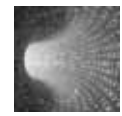

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The like economy: Social buttons and the data-intensive web

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Abstract
The paper examines Facebook's ambition to extend into the entire web by focusing on social buttons and developing a medium-specific platform critique. It contextualises the rise of buttons and counters as metrics for user engagement and links them to different web economies. Facebook's Like buttons enable multiple data flows between various actors, contributing to a simultaneous de- and re-centralisation of the web. They allow the instant transformation of user engagement into numbers on button counters, which can be traded and multiplied but also function as tracking devices. The increasing presence of buttons and associated social plugins on the web creates new forms of connectivity between websites, introducing an alternative fabric of the web. Contrary to Facebook's claim to promote a more social experience of the web, this paper explores the implementation and technical infrastructure of such buttons to conceptualise them as part of a so-called 'Like economy'.

Keywords
Digital methods, fabric of the web, Facebook, Like economy, medium-specificity, platform studies, social buttons, social web, software studies, web analytics

Introduction

Since April 2010, Facebook has increasingly expanded beyond the limits of its platform, offering devices that can potentially turn any website and any web user into a part of its platform. A first step towards this expansion was the introduction of the Open Graph in 2010 which allows external websites to link to the platform and create social connections through external Like and Share buttons (Facebook Developers,

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2012). The possibilities for connecting one's Facebook profile to web objects were further expanded after the last f8 Developers Conference in September 2011 – an annual event for developers, commercial parties and the public – with the introduction of Facebook actions and objects.[1] Now developers can create apps and buttons that allow users to perform any custom action on any web object. The expansion is driven by the desire to enable more social web engagement, as Facebook CEO Mark Zuckerberg suggests, 'making it so all websites can work together to build a more comprehensive map of connections and create better, more social experiences for everyone' (Zuckerberg, 2010). In a later interview, he takes the promise of sociality even further: 'If you look five years out, every industry is going to be rethought in a social way' (Gelles, 2010).

In this paper we examine Facebook's expansion into the web from a medium-specific perspective, that is, we 'follow the medium' and take its ontological distinctiveness (Rogers, 2013) seriously by focusing on the role of social buttons and their increasing implementation. This perspective addresses the politics of platforms (Gillespie, 2010) and seeks to develop a platform critique that is sensitive to its technical infrastructure whilst giving attention to the social and economic implications of the platform. By tracing the buttons and the data flows they enable, we show how Facebook uses a rhetoric of sociality and connectivity to create an infrastructure in which social interactivity and user affects are instantly turned into valuable consumer data and enter multiple cycles of multiplication and exchange. We link Facebook's efforts to a historical perspective on the so-called hit and link economy (Rogers 2002), in which hits and links function as central measurements for user engagement. Doing so, we claim that what is in the making, is not only a social web, but also a recentralised, data-intensive infrastructure which we conceptualise as a 'Like economy'.

In this Like economy, the social is of particular economic value, as user interactions are instantly transformed into comparable forms of data and presented to other users in a way that generates more traffic and engagement. Furthermore, the increasing presence of Facebook features on the web contributes to generating connections between websites beyond the traditional hyperlink. The platform advances an alternative form of connectivity which is operating in the back end and which facilitates participation in Facebook's Like economy by default.

In what follows we first address the emergence of social buttons in relation to specific web economies and introduce the technical specificity of the Like button and the associated Open Graph and Social Plugins. We trace how these features create both data flows between Facebook and external sites and contribute to a reworking of the connections between them, advancing Facebook as one of the central hubs of the web. In an empirical case study we exemplify the growing presence of Facebook features on the web by contextualising them in relation to other data-tracking features. Such a perspective draws attention to the changing quality of the fabric of the web, the underlying infrastructure of connectivity between websites. While this fabric of the web has traditionally been studied by tracing mutual linking practices, we propose that Facebook's Like economy contributes to the making of an alternative fabric, organised through data flows in the back end. Finally, we address the Like button's capacity to instantly metrify *and* intensify user affects – turning them into numbers on the Like counter – while

fostering further user engagement to multiply and scale up user data and we conclude by drawing attention to the limits of sociality in the context of the Like economy.

The informational web: The hit and link economy

Since the mid-1990s a number of web-native objects have had a particular stake in organising economic value production online, most notably the hit and the hyperlink. This section seeks to contextualise the emergence of the Like economy by providing a genealogical account of the different web objects as belonging to and organising different web periods and web economies.

The early period of the web is often referred to as Web 1.0 or the 'Web-as-information source' and is commonly placed in a dichotomy with Web 2.0 as the 'Web-as-participation-platform' (Song, 2010: 251–252). Hence, Web 1.0 is addressed as the informational web, an account of the web as a medium for publishing content (Ross, 2009). In this context, the number of hits was deployed as one of the first metrics to measure user engagement with a website (D'Alessio, 1997). Hit counters displayed a rough indication of the number of visitors to a page, derived from the number of computerised requests – hits – to retrieve the page, and became the standard for measuring website traffic (D'Alessio, 1997). Hits advanced to a central metric for user engagement and thus for web advertising: the more hits a page retrieved, the more attractive it became for placing banner advertisements. The increasing centrality of the hit and its exchange value was conceptualised in the notion of the 'hit economy' (Rogers, 2002). While hits cannot be bought or exchanged directly, websites would buy their way into the top of search engines or onto the front page of portal pages in order to attract more hits and so be of more interest to advertisers (Rogers, 2002).

