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The Viagra Files: The Web as Anticipatory Medium[1]

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ABSTRACT   *The article introduces the **research** behind the making of Viagratool.org, the Lay Decision Support System on the World Wide Web. Viagratool.org is a 'web knowledge instrument' made to provide realities about a drug, available by searching, form-filling, online prescription, e-commerce and the post. Collaborative filtering, made famous by the disciples of Vannevar Bush, is used to ascertain information about Viagra. As we found with the aid of a group of collaborative filterers, Viagra comes across on the Web as a party drug, with distinct user groups—clubbers, sex tourists and others—not addressed by more official information providers—regulatory bodies, the medical industry or the manufacturer.*

Presented here are the findings that have led to two versions of the support system, one for the potential Viagra consumer, and another for the often overlooked second and third parties caught up in 'Viagra situations'. In the first system, the collaborative filters found and kept information about its marketing (and re-selling), its serious harm in cocktail dosages, and insider accounts provided by seasoned aphrodisiac and other lifestyle drug users. The information is displayed in thought trajectories, each asking whether to consume it, from different angles. Importantly, the system is not a consumer-to-consumer information service or pure cohort support service. Rather, it allows a consumer to hear about Viagra from the marketeer, the emergency room medic, the humorist, and the user of Viagra and Viagra substitutes. Each could play a part in the Viagra decision. In the second version, we present Viagra situations, quite remote from the placid beach scenes with loving couples (on the Pfizer website), or a jogging Bob Dole, as seen on TV. Here, we move closer to employing the Web as an anticipatory medium by first resurrecting the second parties in Viagra situations, different from those in 'normal, loving' relationships. Finally, we call into existence third party observers, friends, onlookers, anticipating darker Viagra usage scenarios that are unavailable in the more official discourse.

Keywords: anticipatory medium, collaborative filtering, knowledge itineraries, Viagra, Web.

Introduction

We begin by touching on medieval practices of knowledge-seeking, and how they inform search engine design. Subsequently, we introduce and critique one

contemporary knowledge-seeking technique based on the old practice—collaborative filtering. Finally, in the main text, we introduce the studies and thinking behind a new instrument, Viagratool.org. The tool has been devised to take into account the old practice as well as the dominant critique of collaborative filtering applications.

Significantly, the instrument is meant to be a 'reality checker'; it shows the extent to which the unofficial accounts of Viagra—what it is, and whom it's for—are challenging the official accounts—Pfizer's older men using Viagra to treat erectile dysfunction.[2] The Viagra case study also attempts to put the new medium to a new use: the Web as an 'anticipatory medium'. We show why the Web may 'anticipate' by demonstrating how Web accounts of Viagra use and users not only enrich and complicate more official accounts by regulatory bodies, the scientific medical industry and the manufacturer, they also prefigure traditional media discoveries and third party situations on the ground. The thought and technique behind the anticipatory instrument could apply to future products and issues when the Web may be the 'first to know'.

Knowledge Itineraries and the Web

Medieval scholars, a Czech library scientist told me recently, had an intellectual itinerary that was primarily place-based.[3] Their search for knowledge began by knowing where they had to go, but not necessarily what was in store for them once they arrived. They knew the sites (the libraries), and from them they eventually would learn the texts (and the keywords). Monks and pilgrims had similar, place-based knowledge itineraries. In one of the final, place-based knowledge itineraries in this style, Alexander Csoma de Körös travelled from one site of knowledge to another in search of the origins of the Hungarian people. Instead, he ended up discovering (making known to the West) Tibetan language and literature.[4] We summon Alexander Csoma de Körös here in an effort to show that mere text-based, or keyword, queries may result in the less telling findings.

A story of medievalist scholarly practice could lead the modern developer of a search logic in at least two directions, one that is traveller-based, or one that is place-based. Here we take up the traveller-based scenario. In that scenario the developer of a search logic would rely on collective traveller knowledge. Sets of itinerant scholars would be followed, and what they have learned at the sites would be stored. To future travellers, arriving at those sites, would be recommended the collective findings of the fellows that had come previously to all the sites combined. The recommendations to be made to future scholars could be ranked according to what the most scholars have chosen to 'keep' as knowledge.

'Collaborative filtering', a current content recommendation technique, is based on the traveller-knowledge scenario. Those who have searched for a particular subject (or item), and have selected it, are providing their selection recommendations—their findings and keepings per search—to their cohorts in the future. Significantly, they are providing these findings to the travellers landing at any of the sites on the trail.

Before beginning a description of the knowledge instrument derived from this technique, I would like to lay out briefly the context where a critique of collaborative filtering is often situated. The situated critique will help to explain the choice of the different context we have selected for the technique to be employed.

The different context will also aid in explaining why certain (Web-technique-based) knowledge claims about Viagra may be made.

Collaborative filtering, which goes back to the writings of Vannevar Bush[5] and which has inspired the idea of consumers' and experts' swapping their search query strings, their preferences and/or their automated recommendations for money or free product,[6] has been criticised as an ontological and cultural 'flattener', as a means of placing entities with disparate statuses on the same plane. In discussing Amazon.com's collaborative filtering system, a critic in the *New York Times* wrote:

> They pair you with another buyer and then propose the other guy's picks to you. (. . .) It's a little sinister. Your tastes are cloned and cross-referenced so quickly you end up with the sense that idiosyncrasy is impossible.[7]

Note that the criticism does not concern an invasion of privacy as one normally understands it, that is, the matching of people and records *across* databases. One's collaboration in the system does not require furnishing personal data as name, address, income, medical records. The system is not recommending on the basis of where you live, or what you earn, together with what those variables could tell the system's users about what you are likely to buy, or why you should be rejected for certain types of insurance. Rather, the criticism is levied on the theft of idiosyncrasy, the difference between you and the other 'market niches' of one—between you and 'some guy'. At its core, perhaps, the uneasiness rests upon yielding collections of private knowledge to unknown publics, who then act upon your private knowledge without your consent.

