CyNet

The following presentation is as if everything was set and functional despite the fact that I'm far away from a working prototype. In fact, I gave up the development of the proof of concept *I have in mind, to get a general overview, thus fixing some details; it's amazing how a panorama can give access to almost microscopic features. Discussing the* how to *will be reserved to the next version of this document. I will focus on the* What's that? *part here.*

I would like to thank people that contributed inspiration, comments and discussions. Every single bit was useful either as a direct contribution or as an incitation to improve some feature.
*Special thanks go to **Mary Mantzari**, with who I initiated the discussion at the origin of this project, some 28 years ago, and to the **Eclectic Thinkers** community, who are a source of inspiration and the kind of friendly groups that help ones neurons to relax, with special mentions for **Steve**, **Epp**, **Kasimir**, **Leandro**, **Bill, Maxx** and most of all the **Alienness** for building the community.*

CyNet

short intro

To make it really short, since I started to read I tried to imagine some system to order books, notes, journals etc. I'm the sort of guy who will avoid memorizing any info that may be easily available when needed. And always tried to made info easily available, imagining indexing systems, studying those build by others, almost worshiping databases [:-)]. Since january 2001 I tried to find some process that would make information about human genes easy to access and *read*, unsatisfied by all available solutions. Partial solutions were build, with a central database served by a dozen software agents scanning public databases to collect information and create reports. It appears today that it was a big mistake to try to solve this problem starting by a particular case. Overview are almost always preferable.

Three months were necessary to formulate the project and then follow it's maturation until it reached it's present state. I don't think that I could improve it without a disproportional effort to results ratio, but I hope that it will interest inventive people ready to inject new ideas and help it improve.

This is an Open project. I'll be glad if you mention me when you talk about it, but I'll be happy if you want to talk with me about it. Despite the fact that I'm pro-software patent, this is a public domain contribution. And there is nothing contradictory about it.

what's about?

Allow the organization of available information.

Do this without contradictions with existing copyright laws.

By creating a system with potential of self evolution, much like the biosphere, and let it build up without following preexistent blueprints, but rather by using *natural* selection.

And avoid the need of a central service, without excluding it, privileging distributed processing and redundancy to warrant permanence.

And most of all, do so without the need for continuous supervising by humans.

personal motives?

It's really fun to work on such puzzles, and I do see what would be the benefits for me, both personal and professional. I hope that I'll make clear what may be the benefits for you, and

why it would be nice if you get involved, one way or another; there is plenty of room for everybody.

what is CyNet?

Interactions between *ideas,* creating a network through Internet and human space.

The *ideas* are presented in a particular format, named cycells, and are presented as personal collections, the Domes. Individuality and Autonomy [1]are granted at both the cycells' and Domes' level for interactions with their pairs, without the necessity of human action, once they are launched. And even that part may become unnecessary as the system will evolve.

A cycell is the expression of an idea, an interest, a query... It may be based on an existing document, the seed, or be an empty shell. On the *surface* of a cycell tags are used to define it, and, just beneath, rules determine it's behavior. Each cycell keep the memory of it's builder, people that contacted it and cycells that are related to it.

Tags are expressions, simple words, list of synonyms, logical expressions, mathematical formulas etc. Even other cycells may be used as tags. They are used to describe the idea represented by the cycell and may be derived from the seed or be added during the cycell's built. They are used to evaluate affinities between two cycells, affinities that will determine the establishment of a link between them, which may be unilateral or mutual. Those links determine the CyNet space on Internet.

Rules are simple routines determining the interaction of a cycell with other cycells, Domes, and people, but also it's potential for merging with other ones, a sexual behavior that may produce descendants, new cycells not built by humans.