The centrality of the hit changed in the late 1990s when a new type of search engine, Google, shifted the value determination of websites from pure hits to hits and links. Inspired by the academic citation index, Google established the role of the link as a recommendation unit on the web by turning it into the main relevance measure for ranking websites (Page et al., 1999). Google founders Brin and Page created the hyperlink analysis algorithm PageRank, which calculates the relative importance and ranking of a page within a larger set of pages, based on the number of inlinks to the page and recursively the value of the pages linking to it. By doing so, the search engine determined that not all links have equal value, as links from authoritative sources or links from sources receiving many inlinks add more weight to the algorithm (Gibson et al., 1998).

A high PageRank became a quality indicator of a website, and many websites displayed their PageRank with a PageRank button. The algorithm established a web economy governed by search engines, not only regulating the value of each site, but also the value of each link this site receives (Walker, 2002). Google's increasing centrality has had implications for search engine optimisation (SEO) tactics as the focus shifted from optimising websites to 'link-building' techniques – that is, webmasters engaging in mutual linking practices to increase their PageRank. It further gave rise to black markets of links where reciprocal links are traded to improve a site's ranking. These link farms create artificial linking schemes between websites, and are inevitably considered bad linking practices by search engines. But they also contribute to a commodification of

links as web objects that can be traded or bought within the 'link economy' (Rogers, 2002; Walker, 2002). The move from merely hitting to linking has been a first step towards including relational value in search engine algorithms. However, the social validation largely remains an expert system, since the value of an inlink is determined by the degree of the inlinker's authority.

The social web: The Like economy

The social web proliferated the social validation of web content by gradually allowing for different forms of user participation. While the informational Web 1.0 is characterised by linking practices of webmasters, the participatory features of Web 2.0 opened up new possibilities for more web users to participate in creating connections between websites (Langlois, McKelvey & Elmer, 2009). The blogosphere played an important role in advancing the link economy beyond an expert system as, 'freed from the "tyranny of (old media) editors"' (Rogers, 2005: 7), blogs offered new possibilities for web users and blog owners to link web content.

Beyond blogs, it has especially been social media platforms which introduced new features for participation, posing 'a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content' (Kaplan and Haenlein, 2010: 60). Hence, the social web is defined by the participatory and collaborative production of content, its cross-syndication (Beer, 2009) and the relations created between users and multiple web objects – pictures, status updates or pages (Appelquist et al., 2010).

Among the key features to create such connections are social buttons, also referred to as social bookmarking icons, which allow users to share, recommend, like or bookmark content, posts and pages across various social media platforms. These social buttons emerged in the context of social bookmarking websites like Delicious and content aggregation websites like Digg and Reddit which popularised the acts of sharing and recommending content from across the web by creating buttons that can be placed on any website enabling users to submit or vote for a post on the related platform. The first buttons may be traced back to Reddit and Digg who introduced their own buttons in the fall of 2006.[2] These buttons allowed users to share web content from an external website to the aggregation site where external content shows the number of votes or shares displayed on the associated button counter.

Digg and Reddit were followed by numerous other platforms offering social buttons that afford predefined user activities (e.g. voting, recommending, bookmarking, sharing, tweeting, liking) in relation to the associated platforms, featuring button counters that show the total number of activities performed on the object. These buttons facilitate the cross-syndication of web content and, compared to expert linking practices, introduce a participatory and user-focused approach to recommendation and the creation of links between web objects.

Facebook introduced social buttons with the launch of the share icon in October 2006 as an easy way of sharing web content with one's contacts in order to invoke further social activities on the platform such as resharing, commenting and later liking (Kinsey, 2009). In 2009 liking and the accompanying Like button were introduced and presented

as a shortcut to commenting in order to replace short affective statements like 'Awesome' and 'Congrats!' (Pearlman, 2009). Liking was put forward as a social activity that can be performed on most shared objects within Facebook, such as status updates, photos, links or comments. Initially only available within the platform, the Like came with a counter showing the total number of likes as well as the names of friends who clicked it. In 2010, Facebook introduced an external Like button, a plugin that can be implemented by any webmaster, potentially rendering all web content likeable. According to Facebook, more than 7 million apps and websites are integrated with the platform, more than 2 billion posts are liked or commented on per day (Facebook Statistics, 2011) and there have been over 1.13 trillion likes since its launch in 2009 (Zuckerberg, 2012). Further, Facebook Like presence is slightly over 20% within the top 10,000 websites (BuildWith, 2012). The external Like button does not only capture actual likes, but also aggregates all activities performed on an object: the number of likes and shares, further likes and comments on stories within Facebook about this object and the number of inbox messages containing this object as an attachment – as the Like is set up as a composite metric.

