
F/OSS Projects Community Modelling "Modular Communities" and the Drupal CMS Project

Rositsa Dikova

"I am also an Open Web evangelist and Social Web architect, second-class citizens within the Drupal community"

This research was designed and conducted from a grounded theory perspective, in which the project work does not start with a preconceived theory or model. On the contrary, it begins with an area of study – in this case narrating identity and “native” community discourses – and traverses the emergence of the theory from data (Strauss and Corbin 1998). What emerged was a model for the process of building, sustaining and narrating identity within an open source software development project community, engaged with the Drupal CMS. The specifics of parallel investigation into on-line and off-line community building activities over an 18 months cycle entailed several aspects:

- 1) Developing a reference model for narrating collective identity built, sustained and mediated through ICT;
- 2) Gathering off-line data to observe the possibilities for falsification of root models;
- 3) Defining Drupal developers in Austria as actively engaged in two parallel community narratives, whereas local groups are defined through group theories, and the worldwide community narratives of identity are defined through a social world perspective;
- 4) Coining and defining the term *modular communities* as relevant description of the specifics of the community examined;
- 5) Analyses of participants’ narratives of group/collective identity.

One of the limitations of this paper is the absence of a comparative examination of off-line groups. Another one is the reduced space allocated to reviewing literature in the field, compared to the space allocated to analyzing data gathered off-line and on-line, tracing down popular hypotheses and possible conceptual connections with community narratives. These are heavily influenced by reflections over recorded data and collected impressions during the field work.

Bearing these limitations, the paper neither attempts to be an exhaustive description nor a presentation of strong conclusions, but an invitation to reflect upon possible connections of the Drupal community members' narratives of F/OSS, modularity and identity.

The first part of the paper is more of a reflection on the different channels used to record and retrace internal community discourses and narratives. Although it lacks a sufficiently theoretical base it might be helpful for researchers in their steps in data traversing.

The second part of the paper is more theoretical, focusing on the search for an alternative model for analysis of such peculiar communities, termed as "modular".

These are based on a research conducted over 2.5 years (2009-2011), with 8 out of 12 months spent in Austria, being part of a research stay with the IAS-SAS, Graz.

A leading intuition throughout the whole research was the need for a "compatible" model in addressing concepts of identity within such F/OSS project communities.

Defining F/OSS (Free / Open Source Software)

The generalized definition, which is used hereafter, refers to F/OSS projects as a variety of computer programs and platforms, released under an open source license, irrespective of the particular type. The narratives, accumulated from within F/OSS project developer communities, commonly ascribe similar attributes to their definition, particularly as a set of free programs, platforms, and operating systems, being developed by communities of users, where no ownership claims over the final product are made and the source code underlying all products ships with the pro-

duct, or is publicly available for download (Crowston et al. 2003b; Goh et al. 2008, 81-82; Hemetsberger 2006, 188; Kettell 2008, 307; McInerney 2009; Raymond 1999; Von Hippel & Von Krogh 2003).

Typically, open source software is developed in a cooperative fashion by a network of (normally unpaid) volunteers, incorporating direct feedback from users as a vital part of the process, forming a commons-based, collaborative, and participatory venture (Kettell 2008, 307-308). In this context, property is organized around the right to distribute. The key concern is developing the best strategies to maximize access and collaboration, opposed to proprietary related ownership and exclusion management (Kawamoto 2007).

Following McInerney (2009), it can be stated that under such a regime, software production shifts from a manufacturing to a service economy. The modes of F/OSS project development have already revolutionized software creation and innovation. According to some scholars, this innovation comes from shared norms and values. Others take more economic perspectives, applying rational choice and game theory models, to explain the open source model of development (Gallaway & Kinnear 2004; Lancashire 2001; Von Hippel & Von Krogh 2003). In modelling the engagement and disengagement processes in ICT mediated communities, alternative models are furnished within the academic circles. What this research retained was an ethnographic perspective, that would reconcile native community discourses.