Cycells actions are served by the Domes, constituted by the Residence, the cycells's collection, and by the routines serving to interface them to Internet (and the Web) and to the

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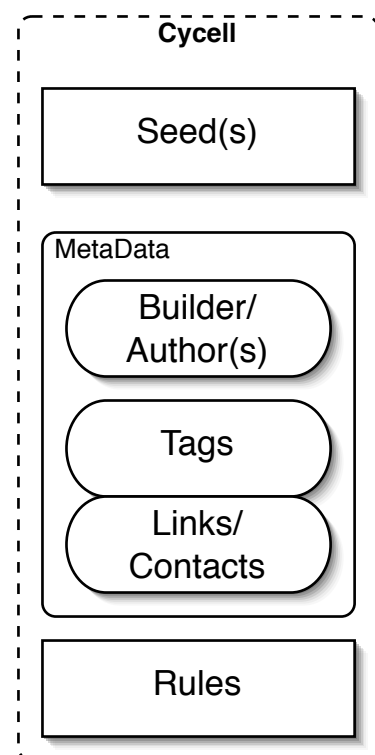
[1] when autonomy's definition is your concern, please do remember that we depend on oxygen to do whatever we do

human space. All actions are written as rules, in CyLingo[2], to be used as well by cycells for communication between them or with their Domes, and by people wishing to contact them.

Cycells may be used to build human social networks, acting as intermediates during the first stage of contact, providing some privacy, and this is CyNet's part in human space, establishing a continuum between human and ideas spaces.

how this would work?

Building a cycell is a quite simple process.

Say, a paper on the journal is interesting for you, then you can use it as seed[3] and continue by adding tags that define it, e.g. "Google", "university library", "London Book Fair", "french government reaction". Then join a standard set of rules or take some more time to determine a new one.

You are done. Save it and the Dome's first reaction will be to prepare a build/birth certificate [BC] and set it to be published as soon as you will be connected on the Net. The BC is posted to the Dome's weblog, the place where new cycells are announced.

Once activate by the Dome, this new cycell will use the rules; what would be a standard set of rules? That may be:

> Search for Web documents[4] with affinities and link them (via search engines)

> Search for other cycells with affinities and link them (via RSS/Atom feeds of other Domes blogs).

> Check for e-mail messages, read them and eventually reply.

Well, that's a minimum I present here, but it's enough for a first approach. It is the Dome that will determine which search engines will be used, formulate the queries and store the results in a cache. The same for the RSS/Atom feeds that are followed, and for the e-mail messaging. This last one would be necessary for the first run of course.

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[2] Kasimir named it ;-)

[3] using the permalink to it, if it's copyrighted

[4] any Web document: news, blog posts,

The posting of the BC to the Dome's blog trigger the creation of a new entry in the Atom [5] feed and make the cycell visible to other Domes that have a subscription to this feed. The BC's publication is a quite important part of the cycell's life, as it make it visible and available to the community.

Let's see what affinities with Web documents and other cycells means.

Web document searches will be through search engines, by formulating queries based on the cycell's tags; e.g. ("Google" AND "university library" AND "London Book Fair" AND "french government reaction"). Affinities will be *à priori* as the query's results *must* fit it to be returned. For an 75 % community of tags there should be four queries made in a case as the one on example: tag1 and tag2 and tag3; tag1 and tag3 and tag4; tag2 and tag3 and tag4; tag1 and tag2 and tag3 and tag4. For simplicity the first ten results of each query may be considered.

For cycells, affinities will be evaluated *à posteriori*. The BC contains the cycell's tag and once read by the Atom feed aggregator it will be easy to evaluate affinities, applying whatever rules it's convenient. As we will see below, the evaluation of affinities between two cycells may be a much more complicated process then the simple percentage of common tags calculation. But this remains the simple, basic method.

E-mail messages may be addressed to a cycells for several reasons.
The first I considered is to get the seed document, if the distribution is possible (the cycell's builder is the author or the is authorized to distribute it by some other way [6]).

A second is to contact one of the cycell's Contacts. That may be one of the authors of the seed document who don't want to make his e-mail address available. The cycell can forward him a message. Exchanges through the cycell may have to be limited in length and number to avoid overloads.