Facebook's Like button is part of the Social Plugins which allow webmasters to exchange data with the platform and leverage Facebook's social graph. This social graph is a representation of people and their connections to other people as well as objects within the platform and poses a key asset for Facebook. With the launch of the first version of the Open Graph via the Open Graph Protocol at the f8 Developers Conference in 2010,[3] the platform opened up their social graph for external content by providing a way for webmasters to integrate any page outside Facebook into the graph. This integration is mainly facilitated through the introduction of Social Plugins, including the external Like button, to enable a personalised, social experience of the web. The plugins allow for a controlled way of exchanging preformatted data between Facebook and the external web as they enable data flows from and to the platform through actions such as liking or by showing which users have engaged with the website or its content within Facebook. These features play an important role in Facebook's strategy of 'building a web where the default is social' (Zuckerberg in Schonfeld, 2010) as the Open Graph and Social Plugins mediate the connections between the platform, external websites and users through platform-specific activities.

Facebook's data exchange with external sources dates back to 2006 when the Facebook API, an Application Programming Interface that provides a structured exchange of data and functionality between sites and services, was introduced, allowing users to share their data with third party websites and applications (Morin, 2008). Further involvement of third parties was enabled through Facebook Platform in 2007, facilitating external app development within the platform, and in 2008 Facebook Connect was introduced, making it possible to use Facebook profiles as authentication across the web. In 2011, Facebook further reconfigured the integration of external content by expanding the possibilities of app development (Facebook Developers, 2012).

The Social Plugins, however, aim at creating an infrastructure in which web users can engage with potentially all web content outside of the platform through Facebook-based activities such as liking, sharing or commenting, setting off a number of data flows and exchange dynamics. Once Facebook users click a like or share button on an external website, this activity is documented on their Facebook Timeline and appears in their

contacts' News Feeds and/or tickers, while incrementing the Like button counter. The external web content then becomes available for further liking and commenting within the Facebook platform, generating additional data flows back to external counters, once acted upon. More data is flowing from Facebook to webmasters in the form of Facebook Insights providing them with button impressions, which, similar to hits, indicate how many times a Like button was loaded on a page both inside and outside the platform. The Insights tool further features button clicks and anonymised, basic demographic data on likers such as age, gender and location. What is emerging in Facebook's attempt to make the entire web more social is what we describe as a Like economy: an infrastructure that allows the exchange of data, traffic, affects, connections, and of course money, mediated through Social Plugins and most notably the Like button.

Interestingly, not all contributors and contributions to this emerging Like economy are visible or require active engagement with plugins. According to Roosendaal (2010), the Like button can be used to read a cookie from a user's device, which is issued after creating a Facebook account or visiting any website with Facebook features. From that moment on, the button is tracing the visitor's browsing behaviour and is automatically generating data for Facebook by connecting it to individual Facebook profiles. Being tracked by Facebook through such cookies can only be prevented by disabling the use of cookies in the browser options or by installing a browser add-on such as Ghostery that disallows third party tracking.[4] Most crucially, this does not only apply to Facebook users, the Like button cookie can also trace non-users and add the information as anonymous data to the Facebook database. Following Facebook, this data is used to improve its services but also for personalised advertising.[5] Therewith the Like button turns any web user into a potential Facebook user, as each user may unknowingly contribute to the production of valuable browsing data for the platform.

At the f8 Developers Conference 2011, Facebook expanded the possibilities of instant and invisible participation even further, most notably through the aforementioned Facebook custom actions. When creating an app, developers are prompted to define verbs that are shown as user actions and to specify the object on which these actions can be performed. Instead of being confined to 'like' external web content, users can now 'read', 'watch', 'discuss' or perform other actions. These new apps come with the controversial feature of frictionless sharing and automatically post performed activities to the ticker once users have signed up for an app (MacManus, 2011). Whereas the Like button requires an active click to share content, the new actions enable automatic sharing of content or activities. Also, while recommendations via the external Like button direct users to websites outside of Facebook, the new actions refer to Facebook-internal app content only, fostering engagement with external content within the platform.

As a consequence, the Open Graph and the external Like buttons create a data-intensive infrastructure enabled by the involvement of a series of actors such as users, webmasters and developers. Webmasters are granting Facebook real estate on their web pages, by embedding a Like button, in exchange for user engagement, platform traffic and user data through Facebook Insights. Users are allowing the use of their data and affects to enable social interaction with other users and to perform their online identity. But third party actors also increasingly participate in the Like economy, by establishing what is commonly referred to as Likewalls, trading access to content for a click on the

Like button of a Facebook Fan Page or by buying likes from external like resellers to increase their fan count and make their pages more attractive. In this framework, Facebook is opening its platform in a controlled way, letting carefully selected user data flow outside of the platform in order to maximise data flows into the platform.

