MySQL and an *open source* programming language, *PHP*, form the most common platform (called LAMP) for dynamic Web applications.

The *Firefox* Web browser grew out of code released to the community in 1998 by the ailing company Netscape. After several rather unsuccessful products, the *Mozilla Foundation* released *Firefox* at the end of 2004 as version 1.0. Carried by strong critique of Microsoft's *Internet Explorer* for its various security leaks, the open source browser captured considerable market share[8] in 2005. It is also a good example for how the open source community allows for the participation of non programmers. Using *Bugzilla*, a tool for tracking bugs, anybody can report errors and ask for features in future releases. Skilled users may extend the browser through plug-ins without having to get to know the code of the main application. *Firefox* is finally not just a piece of software, it is also a community providing logos, T-shirts, images, and wallpapers as well as an entire viral marketing campaign.

The *open source* scene shows that methods and strategies in technical production cannot be divorced from the social, economic, and cultural environment they are stimulating and being stimulated by. The *culture of engineering* is but one of many possibilities in a field that has opened up to manifold models for production. Computers have made technical creativity accessible to a larger and more diverse audience than any previous technologies have. From writing code to designing levels for computer games, there is a wide scale of possible involvement for every level of skill. While the new modes of creation are in many ways similar to earlier forms of amateur culture they are different in a very important aspect: the three programs we discussed are not just niche products but highly competitive artifacts of great quality that hold strong market positions. This signals an *extended culture industry*, where the production of cultural artifacts opens up to the formerly excluded: the consumers.[9] There are of course many commercial actors playing a role in the *open source* scene – IBM, Novell, Intel, and others take an active part in financing and developing. However, the intertwined networks of production that span companies and individuals go beyond the mono-directional processes Adorno and Horkheimer (1944) have criticized so severely. The idea has been contagious and phenomena like *Wikipedia*, blogging, or the countless music labels on the Web take the *open source* principle to a larger context of cultural production. Computers and the Internet can be seen as enabling technologies that give users the opportunity to extend the culture industry and to participate in the production of cultural artifacts, stimulating the social dynamic we are witnessing today (Jenkins, 2002)-recently branded around the term "Web 2.0".

While engineering is often seen as a neutral, detached, and "objective" way of problem-solving, the collaborative and auto-organized design process that marks

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[8] In Europe Firefox is ranging up to 34% in Finland and 24% in Germany; see XiTi Browser Survey, September 2005, online: http://www.xitimonitor.com/etudes/equipement11.asp

[9] According to Walter Benjamin (2002), facilitating the transformation from consumers to producers is every artist's political obligation.

the *open source* scene does not strive to separate the social and cultural aspects of technological creation from the task of designing and writing code.

These developments are not necessarily aimed at replacing the traditional, and more organized institutions of work, education, and research; what we witness today is a trend toward plurality and cross-fertilization. With reference to Eric Raymond (1998), we could say that the bazaar does not supplant the cathedral but blossoms in the city streets around it, slowly infiltrating the sacred halls; and the development of "alternative" methods and strategies for the production of software is by no means limited to the open source community: because of the increasing complexity and "culturalization" of computing problems mentioned above, most fields are constantly forced to go beyond established methodology. Taken together, we see software design as a shifting field that unites a plurality of heterogeneous methods, mindsets, and actors.

4   Bridging the Culture/Technology Divide

So far, we have made two separate arguments: first, we have tried to show that software plays an increasingly important role in our everyday lives, accentuating culture as a hybrid of technology and discourse. Second, we have discussed how software production flourishes outside of the classical institutions and methodology of engineering. In the third part of this chapter, we want to briefly discuss these two arguments in relation to their impact in three different areas: the humanities, technology, and policymaking.

4.1   The Humanities Discourse

Traditionally philosophy and cultural theory have subscribed to a view of technology as something external to, or at least different from, society and culture. In this perspective, the practice of creating a technical artifact is very dissimilar in nature from processes of symbolization, e.g., the writing of law or literature. The first is supposedly oriented toward the material domination of our "lifeworld" (Lebenswelt) through efficiency, while the second is concerned with the social (law) or cultural (literature) dimension of human existence. This separation has the convenient effect of exempting those thinking about technology to have any need for technical knowledge because "techno-science" always produces only more of the same, the true challenge lying in the discovery of the essential dynamics between the strata, an endeavor reserved to the masters of symbolization. However, there is a very dangerous side to this outlook: subtracting the dimension of *meaning* from technology implies the subtraction of *responsibility*. If the creation of technology is not understood to be a deeply cultural, social, symbolic, and political activity, there is no reason for the creators to adopt any ethical and political stance toward their work