A third will be to be presented to the cycell, sending ones virtual card, to be added to the cycells Contacts list. A way to enter it in the "circle" of the cycell and the cycell's network.

cycell networks, rings and sex

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[5] read RSS/Atom/whatever else; I'm using exclusively Atom feed for the moment so, I'll simplify the notation

[6] he may own the copyrights, or the seed document is under a Common Content license etc

There are two levels of networks that can be build progressively around a cycell: the one represented by Internet links and the one represented by links between people in human space. Both are integral parts of Cynet.

When a cycell find another one with which it presents as strong enough *affinity* it links it and send it a message to notify this link; *"hi there, I'm cycell [cycell's ID] and just added a link pointing to you"*.

It is expected that the second one will check back; eventually there will be a back-link, but this isn't always the case! This may be due to a higher threshold for affinity evaluation or to the repartition of tags. Cycell A tags may be {tag1, tag2, tag3} and cycell's B {tag1, tag2, tag3, tag4, tag5}; 100 % community for cycell A but only 60 % for cycell B.[7]
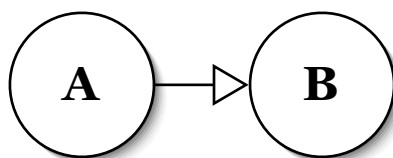
Let's review a few cases:

Cycell A is tagged by { tag1, tag2, tag3, tag4, tag5} and have a threshold of 60%
Cycell B is tagged by { tag3, tag4, tag5, tag6, tag7, tag8, tag9} and have a threshold of 60%

Tags are: { tag1, tag2} specific of cycell A, **{tag3, tag4, tag5} common to both** and {tag6, tag7, tag8, tag9} specific of cycell B.

Cycell A will link cycell B, calculating an affinity of 0,6, but the reverse will not be true as cycell B will calculate an affinity of ~0,43. The threshold is the same, but the interest isn't mutual. The relation will be:

cycell A link to cycell B

Cycell C is tagged by { tag3, tag4, tag5, tag6, tag7, tag8, tag9} and have a threshold of 40%

We have the same distribution of specific and common tags as before.

Cycell A will link cycell C, calculating an affinity of 0,6, and the reverse will be true as cycell C will calculate an affinity of ~0,43. The relation will be:
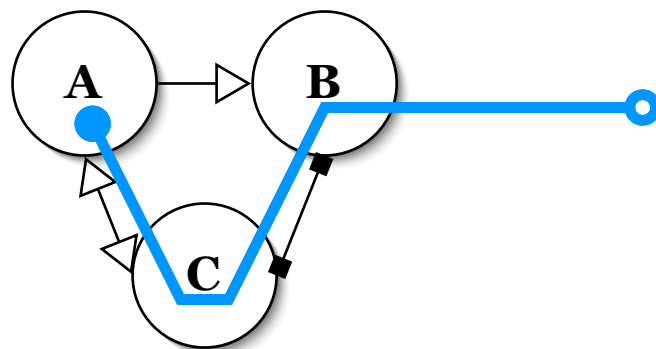
mutual link between cycells A and C

[7] somehow more complex relations are to be present; this is under design
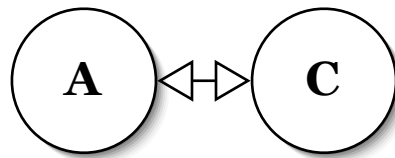
Cycells B and C will establish also a mutual link as they have identical tags' sets, the trio being thus linked this way:
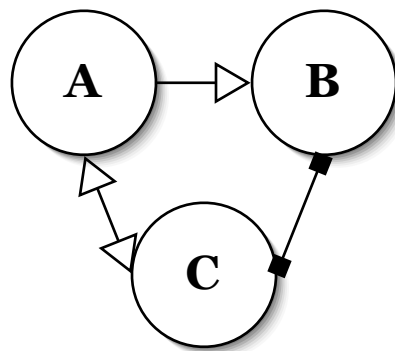