Reworking the fabric of the web

We now move on to look into the specific ecology of the Like economy to explore how the multiple processes of exchange are enabled and how Facebook reworks its relation to the web. Facebook has been discussed and criticised as a walled garden (Berners-Lee, 2010), a closed infrastructure, which controls connectivity to data after it has been integrated into the social graph. Objects from within the platform can be shared and linked to from the outside, yet actual access to these objects by following the hyperlink is managed on two levels: First, on the level of access to the platform, defining if login is required to view the object, and second, on the level of privacy settings, determining whether a user has the corresponding access rights to view the object. While access from the outside is carefully regulated, we have shown that the platform is constantly proliferating possibilities to integrate external content and data into the platform, facilitating a decentralisation of data production.

With the introduction of Social Plugins and the Open Graph, Facebook activities such as liking, commenting and sharing are no longer confined to the platform but are distributed across the web and enable users to connect a wider range of web content to their profiles. Social Plugins may also have a decentralising impact on external websites. Engagement with web content is not confined to designated comment spaces, but takes place across a wide range of platforms and within Facebook across many profiles and News Feeds.

In this context, external websites cannot be considered as discrete entities, but function as initialisers for a series of platform-based interactions. The more Social Plugins a website integrates, the more it opens itself up to being shaped by the activities of Facebook users. Users will also experience such websites in a personalised way, as Social Plugins provide recommendations based on the activities of a user's contacts and feature the engagement of friends with the website. Whereas these are rather novel perspectives for the web, they are key characteristics of social media platforms, which have little original content and are shaped by cross-syndication practices and aggregated content (boyd, 2010). As a consequence, Facebook and the external web are becoming increasingly interconnected with each other, as the activities performed in one space will affect the other, rendering both more open and relational.

On top of that, the Like economy contributes towards a decentralisation of actors involved in value creation, as it is reliant on webmasters as infrastructure providers implementing Social Plugins and is dependent on users to engage with Like buttons and liked content. It is the partial opening of the walled garden that poses an incentive for webmasters to participate in the Like economy, since social buttons provide a new way to foster user engagement and traffic. As opposed to the hit and link economy, website traffic is no longer mainly driven by portals, search engines or referrals from other sites. In the context of the social web, traffic increasingly comes from social

media platforms, facilitated through the decentralised presence of platform features across the web, where content is shared and has the potential of being reshared to ever more contacts.

But Facebook's efforts to make each and every web experience more social, that is connecting all web experience to its platform, indicates a simultaneous rewiring of the web. Social buttons open up sharing possibilities, yet the connections created by users instantly direct back to the platform as opposed to the reciprocal linking practices of webmasters. While the Open Graph presents an attempt to decentralise opportunities to connect external web content to Facebook, it at the same time recentralises these connections and the processing of user data.

Numerous actors are contributing to the creation of the infrastructure of the Like economy, but not all are given full access to the data they produce themselves. In the case of external Likes, data flows are first of all directed to Facebook and are then fed back in a highly controlled way to other actors involved. Users cannot systematically access their own likes, which are turned into ephemeral objects in the News Feed and on their Timeline. While the successor of the Facebook profile wall, the Timeline,[6] introduced the clustering of activities in relation to different topics and temporal intervals, this only applies to liked Facebook Pages and not to other liked objects. As a consequence, users cannot directly search and use their Likes as a bookmarking system, as external Likes retain their status as fleeting objects for spontaneous engagement. Webmasters who implement social buttons to facilitate wider engagement with their content cannot see how their content is being discussed inside the platform as they are only provided with the aggregate numbers on associated counters and Facebook Insights. The recent introduction of Open Graph actions and frictionless sharing add another quality to the dynamics of recentralisation. The new app development features integrate external content even more strongly into the platform, as engagement with the web and mobile services is now promoted via apps rather than external buttons which refer users to content within the platform as opposed to linking to external websites.

In order to extend its data mining and become the central hub of social linking, Facebook is reversely dependent on the dynamics of decentralisation as discussed above. Simply because the platform can expand some of its key features into the entire web and integrate ever more objects into the social graph, it can recentralise and monetise the created connections and data flows, as they all direct back to Facebook. The dynamics of de- and re-centralisation are not only interconnected, they form a prerequisite for the Like economy. They enable Facebook to maximise its data mining activities while at the same time keeping control over the key entities of exchange – data, connections, traffic and, as will be shown in the next section, user affects.