Methods

The original broader question of building and sustaining F/OSS development communities shifted to a particular issue, concerning the techno-cultural face of F/OSS projects' communities as normative laden narratives of identity. Earlier, inquiries into collective development of F/OSS products used to be qualified as a minor, “geeky” research area. With the growth of the communities being investigated, and their importance, it steadily develops into a major, “non-geeky” research area (Hemetsberger 2006, 188; Kettell 2008, 311-312).

242 *Rositsa Dikova*

The study is based on two main methods – participant observation and documentation analyzes. Both are used in order to accumulate ideas on the way participants in one particular F/LOSS project community (the Drupal content management system (CMS)) make claims about their identity and what they do, and how they coin major narratives about the community, about aspects of participation, and their discourses on symbolic and economical capital amassment.

Participant observation is ongoing. Prior to July 2010 it had been mostly on-line (live streaming from community events, chats, webinars and Skype conversations). As of August 2010 it is on spot, involving conversations, unstructured interviews, participation at local and international community events, drafting documentation and everyday co-operation with two developers, acting as their web-site building assistant.

The documentation covered wide aspects of information flow – the project's page (www.drupal.org), personal blogs of community participants, various coders' sites and websites of different for-profit companies working with Drupal. General "native" insiders framings and definitions of politics of open source licensing, of open-source development projects and communities as well as of the project's historical background were accumulated in the same manner.

Why Drupal

F/OSS projects are being conceived as the most global and successful examples of user integration and online collaboration (Hemetsberger 2009, 987-988; Ofcom Report 2008; Von Hippel & Von Krogh 2003, 211).

Following Crowston et al. (2003a, 30-31),

- 1) the time of existence,
- 2) the number of members, and
- 3) the rate of innovation and diffusion,

are used as indicators for a successful F/OSS project, according to which the Drupal CMS is a particular example for a rapidly evolving, long-term, large-community project.

The choice for the project was originally intuitive, however later during the initial research phase it was rationalized through the need to:

- Meet the standards for a large-scale F/OSS project;
- Offer a traceable environment beyond the limitations to collaborative work and a unified goal (Drupal and presumably F/OSS CMS development projects of that scale in general allow for different simultaneous goals, ranked in terms of hierarchy, based on the distinction core – periphery/ core – modules);
- This in turn put forward the need to formulate a tailored definition for the community itself and a more complex model for analysing it, the latter being formulated through investigations into narratives of members of the community itself.

Data Sets

- Blogs of core developers: These helped in tracing back data and temporally determining the development of the project as well as the community. They are also a helpful source of data concerning changes of the community manifesto, ideological discourses, big events and when tracing back major steps of development.
- “Drupal vs.” posts, issues, articles and commenting on such: A thorough research of available on-line comparatives with other CMS systems was part of the “medium” phase of the research after the jargon had been mastered and overall knowledge for the community had been gained.
- Such discourses offer a more thorough look into legitimized community narratives, technological aspects, specific jargon, cultural entrée, emotional investment and community boundaries discourses.
- Modules documentation: This data can be especially helpful in analyzing the opposition core – modules/ core – periphery. Specific aspects can include modules’ substitutes, known incompatibility, support, bug reporting request, usage statistics, translations, module main-

tainers, etc. This source of data can be generally helpful in tracing down...

- 1) issues of authority,
 - 2) F/OSS productive environment,
 - 3) modules' "life cycle",
 - 4) maturity of projects,
 - 5) engagement with ideology of F/OSS,
 - 6) hierarchy of the framework and within the community
 - 7) means of attribution.
- Conferences and meetings, live streaming and archives: Within Drupal these were observed as a major source of "legitimated" community narratives and a market place for identity discourses.
 - Dedicated project pages: Attention was paid to the structure (core – periphery), profiles (specifically for issues of hierarchy, authority, symbolic capital and technology of code), interaction and traceability of activity. Based on these three, the analyses proved that drupal.org is not a social web site and does not retain such endeavours. It is largely seen as a focal point or community hub ("*drupal.org is for everything Drupal*", community member blog post).
- Other data collected included forms of help-desk substitutes (issue queues), discourses of localization (a huge amount of groups formed around interests or geographical proximity), market places (for individuals and organizations that contribute to Drupal), social and collaboration features (chat, forums, mailing lists), documentation, etc.
- Some helpful insights also resulted from analysis of the structure of the different types of posts – obligatory and non-obligatory data fields (counts for all types of posts), tags, webpage search form. General and usually helpful is also taking a closer look at the main menu (core – periphery discourses, official community narratives, etc.), access controls (members zones, new members, openness of the community, public hierarchy), project related categorization (extension applications/modules' categories) and statistics (listings of bug reports, usage statistics, support issues).
 - www.drupal-austria.at: Major sources of data were the user profiles differentiated into:

