mediate between the user and other Websites, sorting, classifying, and constructing a lens through which we view other content on the Web. They are also, primarily, funded through advertising, which we recognise as a core business model for media.

However, the primary reason we turn to media theory is that it offers a well-developed theory of institutional power and the relation of that power to the content of our media in the form of the political economy of communications (PEC).

A recent series of articles has highlighted the some of the deficiencies of search engines:

- They appear not to index the whole Web. In 1994, a study claimed the top six search engines together indexed only 42% of the Web (Lawrence and Giles 1999), although a more recently study put coverage at 80–90% for each of the

Table 11.1 Top 15 Online Properties Worldwide, March 2006

Property Name	Unique Visitors (000)[a]	Global Reach[b]
Worldwide Total	694,260	n/a
MSN-Microsoft Sites	538,578	77.6%
Google Sites	495,788	71.4%
Yahoo! Sites	480,228	69.2%
eBay	269,690	38.8%
Time Warner Network	241,525	34.8%
Amazon Sites	154,640	22.3%
Wikipedia Sites	131,949	19.0%
Ask Network	127,377	18.3%
Adobe Sites	115,774	16.7%
Lycos, Inc.	109,394	15.8%
CNET Networks	107,589	15.5%
Apple Computer, Inc.	98,622	14.2%
Real.com Network	78,104	11.2%
Monster Worldwide	74,152	10.7%
Wanadoo Sites	73,446	10.6%

[a] Those aged 15+ who have used the Internet during the month. Excludes traffic from public computers such as Internet cafes and, access from mobile phones or PDAs.
[b] Reach denotes percentage of unique visitors who have accessed the online property during the month
Source: adapted from comScore World Metrix

[140] These organisations purchase the search services they provide to their customers from one of the technology providers listed above.

major Web search engines (Vaughan 2004). Nevertheless, it is argued that most of the major Web search engines have little overlap. Also, many databases attached to the Web, sometimes called the "invisible Web," appear not to be covered (Bergman 2001). Even where protocols for interfacing with search engines exist, for example through the Open Access Initiative, the best search engine was able to find only 60% of this content (McCown et al. 2006).

- Engines do not appear to index the Web reliably. Fluctuations the documents returned have been reported for identical search terms on the same engine over both the medium term (1½ years) and the short term (10 days) (Bar-Ilan 2000; Bar-Ilan and Peritz 1999).
- Engines appear to systematically favour certain Websites. Several studies have shown that "popular" Websites – that is, sites with more links pointing to them – are favoured by search engines, creating a "rich-get-richer" effect (Kleinberg and Lawrence 2001; Lawrence and Giles 1999). Country of origin may have an effect, with American sites being favoured in a cross-national comparison of results between China, Taiwan, Singapore, and the US (Vaughan and Thelwall 2004). Language features may also result in poor results – recent studies have reported failures of search when confronted with non-English languages (Bar-Ilan and Gutman 2005; Choros 2005).

What are we to make of these deficiencies? Certainly they arise from the technology of the search engines; however, technology is not found, but made – in this case, by people working in particular institutions in a particular historical setting. Political economy suggests that the development of technology is intimately intertwined with the social, political and economic context in which it arises. In the context of capitalism, the quest for profit both directs technical development in information and is supported by them (Schiller 1992; Webster 2002). From this viewpoint, we cannot understand either the functions of search or its deficiencies without analysing and coming to terms with the context in which they have arisen.

While therefore most people, initially, reject search engines as "media", there is a strong argument to suggest that the elements that make up the search engine's content – its indexes, its crawlers, its displays of results – are influenced by its overall position in the capitalist economy. The fact that they produce lists and not narratives, in this case, is central to the analysis of their history, as we argue below.

11.2 The History of Search Consolidation

James Curran (Curran and Seaton 2003:250) argues that the Internet from the mid-1990s onwards entered a commercialised phase in which mainstream companies – in particular large media conglomerates such as Bertelsmann, Vivendi, Time Warner, News International, and Disney – began to dominate the Web, owning 3 quarters of the most visited news and entertainment sites. But in this study, we find that large media firms are conspicuously absent from the major search engine providers (which, as we have seen, are also the most highly visited Websites) in 2006, that is to say Google, Yahoo, and Microsoft. In fact, the only large media conglomerate

to be represented in the top 15 properties shown in Fig. 11.1, above, is Time Warner (most likely its huge ISP and online service provider AOL).

Figure 11.1 presents in diagrammatic form the development of the major Internet search engines of the past dozen years since the invention of the Web. The chart consists of three periods: first, a period of *technical entrepreneurship* from 1994 to late 1997; second, a period which was characterised by *the development of portals and vertical integration* from late 1997 to the end of 2001, in which major media companies and network providers attempted to buy their way into the search arena; and finally a period of *consolidation and "virtual" integration* from 2002 to the present day. While presented as analytically distinct, these three periods of course overlap to a certain degree; for example, it is certainly possible to find technical entrepreneurs in the middle period (Google and Overture are excellent

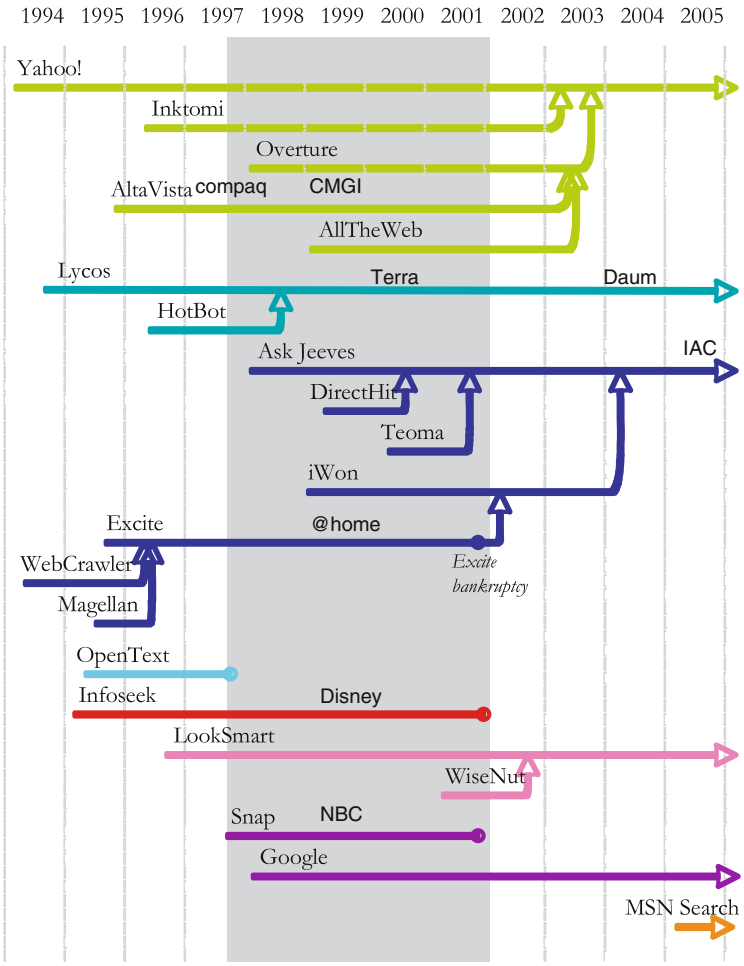

Fig. 11.1 Search engine mergers and acquisitions in the three periods of search history. Data from company Websites and press reports

examples), and attempts at consolidation in the early period (e.g., Excite's early acquisition of Magellan and WebCrawler.