Theoretical collaborative filterers 'solve' this problem by not only referring to an 'opting in' clause—you agree to exchange private knowledge for collective knowledge. (As was mentioned, the 'bargain' is sometimes sweetened with references to a future of earnings, as in contemporary manual or future automated 'ask the experts' schemes.[8]) The theorists also presuppose the existence of a knowledge community, with a 'commons' model, with 'perfect information' idealism. In doing so, they attempt to erase certain tragedies of the commons and perfect information, including rivalry, and data and thought scooping.

Another *New York Times* piece took up the problematic effects of perfecting the information stream, in science. The criticism is similar to the one above. It read that physicists—Web inventors and Web innovators—are becoming wary of a fallowing of the field by the Web.[9] Idiosyncratic avenues of research supposedly are being abandoned, because of increasingly perfected information flows.

> [I]nstead of fostering many independent approaches to cracking each difficult problem, the Web, by offering scientists a place to post their new results immediately, can create a global bandwagon in which once-isolated scientists rush to become part of the latest trend. (. . .) '[S]corekeeping' Web sites, which automatically track the number of times a paper is cited by others, create (. . .) social pressure against marching to a different drummer.[10]

Whilst not literally based on current collaborative filtering techniques, the 'scorekeeping' websites are the culprit in the story of the flattening of difference and the drying up of prospects for radical innovation previously brought about by

relative isolation.[11] I do not wish to evaluate the claim,[12] but only remark that both the marketplace and science have been held up historically as places that lend themselves to the ideal of the commons and perfect information, in the liberal tradition. For the market, the perfect information ideal pertains to products and prices. (Shop AltaVista lays out a price comparison of a goodly number of Viagra sellers across the Web.) In science, the ideal applies to method and findings. I would like to introduce a context, however, where neither the ideal nor the alleged common interest in perfect information adheres—the underground. The underground is often denied a place in traditional information streams, unless its relevance can be demonstrated.

Exposing Viagra For What It 'Is'

We shall not rehearse claims about the Internet and the Web as an *overall* renegade space. (Those Internet days are numbered.) Rather, we shall attempt to look into the interaction between subspaces, between spaces of the palpably non-author-itative, and the palpably authoritative. We do so with a knowledge search exercise— in the style of the old travellers now with collaborative filtering collection and evaluation techniques—and enquire into which subspaces come to play the part of the *overall* authoritative sources, according to the findings and keepings of a group of 'surfer-experts'.

The 'search for information and knowledge' exercises described here, and the ideas for the knowledge instrumentation below, were conducted with 10 advanced students at the University of Vienna in October 2000, and again with 25 advanced students at the University of Amsterdam in April 2001. The focus groups of students were invited to 'travel', 'surf' and 'forage' for information and knowledge on the Internet, i.e. find and determine what is known about a given subject that would provide answers to particular questions. Upon conclusion of the exercise, the groups were then invited to explain their 'search for information and knowledge' strategies, i.e. how they came to know about the subject, in this case a new drug— Viagra. Thus, initially, we are interested in the groups' knowledge acquisition technique, for, beyond that of mere travellers, we would like to ensure their expert status. The 'advanced-ness' of the students, noted above, derives from their self-descriptions as 'webby', meaning their experience-based capacity to forage and their alleged grasp of different foraging methods. We also briefly tested (or, in fact, hardened) this claim with a search engine tinkering sub-exercise, whereby the groups were invited to compare the same queries across three distinct engines, and devise a means (usually analogies) to describe the different engine logics to a layperson. (So we attempted to create a lay–expert divide, and make them into experts, at least briefly.) This sub-exercise also provided the groups with a vocabulary to provide a rationale for their search strategy (and, as it turned out, their 'favourite engine'), as we come to below.

What were they after? The lead questions were: What is Viagra, and whom is it for? Viagra was chosen as a subject matter because it is, in some sense, a special Internet phenomenon—a (mail order) prescription drug that is available via the Internet (click and buy) without face-to-face consultation with a physician. The drug's 'net flavour' has more features, too. Beyond the new online medical and e-commercial elements, it could be associated with two leading (underground) areas of the net: 'pornography' or sex (Viagra may be thought of as a 'sex drug') and 'piracy' (Viagra may be had through quasi-legal, unregulated channels).[13]

Does one end up crediting the 'porn and piracy' reaches of the net as knowledge sources or as knowledge pointers, when researching Viagra? Do these reaches come to over-determine the substance of the answers to what Viagra is, and whom it's for?

Along the way, we also may be able to say something about the relationship between the online and offline, between incipient Web-based knowledge, and traditional knowledge. Of crucial importance is the extent to which the medical consumer (patient or non-patient) arrives at the doctor's office with Web-derived claims to knowledge that challenge the official accounts—the doctor's, the medical industry's, the manufacturer's. (There's also the scenario where they no longer see the need to visit the doctor personally.) Findings such as these would harden claims that the Web knows, or perhaps 'knows enough', as least for those laypeople making a decision to consume. Indeed, we have dubbed the knowledge instrument described below as a 'lay decision support system', in opposition to the expert decision support systems made by the medical industry, employed by doctors and put to use by resellers.[14] A light version of such a system may be seen if one were to fill out the online form and attempt to acquire a prescription for Viagra.

But beyond the implications for doctor–patient relations and the medical industry, we are mainly interested in the Web's potential as the reality few are acknowledging, or perhaps acknowledging only at a later date. We will attempt to show, indeed, that the Web may be anticipating, and perhaps prefiguring, later acknowledged realities. Thus we shall attempt to demonstrate its potential as an anticipatory medium, at least when comparing Web accounts of what's 'really going on', with more official accounts, contemporary and future.

Ultimately, though, we have the intention of designing a knowledge instrument that builds on old scholarly practice as well as the new technique (collaborative filtering). To do so, we have the expert travellers set out on a journey, and then we collect all the findings and keepings. Simulating the collaborative filtering technique, we manually chart recurrence of results, and recommend them. We then devise a Web design piece—a new visualisation of Viagra—to show what the Web, according to the findings and keepings of the newly appointed experts, says it *really* is. In doing so, we attempt to move beyond current collaborative filtering recommendation culture—'there's also this that you may be interested in'—to a digital ontology—'you needn't bother looking further'.

