

Mappings between Virtual Community Processes and Business Processes

Nick V. Flor

Anderson Schools of Management
University of New Mexico
United States of America
nickflor@unm.edu

Abstract

One of the new business models enabled by the Internet is the community-based model. The aim of this model is to profit from the value created by individuals interacting within a virtual community. While we know *that* a virtual community can be co-opted for business purposes, we do not know the extent to which a community-based business differs from a conventional one. If we are to systematically build community-based businesses, we ought to know which existing processes in a pure virtual community can be adapted for business purposes and, conversely, which processes are lacking and must be added to the virtual community in order to transform it into a business. This paper analyzes one of the largest teen-advice forums on the Internet, yesnomaybe.com, which is also a profitable, community-based business. The goal is to uncover how virtual community processes map to conventional business processes. Using representational analyses I show that a virtual community contains autonomous supply, production, and consumption processes, while lacking advertising and income processes. I end by discussing how yesnomaybe.com implements its income and advertising processes and in doing so creates a special kind of community-based business known as a *programmable autonomous business*.

1. Introduction

The Internet has given rise to a number of new business models, whose popular names include the storefront, auction, portal, dynamic-pricing, B2B e-Commerce, and click-and-mortar models [4]. Another emerging business model is the community-based model [16], which aims to profit from the individuals that interact within various kinds of virtual communities like chat rooms, forums, and MUDs [19]. An interesting variant of the community-based business model is the *programmable autonomous business model* [7] — an unmanned, automated business built entirely in software, which operates profitably and grows its customer base without any employees or managers directing it.

Although we know *that* virtual communities can be co-opted for business purposes, we do not have process models that describe *why* they can function as businesses. Existing studies on virtual communities have largely focused on design principles [20] [10] [14] [13], analyzing social interactions within such communities (e.g., [3] [15] [2]) and more recently how to support both

social capital (e.g., [5] [18]) and social processes [6] within virtual communities. There are no studies that systematically compare and contrast the processes in a virtual community with those in a conventional business.

If we are to build businesses that are based on virtual communities, we ought to understand the extant processes in virtual communities that can be adapted for business purposes, as well as those processes that are missing and must be added to the virtual community in order to complete its transformation into a community-based business. The research reported in this paper is a first step towards understanding these processes.

2. A Functional Blueprint for a Conventional Business

Businesses exist to create value for customers [11] in the form of goods—both physical and informational—and services, or products. There are as many different kinds of businesses as there are products. However, although the internal makeup, e.g., employees and equipment, as well as the external environment, e.g., suppliers, promoters, and customers, can vary tremendously across businesses, the creation and operation of most businesses can be described in terms of a very general model that I refer to as the *conventional business model*, which I have adapted from Flor [7]. This model depicts the main agents that a business interacts with, along with the key physical goods, information, and income exchanged between the agents (refer to Figure 1).

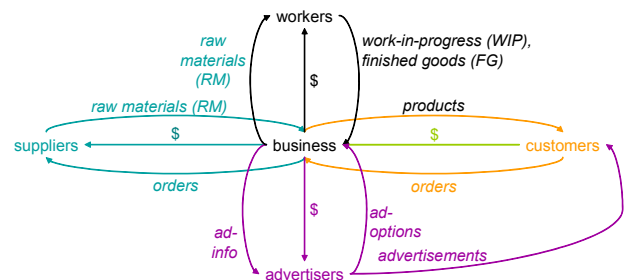


Figure 1. Functional Blueprint for a Conventional Business

Briefly, a business orders raw materials from suppliers who deliver them to the business in exchange for payment (west loop). Workers—both human and machines—take these raw materials and transform them into work-in-progress or finished goods in exchange for wages (north loop). Customers order products from the business,

which delivers them to the customers in exchange for payment (east loop). Finally, one of the major tasks of any business is to "create" customers to purchase its products or services [1]. A business works with various organizations to advertise its products to customers (south loop). These loops correspond to supply, production, consumption, and advertising processes, respectively.