The periods into which I have classified the short history of search are essentially based on shifts in revenue models and ownership, and give primacy to the economic history of search over its technological history. Clearly technological innovation is also important; and indeed, the shifts in revenue and economics closely coincide with technological developments and are related to pre-existing structures for capitalising on technology. But a history of technological "successes" is not sufficient to explain the dynamics of the search market, nor can it adequately characterise an industry likely to generate some $12 billion in 2006.

Of the 21 search ventures listed in Fig. 11.1, only six remain independent entities. Of these, only four produce algorithmic search results of the whole Web: Yahoo, Google, MSN, and Ask. As regards the remaining two, Lycos no longer operates a Web search engine, but purchases search from Yahoo, and LookSmart no longer operates its own directory, but has transformed into a provider of paid search results.[141]

11.2.1 Technological Entrepreneurs (1994–1997)

The history of modern search engines begins in the non-commercial setting of the academy or research institution. Technologically speaking, search engines developed from the academic discipline of information retrieval. Information retrieval itself is something of a hybrid between information science and computer science. From information science, information retrieval draws theories of information categorization and the human cognitive process in information seeking. From computer science and artificial intelligence springs the desire and the ability to automate catalogue creation and information retrieval from catalogues (see Singhal 2001 for a short overview of the development of information retrieval as a field). It is no surprise, therefore, that most of the earliest Web search engines were created in computer science research laboratories, primarily in academic institutions. Table 11.2, below, shows the earliest Web search engines and their locations, organized chronologically[142].

In these early search engines, two alternative models of service provision can be seen. First, the *Web directory* provided groups of sites that were categorised and in some cases given ratings by an editorial team. Examples of the directory strategy

[141] In other words, they search an index of advertisements placed by website owners, rather than an independent index of results generated by crawling the web.

[142] Not included in this chart are Archie, a pre-Web search engine for FTP sites developed by McGill University student Alan Emtage in 1990 and Veronica, a similar engine for Gopher sites, developed at the University of Nevada in 1993. Also excluded are the first two Web search engines, the WWW Wanderer, the first spider to crawl the web, developed by Matthew Gray, a researcher at MIT, in 1993, and Aliweb, developed in 1993 by Martijn Koster while he worked for Nexor in Nottingham, England. Neither of these technologies was commercialised.

Table 11.2 Early period web search engine dates, institutions, and founders

Engine/ Directory	Date went live[a]	Institution (Location)	Developer(s)	Position at time of development
Yahoo (directory)	Feb 94	Stanford University (Palo Alto, CA)	Jerry Yang	Computer Science (CS) PhD students
			David Filo	
WebCrawler (engine)	20 Apr 94	University of Washington (Seattle, WA)	Brian Pinkerton	PhD student in CS
Lycos (engine)	July 94	Carnegie Mellon University (Pittsburgh, PA)	Dr Michael Mauldin and Bob Leavitt	Postdoctoral research fellow in CS
Infoseek (engine)	13 Feb 95	n/a (Sunnyvale, CA)	Steve Kirsch	Serial technology entrepreneur – founded Frame Technology and Mouse Systems. BA and MS from MIT.
OpenText (engine)	Apr 95	n/a (Waterloo, Ontario, Canada)	(uncredited, possbly OpenText VP of Information Retrieval Larry Fitzpatrick)	Early provider of search interfaces to products such as Oxford English Dictionary
Magellan (directory)	Aug 95	n/a (Sausalito, CA)	Isabel & Christine Maxwell	Daughters of publishing magnate Richard Maxwell, originally published a print guide to the Web
Excite (engine)	29 Sep 95	Stanford University (Palo Alto, CA)	Graham Spence	Recent CS graduates (apart from Krausz who graduated in political science)
			Joe Krausz	
			Ben Lutch	
			Ryan McIntyre	
			Martin Reinfreid	
			Mark Van Haren	
AltaVista (engine)	15 Dec 95	Digital Equipment PARC (Palo Alto, CA)	Dr Louis Monier	Research fellow
Inktomi (engine)	20 May 96	University of California at Berkeley (Berkeley, CA)	Dr Eric Brewer	Assistant professor of CS and graduate student
			Paul Gaulthier	
LookSmart (directory)	28 Oct 96	Reader's Digest (Melbourne, Victoria, Australia)	(uncredited)	(uncredited – presumably the publishing team acting through ordinary channels?)

[a] Dates refer to when the search engine became publicly accessible.
Data derived from original press releases and news reports.

included Yahoo!, Magellan (who pioneered editorial ratings), and LookSmart. The second model was much more complex technically, and involved used automated technology to browse Websites, store them in an electronic index, and automatically retrieve them based on user queries. These were more properly called *engines*. The two main axes of technical competition at this stage were the size of the engine or directory index and the speed of retrieval.

Early search enterprises had three primary sources of revenue: venture capital, product licensing, and advertising. Later, money raised on the stock markets would help to fund the business. In particular, venture capital was absolutely crucial, since during this phase of technological entrepreneurs, no one was exactly sure how the business would be funded – that is, whether the licensing and advertising revenues would prove viable.

Just how uncertain the business model of Internet search was is emphasised in an interview with the first Chief Financial Officer (CFO) of Lycos, Ted Philip:

> "We didn't have a model to follow," Philip recalled. "There was no such thing as advertising on the Internet at that time…We had no business plan. All we had was a piece of technology." (quoted in Gavetti and Rivkin 2004:15)

Vinod Khosla, the Silicon Valley venture capitalist who gave seed funding to Excite, says the same: "I had to develop a complete business plan. Being a navigation service for the Internet wasn't originally on the list of what they wanted to do" (quoted in O'Brien 1997). The Yahoo! founders expressed similar sentiments (Battelle 2005: 59). Even those who did have a revenue plan, like Infoseek, weren't able to make it stick. Infoseek's initial $9.95/month subscription plan, which included a hundred free queries and ten cents per query after that (Infoseek, 1995a), quickly crumbled in the face of free services from Lycos, Yahoo, WebCrawler and Magellan.

The business model that most eventually decided on was a mix of advertising and licensing. Webcrawler began taking limited sponsorship on December 1, 1994 (Pinkerton 2001). On May 22, 1995, a short three months after its debut, Infoseek announced that it was introducing a new free service supported by advertisers[143] in addition to its subscription model (Infoseek 1995b). It later claimed to have introduced cost-per-thousand (CPM) advertising pricing to the Web[144] (Infoseek 1997). It certainly was the first in the search market, and it was quickly imitated. Carnegie Mellon announced in June that Lycos would become a commercial company in partnership with CMGI Ventures (a venture capitalist). It would "offer advertising space on its site and [would] license the catalog as well as key technology components" (Carnegie Mellon University 1995). Just nine days later, Yahoo! announced that it would, as founder Jerry Yang put it, "make a graceful transition from being a not-for-profit hobby into a professional commercial service" (Yahoo!

[143] Original advertisers were Sun Microsystems, Storage Computer and the Internet Shopping Network.

[144] CPM pricing essentially charges a fixed cost – say $10 – for every one thousand viewings of an advertisement; sponsorships, on the other hand, are typically paid at a fixed price irrespective of the numbers of people who actually view the advertisement.

1995). It debuted with five advertisers in a three-month trial. Magellan followed suit in October of 1995.

Thus by the time the second wave of search pioneers – AltaVista, Excite, Inktomi, and LookSmart – launched their services, advertising was already widespread on Web search engines. However, a second revenue stream was also clearly being developed. OpenText, one of the few companies that preceded the Web, based their plan on primarily on software licensing, as did Inktomi, which launched with a deal from Wired Digital to operate its new "HotBot" search engine.