The Exercises: Explaining Expert Search Considerations to the Laity

First, stock is taken of a range of search-for-knowledge strategies to provide a means to oppose chosen strategies to others, to tailor strategies to search types, and/or to mix strategies, in a carefully chosen order. To find out what Viagra's really about, the webby could begin with a 'favourite' search engine; provider or browser default pages or channels; portals; directories; databases; a single, known site; a set of known, trusted sites; sites guessed to be relevant by associative domain name reasoning; discussion lists; or newsgroups. These starting points are discussed briefly, together with expert commentary on how they should be explained to a layperson, and when they should be employed in a search for knowledge strategy.[15]

According to our experts, the choice of a search engine involves advanced (user-based)[16] knowledge of the following: language orientations, and especially indexing and ranking logics. National engines, as ilse.nl or aon.at, appear to boost

'national'.nl or .at sites for no other reason than language. By our experts, they were pejoratively dubbed 'nationalist', and dropped, perhaps too quickly, from all search strategies. AltaVista, a favourite amongst many non-experts, it was said, relies in the first instance on webmasters' self-descriptions of the contents of sites (metatags). It is via AltaVista, some argued, that one would find the underground cultures—at least, those cultures most likely to build in dubious tricks of the trade to boost their rankings across query type (such as listing both authoritative terms and 'racier' keywords in their metatags). An identity check for the true underground is the 'view source' feature in browsers, where you can see whether the metatags have been well stuffed in this manner. DirectHit, another 'tested' by some, relies on a form of 'collaborative filtering by the masses', whereby those sites returned by the engine that are in turn clicked by searcher are boosted the next time a searcher queries the same term. This was dubbed a 'populist engine'. If the logic also relies on metatags, then, it was explained, we could find the 'most popular underground', if that notion is not too oxymoronic. Google relies on link authority logics and the pointer text written by the webmaster to describe their outgoing links, so a searcher receives those sites that have the most links with the text that most matches the search query.[17] Fortunately for the understanding of one group of experts, the story had just broken that typing in 'dumb motherfucker' into Google returned a George W. Bush campaign products site at the top of the rankings. It was surmised that quite a large number of webmasters must have used that pointer text to describe the link they made to the Bush campaign products site. Anomalies or telling instances aside, the experts called Google the device most likely to return the official account, or what the majority of webmasters are calling something, on the record. Here we suggested that Google's provision of officialdom accounted for its 'popularity', and, stretching it, that the arrival of Google accounted for the Web's ascent into reputability, into matching the Web with officialdom. Previous ideas of the Web as a jungle, or rumour mill, coincided with the dominance of AltaVista, the underground's engine. Finally, meta-engines, as metacrawler, amalgamate engine returns through triangulation techniques, i.e. those returns occurring most frequently in the top sets of the leading engines are boosted in the rankings by the meta-engine. It was pointed out that meta-engines are only as good as the engines whose results they amalgamate. Should a meta-engine be found that amalgamates the official and the unofficial accounts, in a sophisticated manner, then we have one for the reality checkers, one where we can watch the competition between the lesser and greater authorities. (A few people in the groups considered such a small software project doable.)

Discussion lists and newsgroups, it was noted, are difficult to characterise generally without caricaturing. Nevertheless, both discussion lists and newsgroups tend to yield informal and tacit knowledge (viewpoints and experiences), often with references given to sources (URLs). Discussion lists, run on email, tend to have at least a quasi-institutional or (amateur) organisational character, if not a formal structure with a vetting threshold to join. Newsgroups, run through usenet, tend to be populated by subject enthusiasts alone, with no threshold to joining or staying on, apart from their newsgroups' 'culture'. Newsgroups have been around since the early 1980s and tend to follow, or at least jest about, an original 'net etiquette'; there are veterans and 'newbies'. Discussion lists are more recent, and threads of discussion are often broken by event and book announcements by professionals working within the list's subject matter. (Nettime, one major list for net theory and criticism, has attempted to maintain threads by always combining all the

announcements and sending them in single postings.) In both cases, there are what may be called 'list effects', i.e. what one comes to know about a dedicated subject from an .alt or a listserv has much to do with the existing level of discussion, and the list's tolerance for questions by the uninitiated. Intriguingly, those who joined or looked up Viagra discussion lists, arrived at the unofficial, official accounts, that is, they suddenly found themselves, initially, among users (and future users) of the product but also potentially in discussion with a representative of the marketing company that had just been hired by Viagra's maker—Pfizer—to create a new product image and advertising campaign! The previous 'image', at least in the United States, where the marketing representative is based, revolved around a 70-something Bob Dole, jogging down the beach on television, showing some vigour. Smiles abounding. Dole, it turns out (in between our two exercises), did a Super Bowl commercial—a major television event in the United States. In it he jogs down the beach again, but upon letting up, he reaches for something else—a Pepsi. This was one context for the marketing representative's query to the list for suggestions about a new look and feel for Viagra. Indeed, reports of this list incident (and the context) to one expert group occasioned many in the ranks to look further into the use of a discussion list as knowledge search strategy, and certain of the more telling findings and keepings are derived from lists. Of the particular discussion lists queried, some of which are archived on the Web, they were said to reveal underground user cultures (as opposed to the user cultures put on display in product testimonials on Pfizer's site). The lists thereby lived up to their most recent touting. They are comprised of anonymous confidantes sharing small truths. Professionals, as the marketeer, occasionally break the threads, or even kill lists all together. (The discussion moves elsewhere.)

Portals and directories, like websites, are generally heavily edited by the webmaster or organisation. (On these channels, the editorial policy extends beyond 'the content' to the link list, as many portals, borrowing content from elsewhere, only 'author' their link lists.[18]) For the purposes of stock-taking for the brief discussion, the experts conceived of portals as issue-oriented (e.g. truefood.org is dedicated to the organic vs. genetically modified food issue, albeit it is authored and branded by Greenpeace) or worldview-oriented (e.g. one-world.net is dedicated to 'global justice' and globalisation issues, with only NGO and journalistic pieces available). The experts showed little faith in all-in portals (e.g. msn.com or startpagina.nl), and 'only-if-pointed-to' interest in news portals (e.g. BBC online). They also preferred independent portals, which were defined simply as non-commercial. (By independence, for example, was not meant 'fairness', or representing as many sides and sources to an issue as possible.) They recommended surfing a favourite portal (e.g. *Wired News*) on a frequent basis for everyday net-related news, but not to use such a net news portal in the first instance for more specific knowledge-gathering needs. Nevertheless, their guidance about everyday net behaviour could not restrain a few from producing at least one collective finding and keeping from net news. *Wired News* reported that an Israeli scientist was feeding Viagra to daisies, so daisies became one of the answers to the question as to whom Viagra is for.[19] [A debate ensued, however, about whether Viagra was really for the scientist (and science). Most concurred, so that they were added as well.]