If we build a similar functional blueprint for a virtual community, we can compare and contrast it with that in Figure 1, to uncover existing business processes in a virtual community as well as the processes that are lacking but necessary to make it into a business.

3. Methodology

We apply a representational analysis [8] [9] based on the theoretical framework of distributed cognition [12], to a specific information activity within a community-based business. This is an inductive method where one first charts the movement of information across the individuals and technologies (collectively "agents") that participate in an activity. By abstracting the agents and information in the chart (also known as an *information activity map*) one can then infer the general processes underlying the observed information activity.

3.1 The community-based business: YNM

The business whose activity is analyzed in this paper was the website YesNoMaybe.com, or simply *YNM*. YNM is a web-based forum developed by Mental Systems, Inc., which has been in operation since February of 2000. It is the largest teen advice forum in the Open Directory¹ (www.dmoz.org)—for both its own category *Kids and Teens : Teen Life : Advice : Romance*, as well as its parent category—with over 60,000 registered users who have contributed more than 300,000 postings.

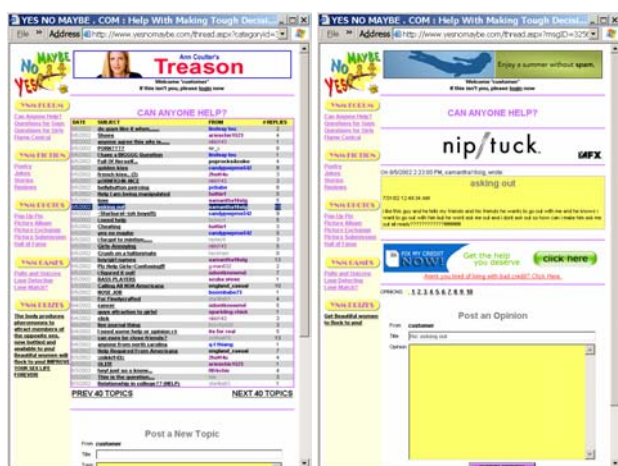


Figure 2. Screen shots: topic list (left) and topic/opinion display (right)

¹ The Open Directory is a hierarchical organization of web sites similar to Yahoo (www.Yahoo.com), but much larger and is outsourced to many of the top search engines, including Google (www.Google.com) and AOL (search.aol.com).

YNM's forum consists of ten different categories, e.g., "Questions for Girls" and "Questions for Guys." Similar to other web forums, users can browse a list of topics (see Figure 2, left screen), read the content of those topics as well as replies (see Figure 2, right screen), or post their own topics and opinions (see Figure 2, bottom of screens).

A poll of over 700 users indicates that 80% are females and 20% are males. 96% of the users are eighteen or under, with 62% below the working age of sixteen. However, YNM is more than just a teen advice forum, it is also a business that has operated profitably since its inception in February of 2000. For example in its first quarter of operation, when companies had large Internet advertising budgets, YNM averaged \$9500 per month in advertising revenues. Since then revenues have been more modest. Over the past year (8/1/2002—7/31/2003, see Figure 3), YNM averaged \$131/month in advertising revenues, with only \$15/month in expenses (fixed web hosting fee)—a simply profitability index of 777%. Besides operating profitably for the past three years, YNM continues to grow its customer base, averaging 1090 new user registrations a month over the past year.