But first we exemplify the interplay between de- and re-centralisation and discuss Facebook's relevance in relation to other data mining services on the web. For this purpose, we developed a tool with the Digital Methods Initiative that can detect the presence of third party trackers on websites. It is built on top of Ghostery, a privacy browser plugin, which recognises the fingerprints of a number of data mining services active on websites. The plugin allows web users to see the back end data flows that are initiated when loading a page and offers the option to block them. Our research approach repurposes the analytical capacities of the privacy awareness plugin (Rogers, 2013), which

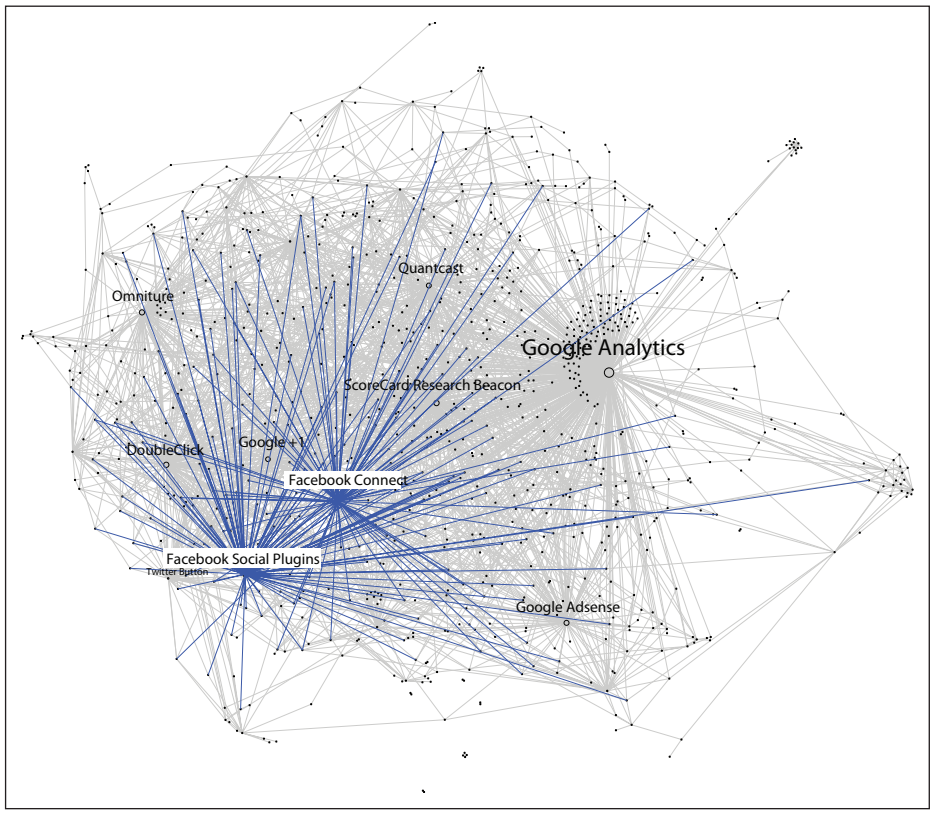

Figure 1. This bipartite graph depicts the top 1000 global websites according to Alexa, February 2012 and their trackers. Websites using Facebook Social Plugins and Facebook Connect are highlighted in blue. Created with the Tracker Tracker Tool by the Digital Methods Initiative, 2012, available at: https://tools.digitalmethods.net/beta/trackerTracker/

makes the invisible web visible with its trackers, beacons and cookies. Taking the top 1000 websites according to Alexa as a starting point allows us to explore how the part of the web that receives most of the traffic comes with an embedded data mining infrastructure based on tracking devices. The following visualisation (Figure 1) shows the presence of Facebook Social Plugins and Facebook Connect.

In our sample, around 18% of all websites feature at least one of these connections to Facebook, allowing users to engage with their content via Facebook features and enabling multiple data flows in the back end. The second map (Figure 2) shows the overall presence of different types of tracking devices, that is web analytics, widgets (including Facebook), advertising services and trackers, and allows us to draw more general conclusions about the organisation of value and the fabric of the web, that is the organisation of connections between websites.

Focusing on the presence of tracking devices allows us to explore an alternative network of connections, one that is not established through mutual linking practices between