In fact, licensing was in many ways the preferred model for many of the entrepreneurs: licensing was a known software business model, with predictable, ongoing revenue. Advertising was much more linked to Hollywood than Silicon Valley. Nevertheless, advertising predominated in the early search market, possibly because the number of companies who wanted to license search engine technology was limited. Advertising revenue, was driven by usage (especially after the introduction of cost per thousand, and later cost-per-impression[145] pricing), and the licensing model played a part here as well – many companies quickly understood that by giving or licensing their products to large traffic source – ISPs, for example – they could quickly build up usage. Distribution deals of this type proved critical, and there were no more important sources of traffic in the early days of the Web than Netscape and AOL. These two companies, while never themselves developing search technology, were crucial in the early development of the search and navigation industry. Each of the major players partnered with one or both of these companies and in so doing secured enough viewers to keep their advertising revenue high and the company solvent until their initial offerings on the stock market.

These public offerings, in turn, brought an influx of new cash to the search engines which funded their later expansion. The level of cash generated for such young businesses was unprecedented, as a contemporary account of the Yahoo IPO from the *Financial Times* shows:

"Definitive proof of the scale of the Internet craze comes in the $1.1bn market capitalisation briefly accorded last Friday to Yahoo, an electronic catalogue of the World Wide Web. So egregious is the overvaluation…that it is hard to convey in the FT's sober prose. This is a company with total revenues of around $3m since its launch in March 1995…[it] has achieved an operating profit ($62,000) in only one of its four quarters…[and is] run by Jerry Yang and David Filo…[who] have no previous business experience." (Martin 1996)

Indeed, Yahoo! was one of the defining companies of the Internet boom period, to which we now turn. However it is worthwhile noting in passing that despite the 2001 market crash in high-tech stocks, the "Internet craze" continues: as of 20 March 2006, Yahoo's market capitalisation was $46.6bn, over forty times its "egregious overvaluation" of a decade earlier.

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[145] Cost-per-impression or CPI pricing charged a small sum (2¢ to 6¢, according to Yahoo's 1996 Annual Report) for every viewer. This was made possible by the accurate tracking of Internet servers as opposed to the more general audience measurements available for print publications.

This first period of search engine history, then, is characterised by technological innovation within research centres followed by commercialisation using advertising and licensing as business models and capitalisation through venture capital and the stock market. The market was competitive, consisting of multiple companies with different technologies.

11.2.2 Portals and Vertical Integration (1997–2001)

The middle period of the short history of search engines online comprises the heart of the dot-com boom and bust period, that is to say late 1997 to late 2001. It is characterised by the change in focus from search engines to "portals" and the involvement of traditional media and telecoms giants in the sector. If the first period of search can be characterised by technological innovation and the establishment of a vibrant, competitive marketplace for search technology, in this second period the search engines become focal points for a struggle to control the Internet as a whole on the part of traditional media companies and telecoms providers.

In general, this period in the history of search is notable for two related dynamics, which sometimes work together, and sometimes in opposition. These are: first, the growing technical opportunities for content integration; and second, the related idea that a proprietary "walled garden," or secondary Internet, could be created which might to be owned by a single company.

In order to understand these dynamics, we can use the vertical supply chain as a means of analysis. The vertical supply chain is a tool for analyzing an industry whereby activities are ordered in a sequence, which starts at the early stages of production and works its way through the various intermediaries until arriving eventually at the customer (Doyle 2002: 18). Doyle has recently defined a vertical supply chain for media as consisting of three general phases: production, packaging, and distribution. While generally useful, the supply chain is particularly helpful in understanding the dynamics of search engines at this time – but only if we change its focus, as follows.

The generic media supply chain is based upon taking *content*, that is to say, television broadcasts, news stories, pictures, etc., as the basic unit of analysis. Most traditional media companies have some element of vertical integration along this chain. So, for example, Time Warner owns production companies, networks, and cable television stations. However, it is clear that media companies operate in what is called a dual product market. On the one hand, they sell content to audiences – this is the content supply chain that Doyle is focused on. On the other hand, however, media companies sell *audiences* to advertisers. On the Internet, where audience is extremely fragmented, this turns out to be much more useful vertical supply chain to construct, since the problem is not so much getting content to your audience (a basic web page being quite easy to construct) but audience to your content. Thus, what we need is not a supply chain for media content, but a supply chain for media audiences.

To construct such a chain, we must begin by considering how audiences get on the Internet. First, they must have a computer, and the software to make it run[146]. Hardware manufacturing and software providers are therefore the first two steps in the chain. Second, they must connect to the Internet via some kind of an Internet service provider whose signal will run over telephone lines (or, possible, cable lines). The telephone or cable company and the ISP are therefore the third and fourth steps in the vertical supply chain. Fourth, they need a browser to access the Web. In the early days of the Internet, the browser was seen as the crucial point for audience aggregation. When Netscape went public, it was this insight that drove its market price sky high. Finally, in order for the audience to get to their destination Web site, they may very likely need a Web search engine, especially if this site is small and has little brand recognition of its own. Figure 11.2 presents this chain in diagrammatic form.

In general, this period of search engine history is characterized by attempts at integration – both forwards and backwards – along this audience supply chain. First, we consider attempts by Web search engines to integrate destination Websites into their products.

The development of the portal

Beginning in 1997 but accelerating in 1998, the "portal " evolved out of the navigational services (both directories and engines) developed in the technology entrepreneur phase. Portals typically had a search engine or directory service at their core, but also had many "channels" which featured content brought in directly from advertisers, including finance, shopping, travel, e-mail, music, etc.

Figures 11.3 and 11.4 show the Excite home page from October 1996 and 1997 (retrieved from the WayBack Machine at Archive.org), which illustrate this development clearly. In 1996 the page advertises that the search is "twice the power of the competition" and has content generated by the Excite/WebCrawler team, such as reviews and tours of Web content, below the search. A few services such as travel

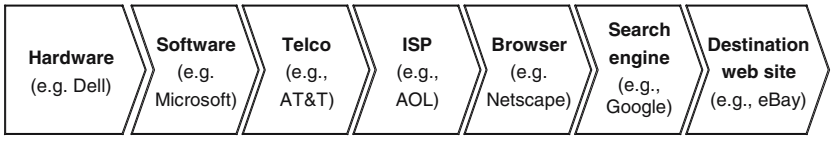

Fig. 11.2 Supply chain for search engine audiences

[146] Of course, today some audiences access the Internet without having a computer – for example, from mobile phones. However, during this period, the computer was by far the most important means of access.

Fig. 11.3 Excite home page, October 1996. (Page retrieved 16 August 2006 from http://web.archive.org/web/19961022175004/http://www07.excite.com/)

guides, news, weather, e-mail directory, maps, etc. are also on view, as well as two shopping links – for cars and flights.

In October 1997 the page has been completely redesigned to feature channels, many of which are filled with content from partners.