Thus, there is a path from B and A, but only if C is considered:

A cycell ring is formed when at least three cycells are inter-connected by mutual links. It constitute a node that may be used for sex. The first step will be initiated by one of the cycells, which reached it's sexual maturity (say aged of 2 weeks), hanging around in a connected but not busy Dome.
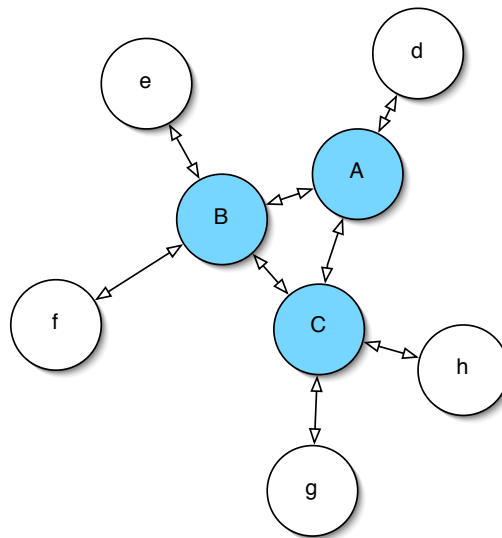
Then the Ring is *explored*: fellow cycells must be old enough, and the cycell's with mutual links to them are evaluated and new links are created (yellow ones are the new one in the ring). This process should be limited in time and levels.
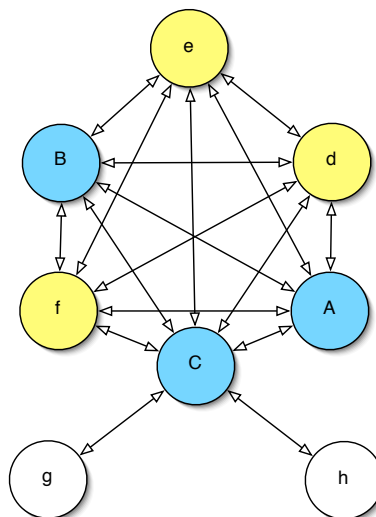
Joining the cycells tags and seed documents may produce children cycells that keep focus on the subject of the parental ones and concentrates all their links and contacts content. Several strategies can be adopted to determine which tags sets/cycells may be maintained. First, tag set already present in existing cycells are discarded, then the new one undergo an evaluation period, equivalent to an incubation; they be incubated by any of the parental cycells Domes. During incubation, the cycell have the same privileges as any cycell of the Dome. The incubation's duration is one of the parameter to set for each Dome, two weeks seem to be enough. Conception certificates are published; the main difference is that the survival of the cycell isn't guaranteed after the incubation period. Either the children cycells gather new information for the ring during this stage, in which case the conception

certificate is turned to a birth certificate, or they don't present an interest and are simply discarded.

An important to pinpoint possibility is that each Domes may have it's own sex modalities, I mean way to tag-shuffling. Usually, a sexual relationship implies two individuals and a single gene recombination and transmission mode. Cynet sex accepts as many participants as available and as much modes of children conception and evaluation as there are implicated Domes. Hope that will be an improvement over biological reproduction.

dreaming

Do you know a computer user, Sci-fi addict, information treatment concerned that have never dream of dreaming machines? I don't. So I decided that something should be able to dream ion Cybernet. Sex is certainly a way to make new individuals appear, but there are to many restriction about it and children are bound to inherit a lot from the parental cycell. That should bring improvements but I didn't expect it to be a clearly innovative process.

First I had to decide what dreaming is and the what would be able to dream!

I defined dreaming as the recombination of recent memories fragments, through the filter of previous experiences to generate new ideas. If you are on the psychology field and think that this definition is wrong, you probably are talking about biological organisms ;-) I'm talking about Cynet.

Cycells are to simple to be able to dream. But Domes could do it!