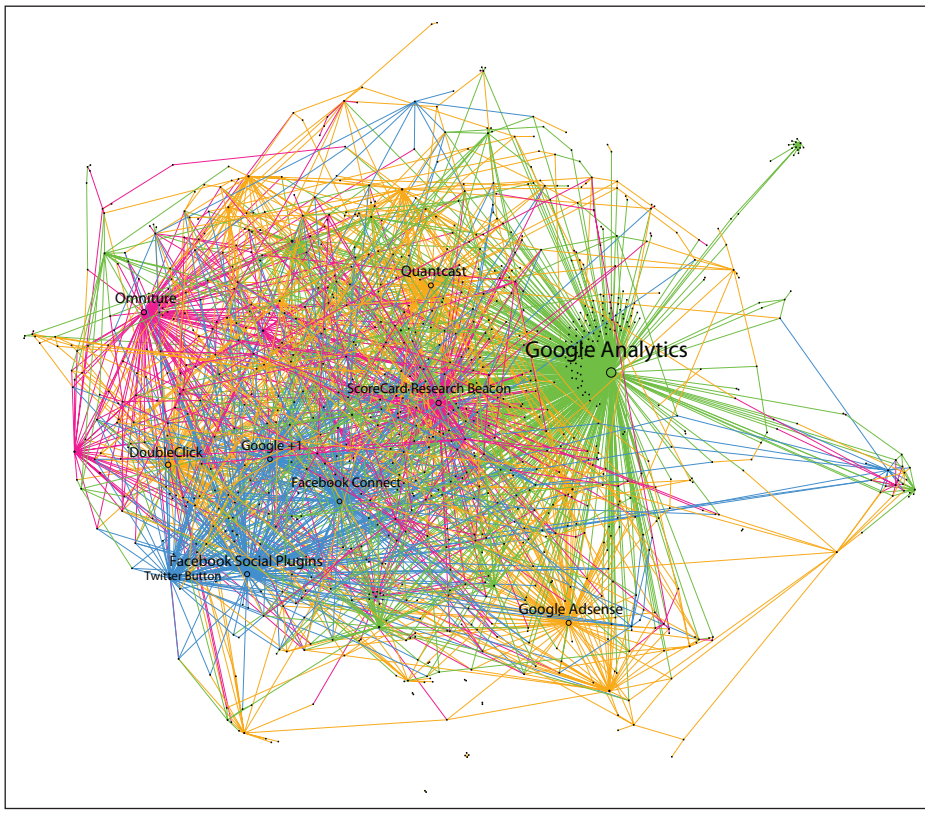

Figure 2. Websites and their trackers in the top 1000 global websites according to Alexa, February 2012. Green: analytics, blue: widgets, orange: ads, pink: trackers (categorisation provided by Ghostery). Created with the Tracker Tracker Tool by the Digital Methods Initiative, 2012, available at: https://tools.digitalmethods.net/beta/trackerTracker/

websites, but based on associated trackers. According to Ghostery, over 1000 companies are issuing different tracking devices on the web.[7] Despite Google's predominant position, Facebook has established itself as one of the main agents. In its attempt to render web experiences more social, as these maps show, Facebook is fostering an infrastructure of decentralised data production and recentralised data processing. Its investment in creating a more social web is hence tied up with an involvement in web economies focused on data mining and web analytics. Such web economies based on cookies have existed since the informational web with its hit and link economy. What is different in the Like economy is that this data collection in the back end can be connected to the platform's social graph, merging two sources of user data together that had not previously been connected.

Facebook's expansion into the web does not only come with implications for an understanding of the social web and its economic affordances, but also contributes to a

new perspective on the fabric of the web. What emerges, when exploring the connections between websites forming through the presence of tracking devices, are clusters organised around major data analytics corporations like Google Analytics, Quantcast, Omniture and, most recently, Facebook. These form an alternative fabric of connections between websites, which are operating in the back end and are enabled by a range of actors, including webmasters and web users in the front end. Tracking devices thus establish new relationship markers between websites beyond the hyperlink, as this alternative fabric is not organised through connections between websites, but through the presence of third party tracking devices on websites linking to associated data mining services. The actual connections are enabled through user activities that set data flows in motion from the websites to the associated service. In this sense, the emerging fabric can be understood as live, that is responsive in real time. Yet, as the next section will show, it is also lively (Marres and Weltevrede, 2012), as it is changing its intensity depending on user activities and circulation of data.

A web economy of metrification and intensification

So far it has been shown that Facebook's Social Plugins do not only enable a social web, but also partake in multiple dynamics of data mining and circulation. We now move on to explore how user engagement is instantly transfigured into comparable metrics and at the same time multiplied and intensified on several levels.

A click on the Like button transforms users' affective, positive, spontaneous responses to web content into connections between users and web objects and quanta of numbers on the Like counter. The button provides a one-click shortcut to express a variety of affective responses such as excitement, agreement, compassion, understanding, but also ironic and parodist liking. The affective dynamics informing such engagement (Massumi, 2002) are not measurable, countable and comparable as such but are, rather, intensive (DeLanda, 2006), referring to transforming states of being. By asking users to express various affective reactions to web content in the form of a click on a Like button, these intensities can be transformed into a number on the Like counter and are made comparable. Users can materialise their affective responses and Facebook can use them to expand the social graph or count and evaluate them. While the Like button collapses a variety of affective responses, the Like counter combines even further activities such as commenting, sending and sharing into the same metric, since the like is designed as a composite entity as described above.

Yet the quanta of data produced in such processes are not just metrifications of intensities, they also have intensive capacities themselves, entering various processes of multiplication. First, Facebook advertises the external Like button as a generator of traffic and engagement (Facebook + Media, 2010). Likers, the platform argues, are more connected and active than average Facebook users. Each click on a Like button is supposed to lead to more traffic for, and more engagement with, web content, as friends of likers are likely to follow their contacts' recommendations or might be influenced by what their friends like. Engaging with social media, to draw on Grusin (2010), presumes or premediates ongoing interactivity and such an anticipatory climate is facilitated through notification systems highlighting any responses a user has received: 'Social networks

exist for the purpose of premediating connectivity, by promoting an anticipation that a connection will be made – that somebody will comment on your blog or your Facebook profile or respond to your Tweet' (Grusin, 2010: 128). By prompting users to engage with Facebook features on the web and showing what their contacts have engaged with, Social Plugins seek to set a chain of interaction in motion, moving across numerous spaces within and outside the platform. In this context, a like is not a means in itself, but designed as an ongoing and potentially scalable process. A Like is always more than a number on the Like counter or more than representational (Thrift, 2008). Its value lies both in the present and in the future, in the plus one it adds to the Like counter and the number of x potential more likes, comments, shares or other responses it might generate within the platform. It is in this sense that we can understand the infrastructure of the Like economy as lively (Marres and Weltevrede, 2012), as changing internally through the numerous ways in which data are multiplied and content is circulating.