- 1) Coders,
 - 2) Web site builders,
 - 3) Themers and
 - 4) Drupal Evangelists, with the latter being introduced during the observation period as a non-bizarre internalization of ideology of community driven F/OSS project development.
- Formal interviews and observations

Formal interviews:

The selection of the interviewees as such was a very useful source of information, as it combined discourses of hierarchy, authority, reputation and trust. Specifically important were the advices/”hints” on whom to interview and what for, how to handle the technical jargon, which aspects of community discourses are relevant within the local group, and how to induce life-story narratives.

Observations of local meetings:

These took place over a period of 8 months. Significant reflections focused on local aspects and group specific discourses – programming, usability, collaboration and assistance. Overall, the meetings were seen as more pragmatic, with little or no trace of explicitly rationalized community discourses, but a strong

- 1) “Drupal vs.” talks density, which served as a primary source of community narration records;
- 2) Collective identity narratives, which were mostly observable through presentations from attended community events. These were seen as a peculiar way of integrating external community discourses at a local group level; and
- 3) Discourses on authority, hierarchy, capital accumulation and trust, traversed through website projects’ presentation, organization of local events, issues with modules and themes.

A Social World

Following Kazmer (2007, 112-115), a major factor that distinguishes the ‘social world’ concept from a ‘group’ is seen in the context of McGrath’s

(1991) discussion of the theory of groups. A group would usually have a shared problem, project, or goal that is the primary objective of the group's shared activities. This entails a legitimate, publicly recognized target/goal and a unified group (community identity) narrative (insiders' discourse).

In a social world however, there is a lack of such a shared specific problem, project, or goal.

Differentiation can be projected through the lack of a non-obligatory, unified purpose (Strauss 1984, 124) where the members are not trying to develop one solution or product together. In this respect, several drawings of "modules" sustained this model, depicting modules as a system of their own, opposed to other representations and concentrated on a more core – periphery type of discourse. In the latter, purely spatial characteristics reveal a supplementary positioning discourse. The former show a distinct association of modules as a system of their own, with fine granularity of objectives and differentiation of projects and goals.

The modularity of the CMS and the maturity of different projects within it, plus the active engagement of several programmers from the Austrian community with extremely popular and mature modules development groups, can be a starting point for analyses of these different ways of depicting and conceiving community discourses.

It is by no means objected here that groups are indeed formed within the social world of this primarily ICT mediated collective node. Issues such as project groups, local (national, city- or district-wide, but exclusively spatial) groups, internationalization (the huge "i18n project"), modules maintenance, community building, events organization, etc. all show a distinct growth of group formations – group formations, which yet blur the boundaries of the dynamic collective nodes, through parallel narrative discourses within the social world of a fragmented, "modular" community.

The technical specifics of the CMS on the one hand, combined with the maturity of the projects forming an integral part of it, and the process of evolvement of these projects on the other hand, underlie the need for a combined research model. A research model which would be compatible with the complexity of the project, and would also integrate aspects of both group modelling and a social world model, combined under the coined concept of "modular communities".

Conclusions

A major outcome from this data collection, recordings and analysis resulted in a set of heterogeneous insiders narratives. Modelling F/OSS discourses of identity through a concept of community/group broke at the technical level, where the modularity of the numerous projects seen as integral part of the Drupal project failed to meet the need for a distinct, legitimized, publicly held, collective goal. Models, based on social world conceptualization of the F/OSS development projects, disengage with the two-way processes of localization and unification of a local group’s identity, projected in their “native” discourses. These controversies were largely observed in the “end-phase” discourses generation, through drawings. During a meeting at the end of June 2011, all participants were asked to make an anonymous drawing on two widely-formulated topics – modules and community. (Appendix one shows an excerpt of drawings.)