These content partnerships are very interesting because they begin to give glimpses of the value that Internet traffic is beginning to take online. In an offline network such as a television network, the network pays the production company for rights to distribute the show. However, the online content partnerships were often the other way around – the content producer – for example Preview Travel – would

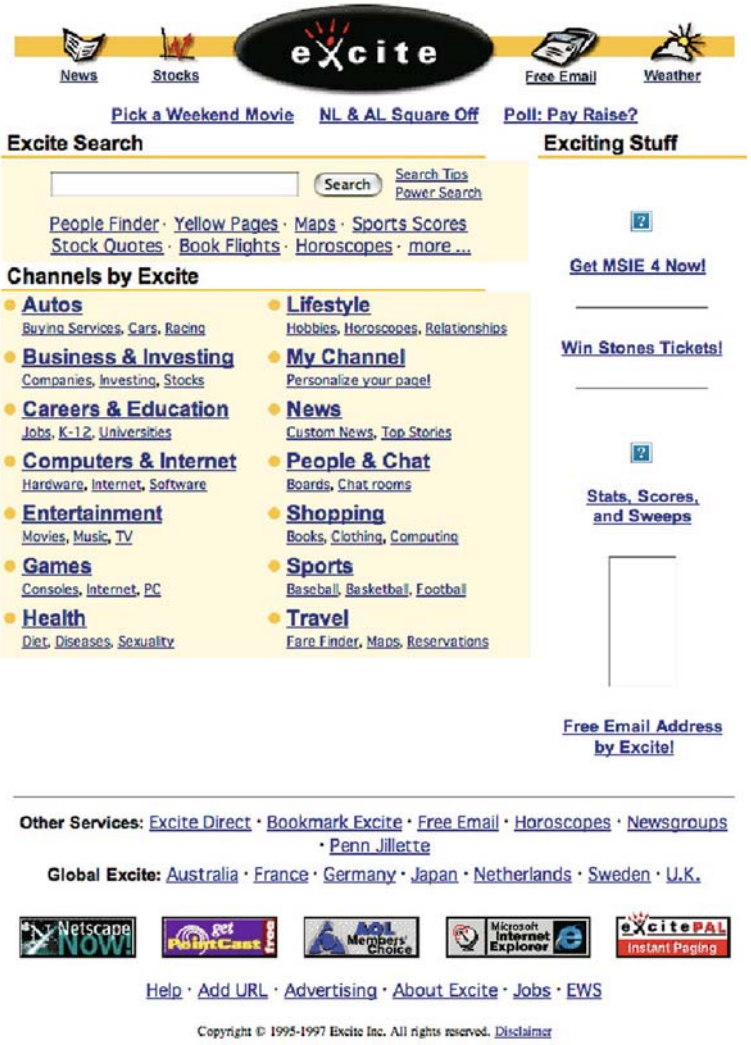

Fig. 11.4 Excite home page, October 1997 (Page retrieved 16 August 2006 from http://web.archive.org/web/19971012110114/http://www07.excite.com/)

pay Excite to be the main provider of content on its travel page, or "channel", as they began to be called.

This change requires some explanation. In television production, the network pays the production company because they need content attract an audience to sell on to an advertiser. In other words, the network acts as a packager of television content. But although a Web search engine (or portal, in this era) intuitively seems like the same kind of business, there are key differences. The Web search engine delivers not just in "impression" or view to the advertiser – although Web search

engine advertisements were sold on a cost-per-thousand-impressions basis, as we have seen – but also, and much more importantly, an interaction – that is to say, an interested person who has actually taken the time to act on the content provided. A growing exploitation of the technical infrastructure of the Web made this change possible. In traditional media it is rarely possible to give advertisers the opportunity to sell directly to customers (apart from newspaper coupons and the like). But it was possible to integrate Preview Travel travel bookings directly into the Excite travel channel, and in effect for Excite to become another avenue of distribution for Preview Travel – and in a sense the Preview Travel Website became part of Excite, and vice versa (see Fig. 11.5).

Thus partnership deals with portals, while they might involve some measure of compensation for content producers, were more typically structured as a mix of direct payments by the content producer (who might now be better understood as an advertiser) and a share of revenues from customers who purchased from a portal Website. Here the producer of content becomes the customer, and the traditional value chain gets flipped on its head.

This new revenue based on selling targeted channel impressions to content providers/advertisers and allowing sponsors to sell directly within the portal pages was so successful that channels proliferated and portals became the new face of the Web search engine. The more channels available, the more high-value sponsorship opportunities could be created, and channels were even specifically created to showcase and sell partner/advertiser products and services. Deals were often long-term (several years) and multi-million dollars – one article in the *Industry Standard* magazine cites a 4-year, $89 million deal and suggests that $2 to $10 million deals were common (Werner and Helft 2000).[147]

It is important to understand that portals were not examples of vertical integration, in the traditional sense. In general, portals were not buying e-commerce companies, and e-commerce companies were not buying portals. There is no suggestion, for example, that a travel operator like Preview Travel was trying to buy a portal like Excite. But this integration of advertiser and search engine content has important implications, as we shall see later.

Vertical integration

Also, during this period many search engines were bought and sold. Dan Schiller argues that with the wide array of cross-media ownership, the increasing transnationalization of media, and the growth of commercial sponsorship as the decisive form of media patronage, the "suitable unit [for analysis] has become the diversified media conglomerate." (Schiller 1999: 36). In the second period of search

[147] This was also true in Europe. In late 1998, I worked for Jupiter Communications, an market research company specialising in the Internet, and documented a $10 million pan-European deal between Lycos and BOL, a book retailer (Van Couvering 1998).

Fig. 11.5 Excite Travel Channel, October 1999 (Page retrieved 16 August 2006 from http://web.archive.org/web/19991008211456/http://www.excite.com/travel). Note: question marks in the figure represent non-archived images which can no longer be displayed

engine history, portals became a natural target for media and telecoms conglomerates jockeying for position as the Internet developed commercially.

It was hoped that portals could provide a new "window" or viewing opportunity for existing media content, as well as positioning media conglomerates for control of the online operating environment, by controlling the huge audiences that visited the portals. Essentially, the strategy was one of growth through vertical integration in the content supply chain – that is to say, the conglomerates hoped to dominate

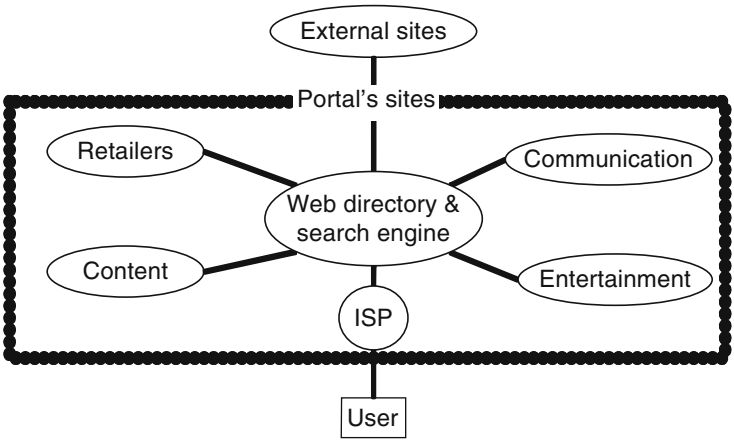

Fig. 11.6 A fully-integrated portal (adapted from Meisel and Sullivan 2000: 480)

existing portals by running their acquisitions more efficiently, exploiting economies of both scale and scope.[148]

Business texts of the time sought to promote this new kind of vertical integration, touting a concept called the "fully-integrated portal" (e.g., Meisel and Sullivan 2000, p. 484). The vision of the fully-integrated portal was to control the whole user experience online – it was envisaged that users would leave the portal only rarely to visit external sites (see Fig. 11.6). This mega-portal would have three sources of revenue: subscription fees from ISP subscribers, advertising fees, and e-commerce transactions. Economists and business pundits encouraged portals to actively to seek old media partners, develop specialised content, strengthen ties to delivery systems and expand through Europe, Asia, and Latin America.