Second, this process of intensification is based on the creation of differently scaled social formations to which acts of liking, sharing and commenting are being exposed. A series of Social Plugins, for example, are only designed to systematically display activities of particular groups in relation to web content. While the Like counter shows the anonymous number of all likers and sharers, detached from personal profiles, the majority of Social Plugins only depict the activities of a user's contacts and thus will look different to each visitor. Depending on their Facebook privacy settings, a user's click on the Like button may be visible to everyone, to all friends or a selected group of friends and is further distributed across the user's Timeline, different News Feeds and tickers, creating threefold impression statistics for webmasters. If a friend responds to a like with another like or a comment, this activity is exposed to yet another set of users. Each device of the Like economy is creating differently scaled social assemblages in DeLanda's sense (2006), formations of users that are not stable but constantly reconfigured. The data flows between profiles, the exposure on Timelines or News Feeds and the privacy settings allow these formations to scale up to almost every web user or scale down to a selected few Facebook friends. Engagement with web content via Facebook features is thus not only decentralised across a variety of Timelines, News Feeds and tickers, but is also spread across a multiplicity of social formations of different scales.

Through Social Plugins, the previous activities of a user's contacts are presented as potential future activities to user and 'delineate a horizon of possibility' to speak with Langlois, McKelvey & Elmer (2009), that is create climates in which users are likely to perform some activities rather than others. Although Facebook has recently made an effort to claim that its News Feed, organised through the EdgeRank algorithm, is not creating an encapsulating echo chamber (Bakshy, 2012), the Like economy still features a number of devices that seek to deploy the logic of recommendation cultures in order to set in motion the multiplication of data production.

Third, it is not only user formations and engagement that are being scaled up and intensified, the Like economy also contributes to an increasing cross-syndication of content. As mentioned above, with each like or share, web content is being syndicated to different News Feeds, top stories, tickers and Timelines within the platform, thus rendering cross-syndication more scalable. In the framework of the informational web,

webmasters produce content to be found. In Facebook's social web, however, content is created to be shared, distributed or cross-syndicated by users to users. Moreover, users do not have to search for content, but content is presented to them through the multiple recommendation features built into the platform.

As a consequence, a particular relationship between economic value and the social emerges in the case of Facebook, one that is mediated through the creation of connections between the external web and the social graph and through the production of data. User activities are of economic value because they produce valuable user data that can enter multiple relations of exchange and are set up to multiply themselves. However, it is the platform that decides which social activities can be performed and which are turned into comparable and exchangeable data formats, as indicated by the absence of buttons or plugins for critique or disliking.

Zuckerberg's claim to offer a more social web experience rests on the instant transformation of selected social interaction into forms that can enter further relations in the graph or multiply themselves. Hence, Facebook's very definition of the social web falls together with an increasingly structured, preformatted and traceable web. Being social online means being traced and contributing to value creation for multiple actors including Facebook and external webmasters. To achieve this, the metrifying capacities of the Like button are inextricable from its intensifying capacities. Within the Like economy, data and numbers have performative and productive capacities, they can generate user affects, enact more activities and thus multiply themselves or, as Simondon puts it, 'Beyond information as quantity and information as quality, there is what one could call information as intensity' (cited in Venn, 2010: 146). Such dynamics are enabled through the medium-specific infrastructure of the Like economy which simultaneously enacts, measures and multiplies user actions.

The limits of sociality in Facebook's social web

Corporate interest in social interactivity and user affects are not new to Facebook, but have to be understood in the trajectory of information-intensive post-Fordist economies, corporate interest in transactional online data, and attempts to objectify consumer affects (Arvidsson, 2011). The increasing centrality of knowledge and information in post-Fordist modes of production (Thrift, 2005) have contributed to a further intermingling between life and production, between social interactivity and economic value and it is especially the web that provides particular infrastructures to cater for these interdependences. In the informational web, user preferences and basic activities could be read from server log files, which are used to derive engagement measures such as hits and time spent on a page. With the rise of the social web, companies realised that everyday online activities provide a rich source of information about user preferences, habits and affects that had previously only been available through consumer research techniques. An increasing range of social media monitoring services is currently tracking and analysing user behaviour online, instantly turning social activity and web engagement into different quanta of data (Lury and Moor, 2010). Special attention is being paid to sentiment, the positive, negative or neutral relations users have to topics or web objects, in order to forecast potential consumption (Arvidsson, 2011). Facebook's endeavours are thus not

new and have to be accounted for in the context of corporate social media monitoring. However, the Like economy creates an infrastructure that not only allows transactional data to be mined instantly, but also allows it to be attached to individual user profiles and multiplied.