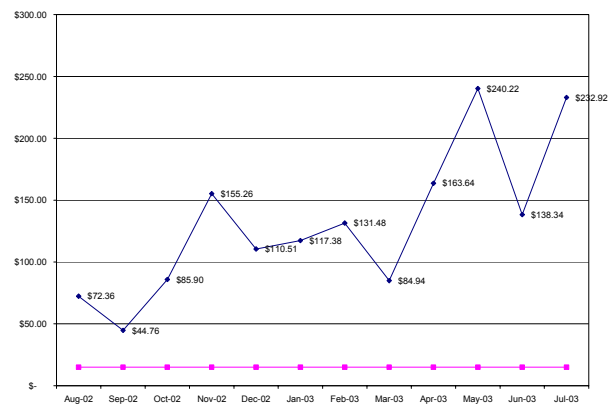


Figure 3. YNM revenues (top line) and expenses (bottom line) from 8/1/2002 to 7/1/2003

3.2 The information activity: A help thread

Table 1 displays a topic posting (index 0) and ten opinion postings (index 1-10). In forum terminology, this is collectively known as a "thread." This particular thread was chosen because it typifies the kinds of messages posted on YNM and that one finds in other virtual community forums.

4. Analysis

The catalyst for the topic posting is some situation in Phoenix's local environment that she is not sure how to handle. Figure 4 graphs the exchange of topics and opinions between the topic poster, Phoenix, and the ten opinion posters over time.

Table 1. The thread to be analyzed

0	phoenix 3/31	I like this guy and he tells my friends and his friends he wants to go out with me and he knows i want to go out with him but he wont ask me out and i dont ask out so how can i make him ask me out all ready????????????!!!!!!!!!!!!!!!!!!!!
1	lillandra 3/31	..Tell him to ask you out! lol That might work.....guys like it when you take charge!..
2	kitty 3/31	You go up ta him ask him out or why he's not askin you out
3	wolverine 3/31	There's no real way to make someone else ask you out. If he wants to, there is a chance he'll eventually ask you, but there's always the possibility that he's shy, or that he doesn't knwo how you would react. The idea that you don't ask people out strikes me as a strange pne; you can't expect other people to make the first move forever, and some people would never make a move if they didn't have some indication of how you would react. If you're unwilling to ask him out, then the best thing you could do it make it known that you would go out with him if he asked you.
4	colossus 4/03	just go up to him and say 'i think your funny (or somethin like that i mena if he is) and i was just wondering if maybe u wanna go to a movie or something sometime?' and if he sasy no then well he is an ass that doesnt deserve u ne way :) lol hope i helped!
5	jean 4/03	get one of your friends to ask him out for you. hope i was helpful....always works for me.
6	rogue 4/04	u go and ask him if he likes u and then say well do u wanna go catch a movie or something on saturday (or something like that)
7	cyclops 4/05	fuck! just ask him out urself! if u like him so much just ask him out! WHY DO GIRLS HAVE SUCH A HARD TIME WITH IT!!!!!!!!!!!!!!!!!!!!!!!!!!!!
8	nightcrawler 4/05	Why don't you ask out already????????!!!!!!! You afraid that at that point, you give him the upper-hand because you were the instigator in this matter? Or maybe you have underlaying insecurities that you haven't dealt with as of yet. You should take some time to think of this matter.
9	Professor Xavier 4/05	If I were you I would flirt as much as possible, or dress really nice for him. And if he still doesn't for awhile then you ask him. I know it's hard to get the courage to, but I have before and it worked. Not all guys are crazy about the old-fashioned saying that the guys have to ask the girls out. XXXXXXX (P.S. Need any more help email me @ xxxxxxxxxxxxxx@xxxxxxxxxxxxx)
10	storm 4/05	Ok Ive been were you are now. The thing i did worked Ive been with my bfriend for 9 months you just talk to him till you are best friends and then he will relize ok Iam ready to go out with her and Iam just going to warn you know that you need to be careful because once you get to know him you might change your mind abort him so be careful and GOOD LUCK