[148] Economies of scale refer to the benefits that accrue for certain types of products when large numbers of them are produced. In media products, the cost of producing the first copy – for example, paying an author to write a manuscript, editing the manuscript, typesetting the book, proofreading the first copy, etc. – often far outweigh the costs of subsequent copies. This is even more true for digital content such as software, where copying and distribution costs are nearly zero. The technical definition is that economies of scale occur when marginal costs (the cost of producing a single copy of the work) are less than average costs – that is to say the average cost declines the more units are produced. Economies of scope refer to the benefits that accrue to companies who can re-use resources to produce a range of products. In media, you might see economies of scope when Harry Potter (the book) is used to provide the basis for Harry Potter (the movie) or Harry Potter (the DVD). Thus economies of scope technically occur when two (or more) products can be produced and sold more cheaply jointly rather than separately. In general, media industries tend to have large both economies of scale and economies of scope, and this in turn huge leads conglomerates such as Time Warner, Disney, Viacom, News International and Vivendi (Doyle 2002, pp. 13-15) which have holdings in radio, television, newspapers, cable television, and so on. As digitisation alters the format of media content, these media companies are increasingly also competing with the liberalised telecoms industry.

Indeed, in 1998 and 1999 the search engine industry witnessed a number of attempts at the creation of these megaportal by diversified media conglomerates. In mid-1998, Disney acquired 43% of search engine Infoseek for $70 million in cash and $240 million in Starwave stock.[149] (CNNMoney 1998a), acquiring the remainder of the engine in 1999 (CNNMoney, 1999). Infoseek was then a popular search engine in its own right, ranked 9th most visited Website overall (Harmon 1998). One week previously, NBC (owned by General Electric) had purchased 19% of C|Net's portal Snap! (CNNMoney 1998b). Both of these portals had respectable audience, although they were not the market leaders. Nonetheless, both of these high-profile acquisitions both failed and closed in 2001. AltaVista, once the most highly-regarded search engine on the Web, was sold by computer manufacturer Compaq (who had acquired its parent Digital Equipment) to media investment group CMGI (which also owned Lycos) for £2.3billion in June 1999 (Dignan 1999). In 2003 it was sold to Overture for $140 million, and later vanished into Yahoo! (see the next section, "Syndication and Consolidation").

Nor were media conglomerates the only actors seeking to dominate the online markets. Infrastructure providers, most notably telephony providers, also attempted forward-integrate along the audience value chain and enter the portal space. This was part of an overall strategy to engage with media content as digital content made convergence between telecoms and media more of a reality. Highly-rated portal Excite was acquired in January of 1999 for $6.7 billion in by broadband Internet service provision (ISP) company @Home (a joint venture of AT&T and several cable companies) (Junnarkar 1999). Similarly, Lycos was purchased for $12.5 billion in May 2000 by Terra Networks (owned by Spanish telephony operator Telefónica) (Kopytoff 2000). These acquisitions was motivated in part by a desire to emulate the enormous success of AOL, whose huge traffic, generated by a loyal base of ISP subscribers, enabled it to make some of the largest portal advertising deals. AOL, the largest ISP in the world at that time, also attempted to forward-integrate by purchasing browser manufacturer Netscape, and its NetCenter portal, in November of 1998 for $4.2b (Clark 1998).

Yet, none of these acquisitions fared well. Excite@Home went spectacularly bankrupt in 2001 (Wallack 2001), and Lycos, while still technically in existence today, stopped providing its own search in 1999 and was sold to South Korean online media company Daum Communications in 2002 for $95 million, a fraction of the price Telefónica paid (Reuters 2004). AOL still operates Netscape's Netcenter, but Netcenter no longer registers as a destination among searchers.

Certainly the nail in the coffin of many of these services was the dot-com crash. To a large extent the growth in sponsorship revenue for all the portals was funded by money from the dot-com boom that was going into start-up Internet ventures, which depended on becoming leaders in their respective markets, based on audience

[149] Starwave at the time operated several websites for Disney brands including abcnews.com and espn.com, as well as sites for the NFL, NBA and NASCAR.

numbers that only the search engines could bring them. When the stock market began its crash in spring of 2001, much of this money dried up. But there seem also to have been other factors.

Blevins has analysed the Disney/Infoseek deal in some detail, and accounts for the closure as a failure of "synergy" – put simply, as too much branding by Disney (Blevins 2004). This relates to a misunderstanding by the media companies about the role of the Web search engine, alluded to earlier when talking about the content supply chain versus the audience supply chain. Looking the audience supply chain for the search business, we can see that Web sites are upstream from portals, who act as distributors of audiences for other Websites like e-commerce providers. Online, however, there is not much of a distinction between the Website of an e-commerce provider or "advertiser," like Ford, and the Website of a "content provider" such as ABC. Thus, by adding more Disney content to the Go Network site (as Infoseek eventually became), Disney actually moved the portal away from its position as a distributor and instead it became merely an ordinary Website. As Blevins describes, its audience immediately began to drop, its traffic dropped, and it lost its paying customers, other advertisers. The problem of "synergy," then, as it relates to big media is as follows: search engines don't represent an economy of scope for media companies. Disney content, as it turns out, cannot be repackaged as a navigational portal. Disney is a destination site, upstream from search. A Disney portal is merely a Disney home page, with little value to audiences not interested in Disney content. In tandem, the Infoseek Web search engine was put on the back burner. In 2004, in a conference panel discussion on the history of search, Infoseek's founder, Steve Kirsch, said that around 1998 he was the only one pushing developments in search; the business people wanted to focus on the top pages, and management wanted to move towards a portal (Schwartz, 2004).

However this issue of "over-branding", if it may be termed that, seems less pertinent for infrastructure providers who should have little interest in the content of Web search engine results. Once again it is helpful to examine a particular case. The most high-profile case of failure was the acquisition of Excite by broadband cable provider @Home. This merger of a top-tier portal with an access provider backed by AT&T seemed certain to succeed and become the "AOL of broadband," but instead failed and went bankrupt within two years. Unfortunately we have no detailed academic study of this case in the way that Blevins has studied the Infoseek/Disney case. However, according to press reports at the time of the bankruptcy in 2001, the focus of Excite@Home was on developing a high-speed cable network, at the insistence of its primary shareholders, who were cable company executives. In the meantime, it began to be difficult to justify spending on developing the portal, and particularly on developing the search engine, which was seen as a necessary but unproductive part of the business – in other words, a loss-leader. Later, *Wired* magazine suggested that @Home had simply been a vehicle for off-book financing of broadband infrastructure, which AT&T bought for $307 million during the disposal of assets (Rose 2002). If that was in fact the case, the development of the Excite portal would have been irrelevant. In any case, at the

time of the sale, the search technology that had built the second-largest search and directory site on the Web was deemed worthless and scrapped, and the domain name was sold for $10 million at the time.

A similar fate seems to have befallen AltaVista, this time with computer hardware rather than cable at the core of the integration strategy. At AltaVista, too, the emphasis switched from search to portals, and it became impossible to fund the development of the search engine, leading to the departure of the chief engineer and co-founder, Louis Monier, with his team (Battelle 2005: 52).

Thus an important element that characterises this phase of Web search engine development, in addition to the acquisition of may of the search engines by larger conglomerates, is the downgrading of search within the portal ; the search engine itself was no longer seen as a key competitive advantage for a portal, but rather as a simple requirement for doing business. Recall that the vision of the fully-integrated portal was that this mega-Website would be so engrossing (or "sticky," as the industry called it) that users would never want to leave. They would arrive through the Website of the service provider, browse licensed content, use branded online email, and shop for purchases all within the confines of the portal. But search, of course, is the opposite of "sticky" – the whole point of a Web search engine is that users search for something and then leave your Website. Search seemed like a giant fire hose spraying precious audience everywhere on the Web but into the portal.