Throughout this article we have approached this development from a medium-specific perspective by discussing how web devices such as social buttons and the Open Graph have contributed to this intermingling of the social and data and their multiplication. In comparing the emerging Like economy with the hit and link economy, we explored how the launch of social buttons has reintroduced the role of users in organising web content and the fabric of the web – and how the infrastructure of the Open Graph is turning user affects and engagement into both data and objects of exchange. We presented a twofold analysis of the Like economy. First, by showing how it is creating a particular fabric of the web through social buttons, which at the same time decentralises data collection and recentralises data processing and economic valorisation. We traced the presence of Facebook Connect and Social Plugins across the web, showing that Facebook is currently emerging as a key agent in the sector of back end data mining. More than that, such data mining practices reveal an alternative fabric of the web, one that is not organised through hyperlinks placed by webmasters, but one that is based on data flows enabled by and to third party devices, facilitating the decentralisation of data mining and the recentralisation of data processing within platforms.

Second, by following the medium-specific perspective further, we have drawn attention to the capacity of the Like button to both metrify and intensify user affect and engagement by turning them into numbers on the Like counter while strategically exposing them to other users to evoke further interactions. User activity on social media platforms has so far often been discussed in a post-Marxist terminology of labour, production and user exploitation. It has been understood as a form of social production (Scholz and Hartzog, 2008), as prosumption or working consumers/users (Fuchs, 2010) or as free labour (Terranova, 2008), as users voluntarily engage in productive activities without financial reward. The medium-specific perspective offers a complementary account, drawing attention to the role of devices, as affect and social proximity are not valuable per se, because they are intensive, hard to measure and to compare. It is the medium-specific infrastructure of the Like economy that allows their transformation into quantified likes, which can then enter multiple forms of exchange: from producing data for user mining and patterning, to creating recommendation traffic from Facebook, providing access to Like button statistics or moving behind the Likewall. This medium-specific infrastructure further creates an environment that does not require active participation in the Like economy through clicking on social buttons or commenting. Instead, the underlying data mining processes foster participation by default, tracking users' browsing behaviour, storing Like button impressions or instantly sharing app engagement to the ticker. By looking at the infrastructure that enables these processes we draw attention to the politics of the Facebook platform and its back end data flows in which logging out, deleting one's profile or never joining the platform do not offer solutions to opt out.

To conclude, we return to Zuckerberg's ambition to integrate ever more social activities into the Facebook platform. As former employee Matt Cohler claims: 'Facebook

has always thought that anything that is social in the world should be social online' (Gelles, 2010). In contrast, we would like to outline that there are limits to Facebook's enclosure of sociality, most notably in the current absence of the widely requested Dislike button as a critical counterpart to the Like button. Although such a button might comply with corporate interest in both positive and negative sentiment, Facebook abstains from its implementation, as a one-click solution for negative affect might lead to insensitive use (Sawens, 2010). Yet, the decision to refrain from 'disliking' also bears economic dimensions as opening up the possibility for controversial sharing practices would create negative traffic and negative connections, which cannot be collapsed in the composite Like counter. In this sense, the Like economy is facilitating a web of positive sentiment in which users are constantly prompted to like, enjoy, recommend and buy as opposed to discuss or critique – making all forms of engagement more comparable but also more sellable to webmasters, brands and advertisers. While Social Plugins allow materialising and measure positive affect, critique and discontent with external web content remain largely intensive and non-measurable. The absence of negative affects has until the autumn of 2012 marked the limits of Facebook's understanding of sociality. The introduction of new activity apps, however, has complicated the affective space of Facebook, allowing for differentiated and even negative activities in relation to web objects, such as to hate, disagree and criticise – while the action 'dislike' remains blocked.

The Like economy has thus created an infrastructure that comes across as facilitating a more social web experience, but partakes in creating an alternative fabric of the web in the back end, one in which social interaction is instantly metrified and multiplied and which connects insights from web analytics with individual user profiles and the social graph. It enables only particular forms of social engagement and creates specific relations between the social, the traceable and the marketable, filtering them for positive and scalable affects.

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Notes

1. www.facebook.com/f8/timeline/2011 (accessed 1 October 2012).
2. web.archive.org/web/20061113041318/http://www.digg.com/tools and web.archive.org/web/20061117015427/http://reddit.com/buttons (accessed 1 October 2012).
3. www.facebook.com/f8/timeline/2010 (accessed 1 October 2012).
4. www.ghostery.com (accessed 1 October 2012).
5. A full documentation of the use of Facebook's cookie data can be found at www.facebook.com/about/privacy/cookies (accessed 12 October 2012).

6. Timeline is the successor of the Facebook user's profile page and organises content and activities in a timeline, see https://blog.facebook.com/blog.php?post=10150289612087131 (accessed 1 October 2012).
7. www.ghostery.com/about (accessed 1 October 2012).

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