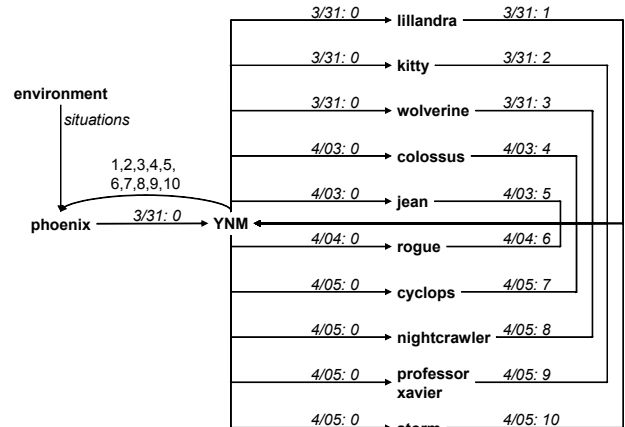


Figure 4. Information activity map for the sample thread

The arrows in the graph are labeled with a number corresponding to the content index from Table 1 and, where known, are prefixed by the date the content exchange occurred, e.g., the label 3/31: 0 denotes a topic posting on March 31st, whereas the label 4/05: 7 denotes the posting of the seventh reply on the fifth of April. She originally posted her topic on 3/31, and over the course of five days, ten other users read and responded with various opinions.

To understand how these processes get co-opted for business purposes. We first simplify the diagram by grouping the ten opinion posters into a single node labeled "opinion posters" (see Figure 5):

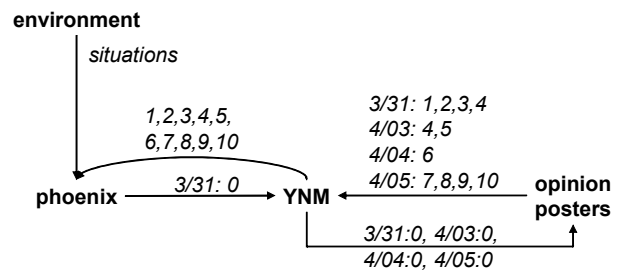


Figure 5. Grouping the 10 opinion posters

Next, we group the information exchanged between agents, as either a "topic" or "opinion" and generalize phoenix as a "topic poster" (see Figure 6)

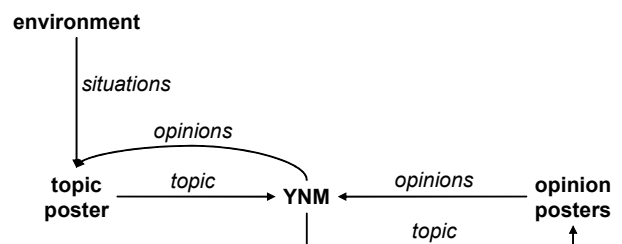


Figure 6. Generalizing the information

Not shown in Figure 6 are the members of YNM that

simply browse and read threads without contributing an opinion or topic of their own. Members refer to this behavior as "lurking," which is best summarized by the following user's posting (see Table 2, emphasis mine).

Table 2. A user posting that describes lurking

Mac y	... aww spanx babe!!! dont worry theres msn for me and you! i might come back i dont know, right now im just <i>lurking around lolz i'll hardly post or reply to anything, like i did before,</i> but it'll be way less, ...
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Figure 7 depicts the information activity map for YNM with lurkers added:

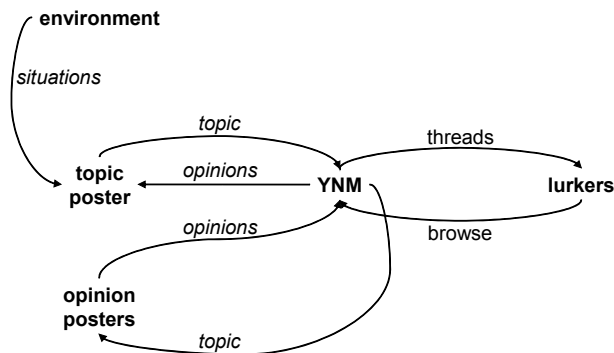


Figure 7. Functional blueprint for the thread

We are in a position now to compare the functional blueprint for the thread (Figure 7), with the functional blueprint for a conventional business (Figure 1).