Known sites, trusted sites, and corresponding domain name sites may be used as entry ways in a knowledge search. 'Going straight to the source' on the Web— one way of filling in the notion of 'disintermediation'—often means one of two

things, according to the experts. Either one knows where to go without consulting any other site or device—the known site. (This idea occasioned the designers of Viagratool.org to make a t-shirt; perhaps advertising could make it into a known site.) Or one assumes that the leading source on a subject owns the domain name of the subject term. As a search strategy, one opens the browser and moves directly to, in our case, Viagra.com, Viagra.at, Viagra.nl, etc. These are assumed to be the authority on the subject. The 'authority' largely derives from buying power and/or from trademark law, and the idea that the domain name wars continue to shake out the pretenders from the contenders and owners, with some notable exceptions where trademarks conflict with valid claims, as in the Leonardo case.[20] Choice of authorities may revolve around a preference for .com or .org viewpoints, as Viagra.org would presumably be owned by an independent information provider, whilst Viagra.com would presumably be owned by the manufacturer. So this method revolves around presumptions and likelihoods. (At the time of research Viagra.org has been owned by 'Cisco discussions', presumably a new initiative by Cisco Systems, though we did not dig further, and is offline.) Viagra.com is indeed owned by Pfizer, as is Viagra.nl. (There is no Viagra.at.[21]) Longer domain names including the term Viagra are often encountered, most being unsubtle commercial purveyors of the product.

The designers' choice of the domain name and suffix—Viagratool.org— should be mentioned here as an attempt to compete in the same name space with the more *and* less authoritative; it also bespeaks independence and non-commercialism, without necessarily being 'fair' (as above).

Viagra According to the Web (Experts)

We may split the findings into generations or temporal realities of Viagra, according to the Web (expert surfers). In the main the first group used their favourite search engines (i.e. AltaVista and Google, for the unofficial and the official accounts of Viagra, respectively), and amalgamated the results themselves for the mixed picture. They achieved the mixed realities by concentrating on their chosen site types (independent, etc.), by amalgamating query returns, and finally by looking for recurrence across all the groups' returns. Quickly it was found that Pfizer has lost 'control' of the meaning of its drug. Whether the company has done so consciously, as a matter of strategy, has not been treated, though the presence of the marketeer in the Viagra discussion space seems to indicate a company need for strengthening Pfizer-Viagra. All together, 'Viagra' (which from now on refers to a found, mixed reality) has been defined by, or, in opposition to Pfizer's earlier attempts with Bob Dole, occupied by five types of entities:

1. *Viagra as Californian drug.* Californian e-commerce sites that, under state law, are allowed to issue online prescriptions world-wide, and, with this 'digital prescription', dispense Viagra by mail order to whomever 'passes' the prescription 'exam' and pays for it by credit card. 'California-ness' also provides Viagra with both a webby and racy texture. (Early Internet ideology often was dubbed 'Californian', and Californian may be said to stand for lifestyle experimentation.)
2. *Viagra as underground money-maker.* 'Money programs' are secondary sellers of Viagra. Surfers who click through a secondary seller and purchase Viagra on Californian e-commerce sites receive a percentage of the sales. Often these sites

load their metatags with terms such as 'death by Viagra'. Those searching the web for 'death by Viagra' (an otherwise serious concern) are often re-directed to the secondary seller site momentarily, and then auto-re-directed to the Californian seller. (*All* the middlemen earn a percentage.) The other technique employed by secondary sellers is to craft a home-made Viagra banner ad, and place it on a porn site. Clicking this banner ad brings the surfer to the Californian seller. [As mentioned, at this point, only California state law allows online prescriptions, but sales are being transacted in other (national) jurisdictions. On a UK Viagra mail order site, the buyer must 'promise' to tell his physician that he is self-administering the drug.] Buyers agree to a legal disclaimer that frees sellers of any liability.

3. *Viagra as substitute for natural aphrodisiacs.* On 'alternative lifestyle' sites, and on their discussion lists, Viagra finds itself in a part of a longer history and culture of aphrodisiacs, with user comparisons between Viagra and its natural substitutes. Here one encounters the most wide-sweeping information about Viagra, Viagra usage and Viagra lifestyle, among the leading returns. Discussions tend to encompass the advantages of mail order purchase of 'lifestyle drugs' among the 30s and 40s set. The sites are favourable towards mail order purchase of Viagra as well as Viagra's natural substitutes. The reasoning the sites employ in defence of mail order and digital prescriptions, has much to do with the idea of 'humans as intelligent agents' (one can make one's own decisions) and with confidentiality (one may live in a small town and feel embarrassed to bring a prescription to a local pharmacy and speak about one's 'problem' with a doctor). Also encountered is the argument that one may not have a 'medical problem', and thus needn't consult any physician or deal with any dispensing pharmacist. Theirs is an anti-medicalisation culture. We also learn of former Viagra users, those having left the pharmaceutical for natural drugs.

4. *Viagra as smilie.* As could be expected, many people have crafted somewhat lewd and ludic portrayals of the hazards of Viagra. Most cartoons revolve (again) around death by Viagra, and the embarrassing state of the corpse, upon discovery by the authorities. Bob Dole appears as well; mere mention is 'humorous'. Also the name Viagra—life, vigour, vivacious, Niagara Falls—is enough to bring on the smile. The humorist also appeared, if implicitly, on the *Wired News* site, with a story of Israeli scientists feeding Viagra to daisies, and finding that consumption in certain quantities, under certain conditions, delayed their drooping.