Earlier we described the inclusion of partner functionality, such as flight searching from a travel provider, into portal pages. Gradually it became clear that search functionality could be conceived of in the same way. Thus, as part of the movement towards portals, which as described earlier was linked to the integration of content from advertising and technology partners, the search engine market split into those who were intent on developing media properties – for example Go – and those who focused on a more technology-led strategy, through what was called "white-labelling" or licensing of their search technology to third parties. Inktomi was perhaps the best example of this strategy. In June 2000, for example, Inktomi delivered search results to eight separate portals, including AOL, HotBot, MSN and Snap as well as smaller Websites like iWon, LookSmart, GoTo and 4Anything (Sullivan 2000).

Despite the diminution of the actual search engine from the core of the business to loss-leading commodity, there continued to be new technical innovations in search, and new Web search companies continued to be funded by venture capital. In 1998, AskJeeves debuted with a new interface to the old Magellan idea of editorially-rated sites, by letting users input natural-language questions and organising the results around the most frequently-asked questions. Search aggregation engines such as Dogpile and MetaSearch queried all the other search engines and returned a mix of results. iWon paid its audience directly in the form of a lottery in which each search submitted counted as an entry. Direct Hit began ranking by popularity rather than simply by Website content. And also in 1998, Google began a new Web search engine with a radically new ranking algorithm, backing from significant Silicon Valley venture capitalists, and a key

distribution deal with Netscape (for an in-depth history of Google, see Vise and Malseed 2005).

Important as Google's technical innovations were, equally or perhaps more important for the future of the search engine industry as whole was the debut of GoTo. GoTo was a Web search engine with no pretence of searching the whole Web. The GoTo index was instead made up of people who paid to be there, and it allowed these advertisers to buy the search terms they wanted. Thus, when searching for "flight to New York" the travel agency or airline which had agreed to pay the highest advertising fee would be listed first. But GoTo knew that advertisers would not pay to be included in an unproven Web search engine, so Bill Gross, its founder, introduced the policy of charging advertisers not "per impression" as was now common practice, but rather per click. That is to say, the advertiser was only liable for the fee when someone actually clicked the ad – unclicked impressions were given away for free. The importance of this development cannot be overstated. Instead of the multi-million dollar impression and sponsorship deals based on the huge reach of the major portals, GoTo offered small, controllable deals where a few cents would get an advertiser a definite visitor for their site. It was a compelling business model, particularly because at first GoTo deliberately undercut the market (Battelle 2005: 111ff).

But it was more important than simply a brilliant business idea: it was part of a crucial shift in the search engine business. No longer would the *audience* (the traditional media commodity sold to advertisers) be at the core of the search business. Now, the online commodity of choice would be *traffic* or the flow of visitors from one Website to another. When audience was the main commodity sold, the key task of online Websites was to gather and keep as many audience members as possible, with the ultimate aim being – however unrealisable – to own the whole Internet. But as traffic emerged as a key commodity in its own right, sites which had as much traffic as possible – that is to say, as many people coming and going as possible – became the nexus of economic traffic. Web search engines were the obvious choices, and the new economic possibilities led to a resurgence of technical competence and the technically complex search product as essential elements of the large online media players we see today.

11.2.3 Syndication and Consolidation

The final period of the short history of search is one of consolidation and concentration, as can be seen in Fig. 11.1 at the beginning of this chapter. This is due to two interconnected dynamics. First, media and infrastructure corporations have ceded search to technology companies and are content to buy their search from search providers. Second, the revenues generated from pay-per-click search advertising have meant that the large players have been able to buy their rivals, as shown in Fig. 11.1 at the beginning of the chapter – in this period, acquisition activity of search technology is by other search providers – in fact, almost exclusively by Yahoo.

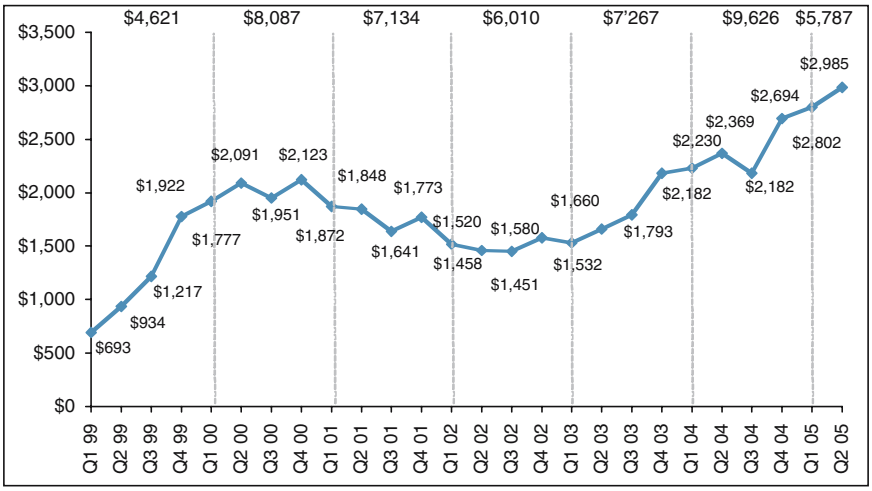

Fig. 11.7 US quarterly online ad revenue, millions of dollars, 1999–2005 (Source: Internet Advertising Bureau)

In 2001, during the dot-com crash that marks the end of the second period of search, Disney's CEO, Michael Eisner, accounted the failure of big media online by suggesting "the advertising community has abandoned the Internet" (cited in Blevins 2004: 265). At the time of writing, five years after Eisner's quote, the Internet Advertising Bureau has recorded the ninth straight quarter of advertising growth online, bringing 2004 online advertising market in the US to over $9.6 billion and the first half of 2005 to nearly $5.8 billion (the total figure for 2006 is estimated to be over $12 billion). The slump of 2001 has been revealed to be just that: a slump, as Fig. 11.7 below clearly shows. In fact, the growth in Internet advertising has outpaced the growth in television advertising in its first 10 years, according to the Internet Advertising Bureau who assemble market statistics for the industry.

This growing ad market has been increasingly funded by growth in "paid search" advertisements, that is to say the type of cost-per-click advertisements pioneered by GoTo, linked to user traffic, whether on search engine sites or syndicated to other Websites. This advertising has three key characteristics: 1) it is priced on a *cost-per click* basis; 2) it is *contextual*, linked either to page content or to the users' search term; 3) it is *syndicated* to other Websites on a revenue-sharing basis (i.e., the fee is split between the owner of the Website and the provider of the paid search service).

The market for these ads has been overwhelmingly dominated by Google and Yahoo. In November 2001, Yahoo made a deal with Overture (formerly GoTo) to launch CPC ads alongside their search results, which at that time were being provided by Google on a syndication basis (Yahoo! 2001). A year later, in December 2002, it began a transformation. Yahoo, originally a directory and always a buyer of syndicated search results, announced it would purchase Inktomi, a pure search engine company specialising in syndicated search results (Yahoo! 2002). It

began serving its own search results in April 2003 (Yahoo! 2003a). Three months later in July 2003, the company announced it would acquire Overture for $1.5 billion (Yahoo!, 2003b). At the time, Overture's clients included MSN, ESPN, and CNN, as well as a staggering 88,000 other advertisers.

Meanwhile, Google had introduced its large-scale automated advertising programme, called AdWords, in October 2000 (Google 2000) – but on a CPM basis. In February 2002 it debuted its own CPC pricing programme (Google 2002). By March 2003, it announced that it had the largest advertising programme in the world, with over 100,000 advertisers (Google 2003a). In June 2003 it began to syndicate these CPC ads to partner Websites on an automated basis, through a program called AdSense (Google, 2003b). By the end of 2005, the company reported that 44% of its advertising revenue ($2.688 billion of $6.065 billion) had been made on syndicated advertising (Google 2006a). According to Google's Website, it now has "the largest online advertising network available, reaching over 80% of 30-day US Internet users," (Google 2006b).