One predominant conclusion from the drawings is the incompatibility of the community/group model with some of the discourses triggering the drawings of modules. A social world model on the contrary met these.

The drawings of community, on the other hand, showed a predominantly localized and to a large extend off-line identity formulation attitude, with heavy influences from group/community identity modelling.

Tracing down interconnections between the two discourses led to a hypothesis that favours a need for a complex model assisting the analysis of alike “modular communities”.

Further Research

This research project has opened up specific horizons to mixed modelling of community identity, not limited to the levels of engagement and disengagement. The interconnections between community narratives and academic models, traced down briefly in this paper, open up prospects for the relevance of such an approach to a specific field I have been only briefly investigating so far – depicting Open-data initiatives and E-science (specifically long-term information infrastructuring) projects from a “modular community” F/OSS perspective, engaged at community identity narration

248 Rositsa Dikova

level with a social world and group segregation model, technology of code (Flanagin et al. 2009) and narrative ethics (Joy 1997). Analysing in parallel aspects of discourses on trust, authority, hierarchy, capital, collective identity, modularity, life-cycle, maturity, engagement, contribution, attribution, localization and internationalization – all of these can be seen as just a starting point for consecutive research.

References

Journal Articles

- Brügger, Niels (2009), 'Website history and the website as an object of study', *New Media Society* 11: 115 -132.
- Faulkner, Wendy, and Merete Lie (2007), 'Gender in the Information Society: Strategies of Inclusion', *Gender Technology and Development* 11: 157-177.
- Flanagin, Andrew, Craig Flanagin, and Jon Flanagin (2010), 'Technical code and the social construction of the internet', *New Media Society* 12: 179-196.
- Florea, Ioana (2010), 'Narrative Online and Offline spaces. Field Notes from the Becoming of an Anthropologist', *Journal of Comparative Research in Anthropology and Sociology* 1(2): 111-127.
- Goh, Dion, Brendan Luyt, Alton Chua, See-Yong Yee, Kia-Ngoh Poh, and How-Yeu Ng (2008), 'Evaluating open source portals', *Journal of Librarianship and Information Science* 40: 81-92.
- Hemetsberger, Andrea, and Christian Reinhardt (2006), 'Learning and Knowledge-building in Open-source Communities. A Social-experiential Approach', *Management Learning* 37: 187-214.
- Hemetsberger, Andrea, and Christian Reinhardt (2009), 'Collective Development in Open-Source Communities: An Activity Theoretical Perspective on Successful Online Collaboration', *Organization Studies* 30: 987-1008.
- Hemphill, Thomas (2005), 'Government Technology Acquisition Policy: The Case of Proprietary Versus Open Source Software', *Bulletin of Science Technology & Society* 25: 484-490.
- Hippel, Eric, and Georg von Krogh (2003), 'Open Source Software and the "Private-Collective" Innovation Model: Issues for Organization Science', *Organization Science* 14(2): 208-223.

F/OSS Projects Community Modelling "Modular Communities" and the Drupal CMS Project 249

- Kazmer, Michelle (2007), 'Beyond C U L8R: disengaging from online social worlds', *New Media Society* 9: 111-138.
- Kettell, Steven (2008), 'The Political Economy of Open-Source Software in the United Kingdom', *Bulletin of Science Technology & Society* 28(4): 306-315.
- McGrath, J.E. (1991), 'Time, Interaction, and Performance (TIP): A Theory of Groups', *Small Group Research* 22(2): 147-174.
- McInerney, Paul-Brian (2009), 'Technology Movements and the Politics of Free/Open Source Software', *Science, Technology and Human Values* 34(2): 206-233
- Mitcham, Carl (1999), 'Why Science, Technology, and Society Studies?', *Bulletin of Science Technology & Society* 19(2): 128-134
- Qvortrup, Lars (2006), 'Understanding New Digital Media : Medium Theory or Complexity Theory?', *European Journal of Communication* 21(3): 345-356.
- Strauss, A. L. (1984), 'Social Worlds and Their Segmentation Processes', *Studies in Symbolic Interaction* 5: 123-139.