5. *Viagra as unknown emergency room predicament.* Health warnings begin with the 'Dear Doctor' letter written by a Pfizer physician to the medical community. This letter, appearing most readily on the US Food and Drug Administration site, and remounted in numerous other (highly ranked) places in official and under-ground cultures, details to paramedics and emergency room doctors the hazardous combination of Viagra and nitrates, perhaps the most well-known of which goes by the name of 'poppers'. Taken in combination with poppers, Viagra may induce a stroke. It is also written that emergency room staff often administer a nitrate to stroke victims, and that they should be aware that the introduction of a nitrate (to a stroke-by-Viagra victim in an emergency situation) could prove fatal.

The users of Viagra, broadly defined, then are Californian companies with virtual doctors, Web money-makers with referral websites and/or banner ads, former and

future natural aphrodisiac consumers, humorists (and, by extension, Bob Dole, Israeli scientists, daisies and science), and popper users now in emergency rooms. The curiosity of this list should not take away from the starkest finding from the amalgamations: Viagra, to the Web (experts), has become a lifestyle drug for men in their 30s and 40s, to be obtained from virtual doctors, having had referrals from 'death by Viagra' search engine queries or from banner ads on porn or racy sites. Having had scant previous exposure to the Viagra phenomenon, the Austrian group was surprised to learn that Viagra was developed and marketed by Pfizer as a drug to treat erectile dysfunction (ED) in active senior citizens. (Significantly, many were 'sure' it wasn't a treatment for a dysfunction per se, but rather an 'arouser', a 'stimulant'.) Part of the official ED reality was indeed encountered and retained; the Californian dispensers, as kwikmed.com, carry the Pfizer take and look on the drug, with scientific terminology (Viagra is the trade name for 'sildenafil citrate'), usage prerequisites and guidelines, mention of approval by the US Food and Drug Administration, the light blue medical appearance, a beach scene and such. But our experts are introduced to this account only with the knowledge that it appears to be a 'front', of kinds, for all the other users who are redirected there—the former natural aphrodisiac enthusiasts, the current popper users and perhaps experimenters of various varieties. (The daisies, the Israeli scientist and science, after all, could be just the tip of the iceberg, as the Dutch group found.) They also note immediately that Kwikmed is also offering treatments for obesity and hair loss, sure signs of a lifestyle drug company and midlife crisis. The most official source—Pzifer—only survived expert vetting by having had its 'Dear Doctor' letter to medics (and the FDA) mirrored and linked to far and wide. One of the more intelligent discussions is found on the yohimbe pages at the natural aphrodisiacs centre, where the downsides of Viagra are discussed next to the low moods after use of yohimbe, in user comparison stories. (The 'Dear Doctor' letter is not on Pfizer sites which perhaps explains Pfizer's absence otherwise.) Similarly, the government only arises by carrying the letter to the emergency room medics.

Before discussing the strategies and the findings of the Dutch group, I would like to move now to the first visualisation of the findings, the initial lay decision support system, also known as Viagratool.org (see also Figure 1). In the centre is the sentence from yohimbe.org: 'Viagra is a lifestyle drug like Porsche is a lifestyle vehicle'—the leading (recurring) unofficial claim, now made official by our experts. It also was partly confirmed, or at least made more comprehensible, by the Pfizer 'Dear Doctor' letter. This sums up the main finding regarding the other Viagra and the other Viagra user, our competing reality conjured by the Web.
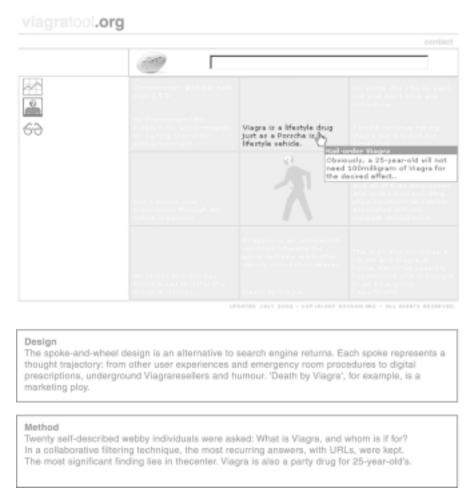
In all, the interface is meant to be an alternative to lists of search engine returns or collaborative filtering returns. It is laid out in a spoke-and-wheel design, with each spoke being a thought trajectory. One trajectory concerns the Viagra business on the Web, from sellers to the incentives for resellers, with exact dollar figures of the cuts to be taken. Another is about health and legal disclaimers, whereby thoughts extend from the disclaimer to the emergency room. Yet another spoke is about natural alternatives, their users and their lifestyles (one of which is from a discussion list); here one comes into contact with the company the drug keeps. Speaking of a Viagra alternative, for example, one user writes: 'On some days I try to wash out and don't take any yohimbine. I'll be in a bad mood, and not very creative, but the following night, I will usually sleep eight hours, and be a much heavier snorer'. Finally, the last thought trajectory concerns non-human users, as science and daisies, where thoughts may lead to prescriptions for non-humans, to ethics.

Each of the statements on the interface provides a foretaste of what's really going on with Viagra. Rolling over the statements or questions brings the tool user to one answer, i.e. rolling over 'An Israeli scientist has found a new use for Viagra', shows, 'He feeds it to daisies'. According to the experts, all that is most significantly known on the Web about what Viagra is, and whom it's for, is there in a glance. To view the source of the known, one clicks on the statement and moves to the Web page. (They are 'deep links'.)

In contrast to the Austrians, the Dutch group began the exercise with some foreknowledge of Viagra culture, if only through a very recent article in a leading Saturday newspaper magazine, with a subtitle about being able to get a hold of just about anything on the (renegade) Internet.[22] Most significantly, but unbeknownst to the researchers at the outset, was the series of stories that had broken that Viagra is a 'party drug' for ravers and clubbers. It had come to be known that carousers from Hartford, Connecticut over Dublin, Glasgow and London to Copenhagen are taking Viagra, not with poppers (as in the 'Dear Doctor' letter from Pfizer), but after ecstasy. Viagra and its users were expanding from seniors on medical treatment to recreational drug users on methanphetamines. (More non-humans were encountered, too.) Now the first Viagratool.org would become a pre-history of Viagra's evolution.