Microsoft and Ask, the two other major providers of Web search technology, have been behind Google and Yahoo in exploiting syndicated advertising. Until 2005/6, both Web search engines simply used the syndicated services of Yahoo (in the case of Ask) or Google (in the case of MSN) (IAC Search & Media 2005; Newcomb 2006).

Google and Yahoo also aggressively pursued a syndication strategy with access providers – in Google's case primarily syndication of search results and advertising, but in Yahoo!'s case the provision of co-branded portals including e-mail, chat, news, horoscopes, etc., as well as the technical facilities for integrating partner content and other content through the RSS (Really Simple Syndication) technical standard. One such example is the BT Yahoo! Broadband portal in the UK (see Fig. 11.8), available to all BT broadband subscribers in the UK.

While such deals are too numerous to be mapped in their entirety, a review of the US market shows Web search engine deals on the homepages that ISPs provide to their customers (see Table 11.3).

It is clear from this table that Google in particular has been very effective in distributing its search engine backwards to ISPs.[150] Figure 11.9 shows that if these figures are aggregated, Google is distributed on the home pages of ISPs that account for 55.6% of the Internet subscribers in the United States.

What these very successful syndication efforts have meant is that, effectively, Google and Yahoo have achieved a situation where, without needing to purchase companies, their advertising is carried across the Web through syndicated advertising and audience is directed to them though syndicated search engine functionality.

In his recent book reviewing the state of political economy, Mosco argues for an analysis of market concentration in media markets which focuses on something more than ownership. He suggests that "networks of corporate power" might need

[150] Infospace, which figures several times in this table, is a provider of paid search results only – in effect, a modern GoTo.

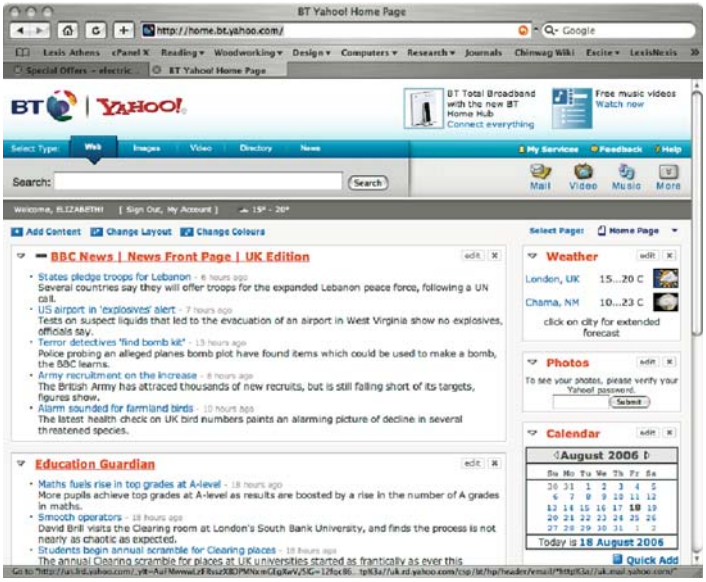

Fig. 11.8 BT Yahoo ! personalised subscriber portal (page retrieved 18 August 2006 from http://home.bt.yahoo.com)

to be investigated through "forms of corporate interaction that build powerful relationships without actually merging businesses. These forms encompass a range of 'teaming arrangements,' including *corporate partnerships* and *strategic alliances*…" (Mosco 1996: 189 italics original).

This analysis of the Web search market seams to suggest that earlier efforts at vertical integration have been replaced by what we might term a "virtual" integration along the audience value chain. In contrast to the fully-integrated portal, the new model might be conceived as a *syndicated portal*, as in Fig. 11.10, below.

The differences with the fully-integrated portal consist not merely of the qualitative difference between ownership and partnership, but also in the quantitative differences of having multiple ISPs, multiple content providers, multiple entertainment venues and multiple retailers attached to the portal. The lines between the Web search engine and its partners are lines of both traffic and money.

By using syndication both into advertisers and also into partners who are further up the supply chain such as ISPs, the new giants of search have developed a network that extends across the Internet. No longer is it necessary to "own" the Internet, as those who dreamed of controlling a fully integrated portal did. Rather, by means of "virtual" integration using technology to achieve syndication, Google and Yahoo!, and to a lesser extent Ask (formerly AskJeeves) and MSN are able to

Table 11.3 US ISP search engine affiliations by rank and provider

Rank	ISP	Subscribers (millions)	Subscriber homepage	Search results provider
	All others	22.3		
1	AOL	18.6	aol.com	Google
2	Comcast	9	comcast.net	Google
3	SBC (AT&T)	7.4	sbc.yahoo.com	Yahoo
4	Verizon	5.7	Varies	Yahoo OR MSN Premium
5	Road Runner (TWC)	5.4	www.rr.com/publicpass/	Google
6	Earthlink	5.3	my.earthlink.net	Google
7	Cox	3.1	www.cox.net	Google
8	BellSouth	3.1	*home.bellsouth.net*	Google
9	United online	2.8	my.juno.com	Yahoo
10	Charter	2.3	www.charter.net	Google
11	Cablevision	1.8	*www.optonline.net*	Infospace
12	Qwest	1.7	qwest.msn.com	MSN
13	Sprint	0.78	my.sprint.earthlink.net	Google
14	Insight BB	0.51	*www.insightbb.com*	Infospace
15	Mediacom	0.5	e.g., suncity.mediacomtoday.com	Infospace
16	Covad	0.48	b2b lines only	not determined
17	ALLTEL	0.44	www.alltel.net	Infospace
18	Citizens	0.33	frontier.myway.com	Ask
19	CenturyTel	0.29	*www.centurytel.net*	Google
20	LocalNet	0.26	start.localnet.com	Google
21	Hughes DIRECWAY	0.26	hughesnet.myway.com	Ask
22	Cincinnati Bell	0.17	broadband.zoomtown.com	Google

Source: Author analysis Data on ISP rank and subscriber numbers from Goldman (2006) and reflect Q1 2006 status.

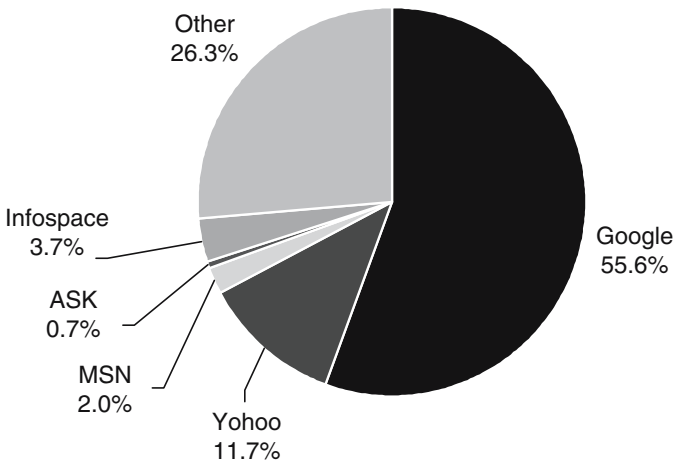

Fig. 11.9 Search affiliations of US ISPs (Source: Author analysis Data on ISP rank and subscriber numbers from Goldman (2006) and reflect Q1 2006 status)