What are recent memories for a Dome? The cache where the recently visited web pages are stored: web pages essentially, downloaded to be examined for affinities with one or the other of the cycells, including birth certificates.

What are long term memories for a Dome? Dictionaries of tags, lists of links, lists of contacts.

Why not just examine the cache, extract tags (single words or more complex *expressions*), combine the more frequent ones to create small sets (tested with 4 to 8) that could be the tags of a new cycell, check if another one similar doesn't exist and use the new ones to define new cycells seeded with the URI's of the corresponding web documents? Why not? New combinations with some relation with the Dome's interests should be generated. New cycells, that can be tested the same way as children cycells in order to select those that present the potential to be *functional*, I mean participate to the creation of a network and eventually of a ring.

First try, using quite simple rules based only to the frequency in my browser's cache and after something as 4000 runs (sets of tags) there where the one I would like to keep. I already used it as an example above:

{"Google", "university library", "London Book Fair", "french government reaction"}

I spend some time surfing the subject before testing Dome's dreaming. And that's a very nice set of tags (or query keys) if you are interested on Google's initiative to organize and serve books content.

More exotic combinations should be achievable by a Dome's cache, filled with documents downloaded by a variety of cycells.

So, dreaming was defined as a Dome's feature to produce new cycells almost from scratch. The way that will be done is as adaptable as most of Cynet's elements. Builders will define them as they would like them better. There aren't really restrictions. And people that think that dreaming should be done differently have plenty of room to adapt their point of view. There is a single restriction; dreaming, as sex, as manual cycell's creation should provide a well formed cycell.

Cynet's interest/application

The description I gave above, is somehow sterile, as it doesn't present what we should expect from the existence of Cynet. But I hope it is sufficient to see more clearly the possibilities that the system offers. Some of the applications described here are what I first discussed with Mary a long time ago: Book Cynet, Avatars Cynet. Love Cynet was imagined to please Véronique G. two months ago. Let's go through the examples; for all of them I assume that there will be a few hundreds people at the beginning (any ideas about how to recruit people once the first Domes will be available are welcomed). Some elements that aren't limited to the examples are bolded.

Book Cynet

Each Dome owner create a cycell for each of the books he read, owns, like. A small database representing the items of his library in fact, with tags (keywords) that define the subject, a small description presenting the way he perceived the book and any other stuff he likes; including the ISBN. Direct benefit for the Dome owner will be the presence of his li-

brary database and a way to present himself: show them what you read, they may find that you are an interesting person.

Cycells seeded with books will create a network based on their tags, including ISBN, which clearly characterize the seed, event if it doesn't give access to the book itself.

A first round could bring together people that read the book and would like to talk about it. Discussions can be initiated in the comments of a Dome's blog or via e-mailed messages addressed to the Dome's owner or to the cycell.

A second round could concern a more general approach of one subject, represented by a set of tags. Say, {"sci-fi", "robot", "artificial intelligence"}. It should be represented by a ring of cycells. Once one is spotted (searching birth certificates), the navigation through it's links may be interesting.

A third application could be the search of books concerning a subject. If there are enough Dome owners out there cycelling their books, there should be one that described the *right* book, with what you expect to be the *right* tags. Searching would be much more efficient then by addressing a central server where indexing is made by a single person. And it could go through a search engine.

One of the remarks I got is that there shouldn't be much of erotic books presented this way. I think differently. **A Dome owner can present himself by a nickname to keep anonymity**. The same way as bloggers do. And there are some blogs out there based on erotic and porn literature. The same should be for Domes. **And a computer can host as many Domes as wanted/needed**. One for professional use, one for hobbies, one familial, one for erotic books etc, each of them handling a different presentation of it's owner: A. Vekris, Oldcola, cybervekris, xxxxxxx etc.

As far as I know, this is the first proposition to implement Terry Pratchett's L-Space in Internet! A subset of Cynet for books to communicate and do the social networking they are made for.