The Dutch group followed a similar search engine strategy as we discussed above (the competition between the underground and above ground), but concentrated in the first instance on the question, whom is it for? From those answers, they derived their definitions of what Viagra is. To the experts, Viagra, in April 2001, is for the following users (in order of recurrence).

1. Party people, clubbers and ravers, at places such as The Complex in London, at the The Arches and The Tunnel in Glasgow, and also in unnamed clubs in Dublin, Copenhagen, Sydney and on the West and East Coasts of the United States, see Viagra as a means of achieving erection after having taken ecstasy and/or speed. In Britain it goes by the street name 'poke'. 'The seasoned dealer claims he earns 5,000 pounds ($9,000 US) per week peddling Viagra tablets at 40 pounds ($70) a pop.'[23]

2. Older men make a comeback, but as 'patients' about to have sex. These accounts describe the 'ED target group' (erectile dysfunction), and placid beach scenes reappear.[24] It is emphasized that these 'patients' (Pfizer) know they will be having sex within an hour. The effect may last for up to four hours.

3. Women, with a thin uterus lining, and those looking for a stimulant, make their first appearance. A variety of studies has been performed. The one most frequently encountered, in Boston, concluded that it had a desired effect on 25% of women 'as long as the situation is one she would normally find enjoyable, arousing and emotionally fulfilling'.[25] (Previously, official accounts insisted that the drug was only for men.) The experts began to become slightly troubled by Viagra as stimulant upon reading such quotations, where unstated, other situations (unenjoyable, non-arousing, emotionally unfulfilling) come across just as clearly.

4. Giant Male Chinese Pandas have been administered Viagra. We learn that Viagra is the latest in a long line of reproductive treatments of pandas. The most frequently encountered quotation, from a Sichuan zookeeper, reads: 'We tried to give them Chinese medicine in the mid-1990s. As a result, the sex drive of the
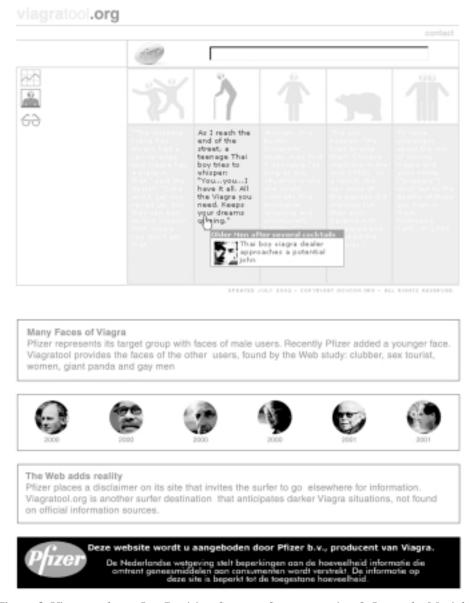
Figure 1. Viagratool.org, Lay Decision Support System, version 1. Image by Marieke van Dijk, anderemedia.nl. Reproduced courtesy of the Govcom.org Foundation, Amsterdam.

pandas did improve but they also became hot-tempered and attacked the females. That obviously wasn't so good and we had to end the experiment'.[26] Viagra, fit into a lineage of zoo-keeping efforts, becomes something given to users. The Israeli scientist, who no longer appears, comes to mind, but his tests become comparatively innocuous. (The previous relationship between animals and Viagra was different. It was once thought that the availability of Viagra would stem the slaughter of endangered species, ingredients for natural aphrodisiacs.[27])

5. Gay men, now that pre-histories of Viagra as party drug begin to be written, play the part of the proto-alternative users (for the first time). In the same stories, one reads that it shouldn't be taken in combination with an anti-HIV drug.

Foreshadowed by the Austrian findings, in the Dutch findings Viagra, overall, has become far less a medical treatment than a recreational stimulant, for party people. The beach faded to darker, late night scenes or enclosed zoo settings. Recall that

Figure 2. Viagratool.org, Lay Decision Support System, version 2. Image by Marieke van Dijk, anderemedia.nl. Reproduced courtesy of the Govcom.org Foundation, Amsterdam.

the conventional alternative users in the Austrian findings were aphrodisiac recreationists, with experience and comparative research behind them. (Older hippies on the island of Ibiza come to mind.) They have left the picture. Intriguingly, we also recall from Austria, that these users were beginning to find Viagra too expensive, and leaving the pharmaceutical anyway. Apparently, they had been accustomed to frequent use, and Viagra didn't fit with the aphrodisiac user culture. Pornographers, whilst encountered, were not 'kept' by the experts, as

referrals for the drug are often from advertising around lifestyle stories (clubbers, gays, Salon magazine) and sponsored links on search engine return pages. To obtain the drug, the pornographer is no longer among the notable passage points. Thus our underground also has improved its standing.

Pzifer, for the first time, makes the system, in a faq page introducing Viagra, with the quotations: 'So with Viagra, a touch or a glance from your partner can lead to something more';[28] and 'Take Viagra about 1 hour before engaging in sexual activity. For most patients, beginning in about 30 minutes and lasting up to 4 hours, Viagra can help you get an erection if you are sexually excited'. In the same faq, it is pointed out that the sexual excitement is a pre-condition for viagric erection, and Viagra helps only with the erection, not with the excitement. Here the Viagra user becomes a patient, in need of excitement, and about to have sex. (Without the patient tag, our experts chose to call these users men who 'know' they will have sex within an hour.) In all, the experts have arrived at three, perhaps four, non-patient user scenarios, with the non-patient predominating over the patient. Viagra, as indicated above, also has darkened. With our new Viagras we learn that women are emotionally unfulfilled, mellowed ecstasy users are seeking a sharpener, pandas are hot-tempered, and anti-HIV drug users are excluded.

For the visualisation—the second generation of Viagratool.org—we have chosen the 'face of Viagra' approach, faces indicating our new users, and by inference the new Viagras: the clubber on ecstasy; the older, expectant male patient; the emotionally fulfilled but sexually non-aroused woman; the formerly hot-tempered panda; and the gay man who is not taking an anti-HIV drug. (The gay man may or may not have HIV or AIDS.)