5. Results

A cursory inspection of the functional blueprint for the thread (Figure 7) may not reveal the underlying business processes. However, by explicitly representing the software scripts that transform the topic and opinions into threads as well as annotating the agents and information with their counterparts in the conventional business model (see Figure 1), the business processes become apparent. Figure 8 depicts a functional blueprint for the thread with these annotations.

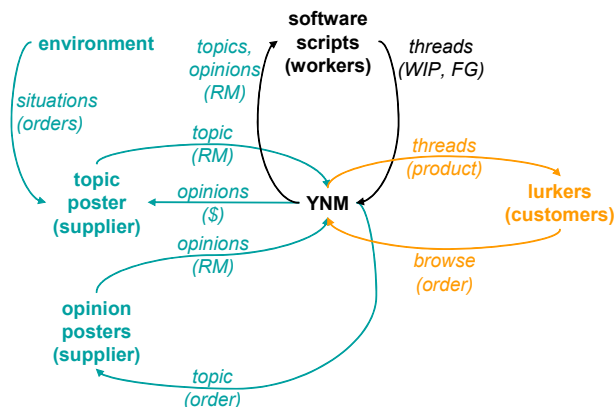


Figure 8. Functional blueprint for the thread with business labels

5.1 Common business processes: Supply, production, consumption

The thread activity, and by extension a virtual community, contains instances of supply, production, and consumption processes. Specifically, the topic and opinion posters play the role of suppliers for YNM. But unlike a conventional business where the raw materials are tangible goods, the raw materials—topic and opinion postings—are information based. Software scripts play the role of the workers in YNM, taking the topics and opinions and formatting them as threads in a database. These threads are YNM's product and are made available online to the lurkers, who correspond to business customers.

The supply process, in particular, differs from that of a conventional business in several interesting ways. First, the suppliers in a virtual community are its members, not some outside agency. Community members can and do shift roles between lurking and posting, viz., between being consumers and being suppliers. Second, they provide raw materials for free without any monetary payment—although one can view the opinions that the topic suppliers receive as a kind of *information payment*. Finally, the supply process is autonomous. No one within the community orders members to start supplying postings. Rather, situations in the members' environment are the catalyst for the supply process.

5.2 Missing Business Processes: Advertising and Income

The business processes missing from a pure virtual community are more apparent, namely an advertising process and an income process. To transform a virtual community into a community-based business, these processes must be designed into the virtual community. One challenge is to implement them without the virtual community having to pay any money. To do so would result in a true programmable autonomous business—a business built entirely in software that runs itself, generating income and customers, without human workers or managers directing it. In the following section, we discuss the advertising and income processes that make yesnomaybe.com a programmable autonomous business.

6. Discussion

The analysis showed that a virtual community instantiates the supply, production, and consumption processes needed by a business. The missing processes are an advertising process and an income process. While one could copy what conventional businesses do—pay some outside agency to advertise the business and charge customers for accessing content—there are several drawbacks to doing so. One obvious drawback is cost; advertising can be expensive, particularly in the national media needed to reach a mass audience. Second, it is not clear that mechanisms which work for conventional businesses will work for community-based businesses.

For example, customers are used to obtaining community content for free and may be unwilling to pay for it, especially when such content is typically available elsewhere on the Internet.