Now, using the model of Book Cynet imaging Photo Cynet, Music Cynet, Movies Cynet, Painters Cynet, etc. Those aren't particular networks, but are diffusely present in Cynet itself. No need to create frontiers, otherwise then by owing more then one Dome.

Avatars Cynet
One particular species of cycells are avatars. Personal representation of someone on the Net, using a cycell.

There may be as much avatars as wanted for a single person.

Are you looking for a job? Seed a cycell with your resumé, tag it with your competences and geographic zone, and it will do the searching for colleagues that may help you by announcing vacant posts, or it may even be found by someone that have a job for you.

Do you have a job to offer? Seed a cycell with the post description, add the researched competencies as tags, add rules and let it gather the right persons for you.

Are you looking for the perfect mate? Seed a cycell with a description of you, tag it with your interests and geolocation, add the appropriate rules (affinities by specified gender, characteristics you are looking for and living place for example) and let it go. It will enter Love Cynet and will create a network pointing to other people's avatars, that may be the ones you are looking for.

As I will describe elsewhere, **using tags' categories** may even diversify your avatar as much as you like, to search for different categories of people. Because the search may concern also friends, not only mates.

Do you belong to a Jazz band that is presenting his repertoire next friday at some cool Jazz Club? Seed a cycell with the announce, maybe some photos of the band in action and some mp3s, a map showing the Club and geolocation data, add the appropriate tags and only the rules that will facilitate the access to the seed documents (probably you don't want to build a set of outgoing links for this cycell). Let the cycell do the advertisement for you to people searching Jazz concerts at geolocation. They even can come to the Dome's blog afterward to say other people how much they appreciated your music. Or blog their impressions linking to the Dome's blog and or to this particular cycell's BC.

So, avatars may present a facet of a person, or of different entity, such a jazz band. **Cycells,** in general, **can represent entities, people, associations, communities, companies etc.** Avatars could be the best solution for that, but other species may be used as well.

A particularity of avatars is that contrarily to other cycell's they may be changed, by whom they represent, as necessary, to take in account changes (geolocation, weight, competencies etc). And eventually they may be inactivated. You don't want to receive invitations for torrid sex *after* your marriage!

Blog Cynet

Are you a blogger? Do you have a particularly interesting post just published? Cycell it!

What for? It's already present on the Web... And the cycell will hang around in a much more intelligent way.

Tags will categorize your post in a more detailed way then your blogs categories. And the cycell will go around in a intelligent way, that the post itself don't dispose. It will seek for web documents and other cycells by affinity, keep a record of them, keep record of incoming links, the same way Technorati or trackbacks would do, and facilitate connection with people too shy to comment on your blog. And it will probably become the member of a ring that will try to improve it and create a more efficient child cycell, helping to get a more detailed overview of the subject. And it will contribute to your Dome's dreaming, participating to your ideas recombination to build new ones.

If you publish in different blogs, your posts will be present in your Domes blog, and thus in a single Atom feed. A nice way to concentrate ones production in a single place, without infringing copyrights (this is for professional publishers), as only the URI of your text is needed to seed the cycell[8]. And this is a replacement to Feedburner.

Aren't you a blogger, but a blogs reader? Is there some posts that you find interesting? Cycell them. The cycells will seek for related links that should be as much interesting as the post that attracted your attention at first. And for people interested by the same subject. And they will continue to do so as long as they are able to gather new links and contacts. And you will be kept informed. This is as much valuable as e-mail alerts from services as Google, Yahoo! and similar, but encompassing the whole Internet and without advertisements. And for cycells to cycells relations much more powerful then keywords based search, as the rules may be quite complex to fit your needs.

Science Cynet

Exactly what I presented for blog Cynet but with some more extensions. I'm personally interested on that so I tried to imagine some special rules for science related cycells.

Cycells are perfect to create scientific networks, in both compartments of Cynet.