In the design, the name space argument (as above) still applies; we remain in the Viagra name space, with the .org outlook defined by our experts: independent, but perhaps also unfair, at least to the tastes of the old officialdom, we presume. But, in the design, the competition with the official account now becomes a little less subtle than in the first generation of Viagratool.org. At Viagra.nl, the official Dutch Pfizer site, a set of faces appear showing the official target group, largely men over 45, maybe over 50 and not older than 70. But there are new faces to be shown now.

To be clear we have no intention of 'rogueing' the Dutch Pfizer site, i.e. parodying it by using a similar look and subtly changed faces and text, in order to furnish a social (Web) critique. In fact, we (normatively) prefer their users, men who are part of loving senior couples about to embark upon on a little experiment or on a late afternoon outing to the beach. Word has reached us from the underground, however, that enriches and complicates the official account. Our newly appointed experts have deemed this word of greater value than the previously official account. Viagra has long been what it never was.

Conclusions: Third-party Accounts of Viagra

There are stark realities on the Web.

> A 52-year-old Illinois man with episodes of chest pain and a family history of heart disease died of a heart attack in March 1999 after buying the impotence drug Viagra (sildenafil citrate) from an online source that required only answers to a questionnaire to qualify for the prescription. Though there is no proof linking the man's death to the drug, FDA officials say that a traditional

doctor–patient relationship, along with a physical examination, may have uncovered any health problems such as heart disease and could have ensured that proper treatments were prescribed.[29]

A search in Altavista for 'death by Viagra' returned, in the top 10, one media story (not the one above, which is a government media story), four jokes, and five Viagra resellers. The same in Google returned an FDA death count from 1998, one medical centre report, one media story and seven jokes, two of which redirected the surfer to a reseller. 'Viagra death' in Altavista produced the same results, while in Google it returned fewer jokes and more media stories (not the one above).

The 'solution' to this (automated) search engine 'problem' put forward by commercial and non-commercial entities alike has been the human-vetted directory. Indeed, most of the major engine-portals have moved to this model, and the 'open directory project' (dmoz.org) is the leading non-profit version now hosted by google. Operating with different motives, the latter is meant to be more 'inclusive', fairer.

In the event, the commercial directory brings the user to the more official accounts (and places to order the drug), whilst the non-commercial directory has official stories, user tales, quality lists (drugs that interact with Viagra[30]) and places to order the drug. In all directories encountered, Pfizer is ranked first. The norm for the order of the directory returns is as follows: Pfizer, then government, then buy here, and perhaps some discussion. The media, the yohimbe alternative aphrodisiac centre, the 'money programs' dollar figures, the pandas, the daisies, the Boston women, the ravers, 'poke' and the 'Dear Doctor' letter are left out. We are faced with the curious situation whereby our experts do not agree with the expert human arbiters of the Web. Experts often disagree, but what's going on here?

We are not concerned; in fact, our hearts are gladdened by the contribution made by our experts. From the outset the point of the exercises has been to introduce findings of a method based on an old practice (scholar-travels), and situate that method in a new context for the travellers (the underground). We have been interested in whether the underground survives a competition with the above ground accounts (and vice versa). And, finally, we are interested in what remains from the scholar-travellers' encounter with the interaction between the polar extremes—the returns of the automated and the returns of the human. So, our experts are the creators, and arbiters, of human–engine interaction.

We are not in disagreement with either of the extremes per se, human or engine. In league with the engines, we do not take 'fairness' as an *a priori* criterion of what is presented as leading findings. In league with the directories, we would like humans to decide. Above all, however, we would like to think that there is more to be decided, after the engines, and after the humans have had their says.

What has been decided? Judging from our expert recommendations, the underground has had an airing, and Viagra leads a richer, more youthful and experimental life than it is granted by the doctors, the medical industry and by the manufacturer—all of whom retain Viagra as a prescription drug for a patient with a medical ailment.

One official account continues to hold sway: the Pfizer target group—older men with the small problem (afflicting about 30 million Americans, they say)—is to follow the Pfizer guidelines. Especially if one's ticker is not fit, see the doctor, out

of town, if necessary. But in the current (official) situation, all others appear to be allowed to experiment freely, after ticking off the right boxes in the questionnaire and giving a name, a credit card number and an expiry date. Only the emergency room medics may be not allowed free experimentation, but their entry is rather late in the game.

The underground accounts, now above ground and resting, as far as they are concerned, quite easily next to the officials', do not allow the rest to experiment freely. Depending on the Viagra in use, beware of emotional unfulfillment, hot-temperedness, the mood swings and blues of the alternatives. £40 is too expensive for poke. It may be worthwhile to watch who is taking it, for they 'know' they will have sex within an hour. (They're in certain clubs.) Porn was once the place for referrals; Salon magazine now has them. Note the disclaimer. These, and others read directly (instead of between the lines of the official accounts) are the situations the Web aids in anticipating. The Web, and the tool, are teasing out scenarios.

Finally, the Web has introduced not only the many new first parties (users), and certain second parties (the partners), but other new third parties, too. There are third-party places—the lifestyle centre and the emergency room, and there are new third party observers: the non-human ethicist, the friend (a sort of designated driver of the situation), the contemporary Viagra history-writer (not to be left to the company or to the humorist!), and the Viagratool-maker, making new accounts and scenarios official and serious. Perhaps this is what could be meant by the Web's capacity to bring to life a new (observing) voice.

Notes and References

1. Earlier versions of this paper have been presented at the Infodrome Congress, The Hague, The Netherlands, 11 April 2001; and at the International Conference of the European Association for the Study of Science and Technology (EASST), York, United Kingdom, 31 July–3 August 2002. The author would like to thank Marieke van Dijk, Auke Touwslager and Stephanie Hankey for aiding in the design of the tool and the images. For critical commentary, appreciation is extended to Noortje Marres of the University of Amsterdam; Krijn van Beek, Ira van Keulen and Mei Li Vos of Infodrome; and the anonymous referees.

2. An argument of this kind has been made in R. Rogers and N. Marres, 'French farmers on the streets and on the Web: stretching the limits of reported reality', *Asian Journal of Social Science*, 30, 2, 2002, pp. 339–53.