One possibility is to design low to no-cost advertising processes, as well as income processes that, paradoxically, do not require customers to pay any money to the community-based business. YNM has implemented two such processes. Figure 9 depicts the complete functional blueprint for YNM. To unclutter the diagram, topic and opinion posters have been grouped as "customers" (see west loop in Figure 9). In the following discussion, terms in *italics> reference items in this diagram.*

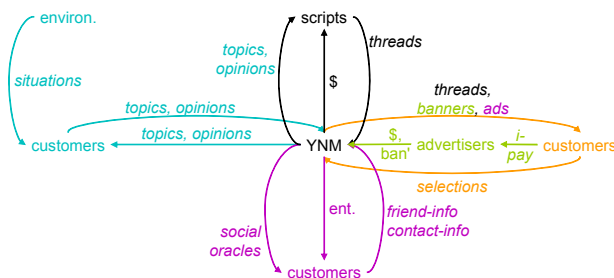


Figure 9. Functional blueprint for YNM as a programmable autonomous business

6.1 Example: YNM's income process

In YNM, customers pay *indirectly* via advertisers. Specifically, the advertisers give YNM banner code (*ban'*) that allows YNM to display *banners* along with the thread content in various locations on the web page. In Figure 2, you can see banners at the top of the page, before the thread content, and after the thread content. The advertisers then pay YNM money (\$) in exchange for the users performing some action on the banner. Different advertisers require different actions for payment. The actions include: (a) clicking on a banner; (b) clicking on a banner and then entering contact information into a form, like an e-mail address or telephone number; or (c) simply looking at a banner. The users' actions can be viewed as a kind of information payment (*i-pay*) to the advertiser, who then transforms this information into money for YNM (see Figure 3).

6.2 Example: YNM's Advertising Process

Aside from the listing on DMOZ, YNM does not appear in any of the top search engines for common search terms like "teens" or "teen romance." Moreover, keeping with the goal of autonymity, YNM's owners do not pay companies to advertise the site. As with the supply process, YNM relies on existing customers to promote the site by both word of mouth or by interacting with *social oracles*. A social oracle is a computer program that provides social information (*ent.*) to customers—entertaining information that users want to share with other friends and associates. YNM has two social oracles: a compatibility program, and the "love

detective" (see Figure 10).

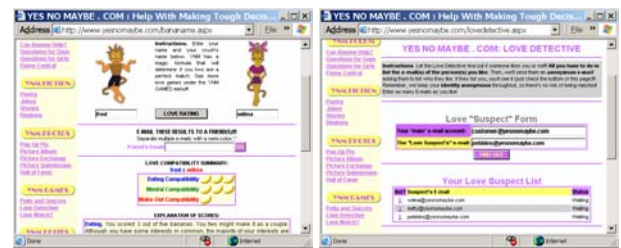


Figure 10. Social oracles for advertising

Generally, social oracles work by taking, as input, information about a user's friends or associates and returning entertaining information about them—information that a user will want to share with others. For example, the compatibility program takes the names of two people and returns three compatibility scores along with an explanation of those scores. This entertaining information is used to construct a direct response advertisement [17]. For instance, in the compatibility game, the user is given the option of e-mailing the compatibility report to a friend. Unbeknownst to the user, only the *scores* get e-mailed to the friend. To receive the *explanations*, the recipient is told to click on a link (the direct response mechanism that sends them to YNM), and use the compatibility program.

Matching the e-mails sent out with the registration e-mails in the new-user database, shows the compatibility program has a 14.46% conversion rate. The love detective, operating on similar principles, has a conversion rate of 30.22%. Both social oracles far exceed the 2% *response rate* that typifies direct mail advertisements.

To summarize, YNM's income and advertising processes when combined with the supply, production, and consumption processes that result from its virtual community, allow it to generate income and grow its customer base without the owners doing any work or paying expenses, aside from the initial development and monthly web hosting costs (see Figure 3). YNM is not only a community-based business, but a programmable autonomous business as well. Future research is needed to discover how to systematically design advertising and income processes for the different kinds of virtual communities on the Internet.

7. Summary

We have seen how a virtual community instantiates supply, production, and consumption processes. To transform virtual communities into businesses, designers ought to focus their efforts on the development of advertising and income processes specific to their types of communities. As YesNoMaybe.com demonstrated, properly designed advertising and income processes can allow community-based businesses to operate autonomously and at low costs.

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