Books

- Hine, Christine (2000), *Virtual Ethnography*, London, Thousand Oaks, Calif.: Sage.
- Joy, M. (Ed.) (1997), *Paul Ricoeur and Narrative: Context and Contestation*, Calgary: University of Calgary Press.
- Marin, Alexandra and Barry Wellman (2011), 'Social Network Analysis: An Introduction' in Carrington, Peter, and John Scott (Eds.), *Handbook of Social Network Analysis*, Thousand Oaks: Sage, 11-25.
- Strauss, A. L. (1998), *Basics of Qualitative Research* (2nd ed.). Thousand Oaks, CA: Sage.

Websites / Electronic Sources

- Baldwin, Carliss, and Kim B. Clark (2005), 'The Architecture of Participation: Does Code Architecture Mitigate Free Riding in the Open Source Development Model?', available at: www.people.hbs.edu/cbaldwin/DR2/BaldwinArchPartAll.pdf. Printed in *Management Science* 52:1116-1127.
- Drupal CMS: www.drupal.org, www.drupal-austria.at, <http://buytaert.net>
- Gilbert, Walter (1992), *The New Paradigm*, available at: <http://www.canis.uiuc.edu/projects/wcs/keck/index.html> (last accessed 19.03.2011)

250 Rositsa Dikova

Kawamoto, D. (2007), 'European Union court rejects Microsoft's appeal in historic case' CNet News, available at: http://news.cnet.com/8301-10784_3-9779499-7.html (last accessed: 20. 02.2011)

Krishnamurthy, S. (2005), 'Cave or community? An empirical examination of 100 mature open source projects', available at: <http://firstmonday.org/ojs/index.php/fm/article/view/1477/1392>, *First Monday*, 7 (6) (last accessed: 20. 02.2011)

Locke, Christopher, David Weinberger, Doc Searls, and Rick Levine (1999), '*The Cluetrain Manifesto: The End of Business as Usual*', available at <http://cluetrain.com> (last accessed 19.03.2011)

Raymond, Eric (1997, last revision 2000), 'The Cathedral and the Bazaar' (available at: <http://www.catb.org/~esr/writings/homesteading/>) (last accessed: 20. 02.2011)

Searls, Doc (2008), 'Understanding Infrastructure', *Linux Journal*, available at: <http://www.linuxjournal.com/content/understanding-infrastructure> (last accessed 19.03. 2011) Personal Blog, available at: <http://www.linuxjournal.com/blogs/doc-searls>

The Open Source Computing Challenge, project website available at: <http://www.nd.edu/~opence/concept.html>

Published Reports

Backstrom, Lars (2006), '*Group Formation in Large Social Networks: Membership, Growth, and Evolution*' KDD, Proceedings of the 12th ACM SIGKDD international conference on Knowledge discovery and data mining, Philadelphia, Pennsylvania, USA.

Kelsic, Eric (2005), '*Understanding complex networks with community-finding algorithms*', SURF 2005 Final Report, retrieved June 2010 from <http://www.its.caltech.edu/~mason/research/kelsic.pdf>

Research Documents

Grechanik, Mark and Dewayne E. Perry (2006), 'Analyzing Software Development as a Noncooperative Game', *The Center for Advanced Research In Software Engineering (ARISE)*, retrieved from http://www.cs.uic.edu/~drmark/index_htm_files/SDGames.pdf

Ofcom (2008), 'Social Networking. A quantitative and qualitative research report into attitudes, behaviours and use', retrieved January 2011 from <http://stakeholders.ofcom.org.uk/binaries/research/media-literacy/report1.pdf>.

Published Conference Papers

Crowston, Kevin, Hala Annabi, and James Howison (2003a), 'Towards A Portfolio of FLOSS Project Success Measures', in *Twenty-Fourth International Conference on Information Systems, International Conference on Software Engineering (ICIS 2003)*: 29-33. Retrieved March 2010 from <http://flosshub.org/180>

Crowston, Kevin, Hala Annabi, and James Howison (2003b), 'Defining Open Source Software Project Success', in *Twenty-Fourth International Conference on Information Systems, International Conference on Software Engineering (ICIS 2003)*. Retrieved March 2010 from <http://flosshub.org/137>