They need to be able to seek information in *secret* places. Scholar Google is quite nice, but some more functions would be better. The ability to use the owners ID and pass to connect to the appropriate server and download automatically the pertinent pdf files for example. That would be an improvement to everyday' life; just the DOI of the document is needed to be specified in the tags.

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[8] this is for you, professional journalist, who hold a personal blog also.

They should present the Dome's owner to the corresponding author of a paper if it is downloaded, much like the "Request a Print" a few years ago. So you know who is interested by your work! And you can contact him via the cycell, so no need for e-mail address communication.

Every author is able to become a corresponding author if he creates a cycell. So he can be easily contacted even if he migrates in another lab (forwarding e-mails is often limited in time, what about the last paper you wrote before you finished with your postdoc?). And the cycell can point to additional material that you produced and made available via Internet *after* the paper's publication. And the tags can specify your contribution to this work, say microarrays, RT-PCR, functional analysis of the results. You aren't the guy to contact for confocal microscopy, immunohistochemistry or monoclonal antibodies. This guy should create his own cycell!

Are you seeking contacts related to onco-pharmaco-genomics at Montreal. An avatar can scan the Cynet for you, based on colleagues publications and current geolocation; you aren't going to contact this old fellow at McGill who preferred to migrate to San Diego because he hates snow after a few years at Montreal. [tried this one, hard stuff]

Are you seeking collaboration with other labs in UE for a grant proposal? Cycell your proposal, specifying in the tags the kind of labs you are looking for and the corresponding countries. Let it fond similar requests or just announce your intend. You may even keep anonymity as long as you didn't identified the right collaborators [That's some kind of a joke; ever read an anonymous proposal, specifying the facilities available in the lab, including a certain equipment available in a single lab in France?].

Now, those are just a few examples. I could continue accumulate applications, but I'm sure that you will do much better then I once you get the mechanism. And I'll keep posting ideas on semanticinternet.blogspot.com.

If you want to share yours, use the blogs comments or e-mail me at oldcola@gmail.com.

Any comment, idea, proposal of collaboration, *may* be welcome. For those interested on the technical aspect, I'll ask to restrain they enthusiasm for a few months! I have a hard time trying to design the DTD of the cycell without forgetting some important XML tags :-)

I should add stuff concerning the tags and the possibility to categorize them, the definition of an affinity constant between tags determining the way they will react and contribute to

the overall affinity between two cycells, the Rules a cycell will be able to use and how to write them down so they will be available for any OS, the CyLingo and it's use for e-mail messages, the CyLingo dialect to dialect translation, sexual behavior of cycells, the inner structure of a Dome, complete Residence, with Nursery (child cycells evaluation stage), Kitchen (cycell builder), Living room (cycells folder, a nice XML database), Bed Room (Dome's sexual rules set), Office (e-mailer, IM, Web browser, Atom feds reader, etc), Library (Dictionaries, imported documents, seed documents) and dependencies, the Silo (where frozen cycells are stored) and the Dreamer.

Most of this stuff is on one or the other of my Moleskines and form a nebula of ideas I'm trying to manage without loosing in focus that:

CyNet's design is to be optimized for (i) **tolerance toward diversity** rather then efficiency, (ii) **extreme plasticity** rather then standardization.
It's final shape is unknown, it have to evolve to adopt it spontaneously responding only to selection pressure and that's the reason why recombination between elemental parts were introduced in the form of (iii) **sexual behavior and dreaming**; hoping to be surprised by the results. The complexity of the system is potential, not imposed by the design.
CyNet's efficiency will improve as people will join as is it based in (iv) **massively parallel treatment** rather then efficient one.

A special thank to people at the Cambridge Arms, rue Rode, Bordeaux, France.

They have a direct implication in this project.

They provid(ed) the perfect environment for me to think and fill my Moleskines, in front of a pint of bier, with a lot of people talking around, the right kind of music and terrific smiles.

Bordeaux, 05/03/28

OldCola