3. Martin Svoboda, the Director of the Czech Republic's State Technical Library, recalled reading N. Arnett, 'Mendicant sysops in cyberspace', *TidBITS*, 225/09, May 1994, at http://www.interesting-people.org/archive/1195.html. I would like to thank Rima Kupryte of the Open Society Institute, Budapest for the introduction.

4. Edward Fox, *The Hungarian who Walked to Heaven: Alexander Csoma de Koros, 1784–1842*, Short Books, London, 2001. See also Alexander Csoma de Körös, *A Dictionary of Tibetan and English*, Cosmo, New Delhi, 1978; Alexander Csoma de Körös, *Grammar of the Tibetan Language*, Akademiai Kiado, Budapest, 1984 (1834); and Alexander Csoma de Körös, *Tibetan Studies*, Akademiai Kiado, Budapest, 1984. There is another 'Tibetan connection' here, for Viagra competes with certain Tibetan animal-based virility products.

5. V. Bush, 'As we may think', *Atlantic Monthly*, 176, 1, July 1945, pp. 101–8, at http://www.theatlantic.com/unbound/flashbks/computer/bushf.htm. See also James M. Nyce and Paul Kahn (eds), *From Memex to Hypertext: Vannevar Bush and the Mind's Machine*, Academic Press, New York, 1991; and P. Resnick and H. R. Varian, 'Recommender systems', *Communications of the ACM*, 40, 3, 1997, pp. 56, 58.

6.   Anne Branscomb, *Who Owns Information?: From Privacy to Public Access*, Basic Books, New York, 1995. For a thoughtful debate around 'trading privacy for product', see *Harper's Magazine*, January 2000, pp. 57–68.

7.   Maureen Dowd in the *New York Times*, reprinted in the *International Herald Tribune*, 16 December 1999.

8.   M. Chalmers, 'Cookies are not enough: tracking and enriching Web activity with a recommender system', in R. Rogers (ed.), *Preferred Placement: Knowledge Politics on the Web*, Jan van Eyck Editions, Maastricht, 2000, pp. 99–111.

9.   See Tim Berners-Lee and Mark Fishcetti, *Weaving the Web: The Original Design and Ultimate Destiny of the World Wide Web by its Inventor*, HarperCollins, San Francisco, 1999; and J. Langer, 'Physicists in the new era of electronic publishing', *Physics Today Online*, 53, 8, August 2000, p. 35, at http://www.aip.org/pt/vol–53/iss–8/p35.html.

10.   *New York Times*, 19 June 2001.

11.   The most well-known pre-publication clearing house for physicists is ArXiv.org.

12.   The opposite claim—that the Web, the 'Daily Me', only strengthens difference by not providing an environment conducive to shared discourse—is made by Cass Sunstein, *Republic.com*, Princeton University Press, Princeton, NJ, 2001.

13.   Pornography and piracy are dubbed two leading areas of the net on the basis of the leading search queries, compiled monthly by searchterms.com. At the time of writing, the two leading terms have alternated between sex and mp3. Pornography and piracy come together most explicitly in Web areas around the term warez, where, in 2000 and 2001, pirated software sites and porn sites have become indistinguishable.

14.   See Gerald Wagner, *Körper der Gesellschaft*, Suhrkamp, Frankfurt/M, 1996; and Marc Berg, *Rationalizing Medical Work. Decision Support Techniques and Medical Practices*, MIT Press, Cambridge, MA, 1997.

15.   See also R. Rogers and A. Zelman, 'Surfing for knowledge in the information society', in G. Elmer (ed.), *Critical Perspectives on the Internet*, Rowman & Littlefield, Lanham, MD, 2002, pp. 63–86.

16.   For the rationale behind keeping in-depth knowledge of the in-built logics from the search engine user, see H. Nissenbaum and L. Introna, 'The public good vision of the Internet and the politics of search engines', in Rogers (ed.), *op. cit.*, pp. 25–47.

17.   See M. Specter, 'Search and deploy: the race to build a better search engine', *The New Yorker*, 29 May 2000, pp. 88–100.

18.   See K. Patelis, 'E-mediation by America Online', in Rogers (ed.), *op. cit.*, pp. 49–63.

19.   See Y. Y. Leshem, 'Viagra extends cuts vaselife', *Greenhouse Management and Production*, 19, 10, October 1999.

20.   Sometimes referred to as a domain name hijacking case, the Leonardo dispute concerned a trademark infringement claim on the Leonardo name made in 1999 by the Transasia Corporation. The most recent ruling has gone in favour of the Leonardo Association, the non-profit arts group, which had been using the name for its journal since 1968.

21.   See http://www.pfizer.at/ed/pat/behandlung/Viagra.htm, viewed in September 2000.

22.   *De Volkskrant Magazin*, 24 March 2001.

23.   http://www.tabloid.net/1998/08/31/Viagra_980831.html, viewed in September 2000.

24.   Looking, briefly, for elders' stories, one expert pointed to the consumer success story section at http://www.viagra.com, viewed in April 2001. **MR. LESLIE:** My name is Robert Leslie. This is my wife Judy. We have been married for 36 years. I have been in a wheelchair for the last 23. When I did get hurt, we lost a lot of stuff, you know, that—I couldn't do anymore. **MRS. LESLIE:** Going for a walk, holding hands. **MR. LESLIE:** Yes, it's just different. **MRS. LESLIE:** A walk on the beach, those are all gone, plus your physical, your sexual life is gone. It's not gone, but it's new, it's a new life that you have to learn to live with. And like he used to come up behind me and put his arm around me and kiss me on my neck, little things that people take for granted.

25.   http://www.globalchange.com/Viagranews2.htm, viewed in September 2001.

26.   For example, at http://gossipmagazine.com/managearticle.asp?c = 80&a = 43.

27. http://www.asianfools.com/print.php?sid = 92; and http://www.animalsagenda.org/article-detail.asp?menu = News&NewsID = 188, viewed in September 2001.

28. http://www.Viagra.com/consumers/about/faq.asp?n = 0, viewed in September 2001.

29. *FDA Consumer*, publication no. (FDA) 00–3235, January–February 2000, at http://www.fda-.gov/fdac/features/2000/100_online.html, viewed in September 2001.

30. http://www.usrf.org/breakingnews/Viagra_interactions.html, viewed in September 2001.