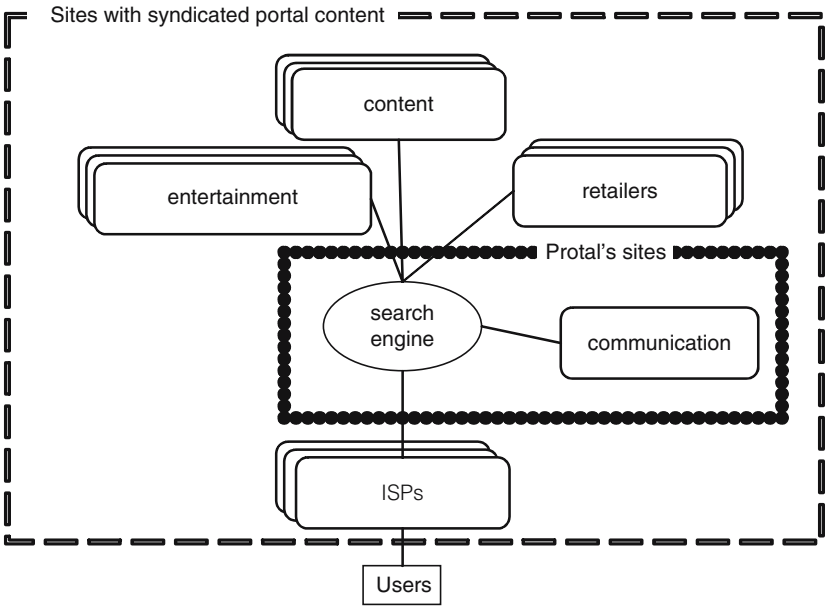

Fig. 11.10 The syndicated portal

stretch their ability to monetise (or commoditise) traffic across the Web, without the need for ownership[151].

11.3 Conclusion

Using a theoretical framework based in the political economy of communications, this chapter has reviewed the historical development of the Web search engine industry. Web search engines, it has argued, are the purveyors of a new media form – we can call it navigational media – that have taken advantage of a fragmented media market to establish their power as distributors of traffic via the creation of flexible and stable networks. Presently in 2006, we have a situation where the large Web search engines overwhelmingly dominate the search market, as Fig. 11.11, below, shows.

Other smaller search engines do exist, such as Nutch (www.nutch.com) and Gigablast (www.gigablast.com); and there are also ranges of small vertical search. However, Fig. 11.11, above, shows that Google, Yahoo!, and MSN account for 81.2% of all searches in the US market as measured by Nielsen Net/Ratings. Further, all the named others on the chart have search results provided by one of these companies or by Ask. These smaller Web search engines, therefore, are disregarded for the purposes of the present analysis.

[151] It is also worth noting that although emphasis in the industry has shifted to paid search, Yahoo and MSN also retain more traditional "portals" with channels filled by advertiser content.

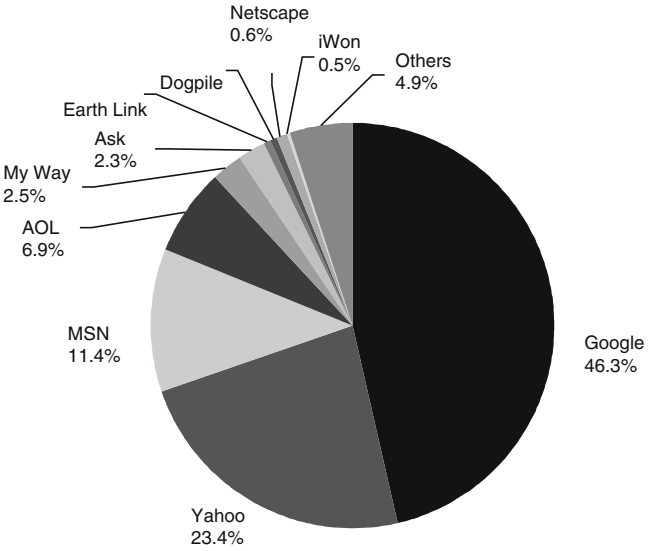

Fig. 11.11 Share of U.S. searches, November 2005 (Source: Nielsen/NetRatings for SearchEngineWatch)

As a result of the growth of paid search versus all other types of online advertising, we can also see a much more surprising result: the same four companies also account for nearly 70% of the *total* online advertising market in the US, as Fig. 11.12, below, shows. In the first half of 2005, the total online advertising market, according to the Internet Advertising Bureau (IAB), was $5.8 billion. For the first half of 2005, Google reported a US advertising income of $1.591 billion, Yahoo of $1.475 billion, MSN of $517 million, and AOL of $445 million, leaving $1.772 billion to be divided amongst all other online advertisers.

This chapter has divided the history of the search engine into three periods in order to examine this growing concentration. In the first period, many new technologies were created, and venture capital systems helped to launch the new companies into the emerging industries created out of the development of the Internet. The new companies turned to both advertising and technology licensing for revenue generation, and succeeded in gathering large audiences at least in part through significant strategic alliances with the Internet service provider AOL and the browser manufacturer Netscape, and the market was competitive, with multiple companies providing multiple search engines.

In the second period, Web search engines developed specialised content "channels" created of advertiser content where lucrative sponsorship deals became possible through the segmentation of their audiences. They were the focus of acquisition activities by both traditional media companies and telecommunications and cable companies who sought to acquire these portals with the hope of owning a large slice of the Web. However, during this period the technology of search was

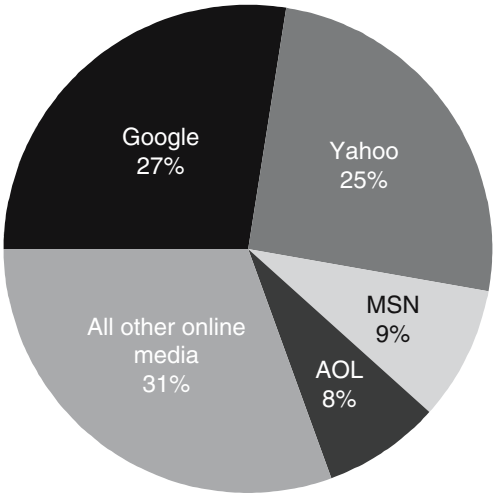

Fig. 11.12 Share of the total US online advertising market for the first half 2005 (Source: Internet Advertising Bureau, company quarterly SEC filings, author's analysis)

neglected in favour of developing channel content. There were three exceptions: first, those entrepreneurs with new technology for Web search who continued to be funded by venture capital in hopes of capitalising on the booming market for Internet stocks, such as Google and AskJeeves; second, those who developed and licensed search to other Websites, such as Inktomi; and third, those who sought to develop alternative models of payment, such as iWon and GoTo. This chapter argues that the cost-per-click model that the latter engine pioneered helped redefine the online media commodity from audience to traffic.

The third period saw the emphasis on traffic and the sale of traffic give a massive boost to search engine revenues, particularly for the early movers Overture (formerly GoTo and acquired by Yahoo during this period) and Google. Instead of seeking to acquire and control content, the engines concentrated their attention on distributing their traffic-based advertising throughout the Web. As a result, they have developed a diversified and flexible revenue base which includes hundreds of thousands of advertisers, tens of thousands of Websites on which their ads are distributed, and distribution of their search engines on most major ISPs. Microsoft, the only significant new entrant of the latter period, has so far been unable to match this "virtually-integrated" network.

The current situation, therefore, is one of oligopoly. This applies not only in the United States, upon which this chapter has focused, but all over the world. This chapter raises the very serious issue of whether or not we can now rely on competition in the marketplace, as some have urged (Goldman 2006), to assure that the provision of search to the public remains at a high quality and the deficiencies already present in search engines are remedied.

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