

## ABOUT "OUDE BELGEN", COMPUTERS AND THE WEB...



March 10<sup>th</sup> 2003.

Hi dad,

It's Monday morning, a holiday, it's raining outside, I've hurt my foot and I'm stuck to this computer. . . a good time to catch up with you. Last night I read your little report on the history of Belgium and was duly inspired to contribute a little to the "Bertels Bank of Knowledge"

myself. By the way, I truly enjoy reading your reports. They constitute all of the dutch literature I've ever read here, and so it is always a special experience for me. [One aspect of our language always catches my eye, the length of some words. Like *onafhankelijkheidsstrijders . . . gemeenschapsregeringen ... Volksvertegenwoordigers*)

As regards Belgian history, I'm glad to have read up about it so now I can at least answer some of the questions people ask me... I must admit that I knew little about it. Anything I learned at school as regards history (and geography) quickly vanished in thin air. But I've always had the excuse that I thought history to be a subject that can only be appreciated after the "perspective of years".

Though I do remember, I must have been 12 or so, having an unexpected encounter with history. I was frantically collecting "historia zegeltjes" - to the chagrin of mother, who would discover several of "Fluppe Merx's" food packets partly (and, in the case of chocolate, wholly) mutilated - Anyway, after I had accumulated enough of them I would send them off, to be rewarded (after many disappointing trips to the mailbox) by a set of prints. These prints for me were the most precious things on earth, possibly because I actually had to do something for it to get them... I remember being fascinated by one particular set. It started with the "Oude Belgen" then went on to pre-Roman times, to the Roman times, and so on...

So here is my request. . . Can you elucidate me on the old (pre 1815) history of the Belgians? I assume that a "Belgian" tribe existed before the Roman empire annexed it as one of its provinces (Belgica) of Gaul.. Or at least that's what Asterix told me... I also was taken by these tribal leader characters like Ambiorix, etc... So there are a lot of questions here, I don't know, maybe you would like to write about this...

I really am enjoying my time at uni this second year. Various aspects of it are only now starting to make sense... I also decided, for several reasons, to do only 75% full time, ie. to do 3 units per semester instead of 4. This enables me to get deeper into the subjects, and it also allows me to work part-time. Though work at Nunatak is very slow at the moment, I am hoping it will pick up soon.

My main vision is to, after I finish the course, do full time work and take up mathematics as a major. This again will allow me to concentrate more fully on the

subject. There is apparently a great demand in "Mathematical Modelling" in computing...

I still do music, and once I have a decent computer I will be able to do digital recording, CD distribution, maybe some net-teaching and marketing. I plan to create a WEB site that functions more like a data base for all things written, composed and programmed by my humble self. God knows, I've been doing some heavy typing here. . .so far I've compiled about 10 books, (popular science literature, mathematics and some philosophy). I also have lots of my own on music (which needs to be type-set), and on science (which is slowly being structured in some kind of coherent form).

Since you often work with (on) computers, you may be interested in a little overview of what I'm doing. This will also help me to overview my subjects a little The 3 units I study at the moment are:

**Advanced Web Development:** Last year we learned how to make web pages (html pages) from the home computer (client). However, once a web page has been developed it is sent (using a packeting scheme called TCP/IP) to a server. The server is the computer that you are subscribed to. It has great memory banks and has its own operating system that enables it to interact with the net. The server is your link to the net. Your developed web page actually lives in this server, so if other people (clients) want to access it, they get it from the server, not from you. This means there is no direct communication between these clients and you. However, you can write code in "Server side scripting language" (we use PHP) that will be interpreted at the web server and generates HTML or other output that the visitor will see. You can also write code (we use "MySQL") that interacts with the database (memory banks) of the server, just like "SQL" in Access, the Microsoft database managing program, does on your home computer. In short, the tools PHP and MySQL enables us to interact with the clients via the web. This of course is needed when doing e-commerce.

The www is not the only network in existence. Most companies and large organisations have their own web" called intranet which exists totally within itself. They have their own servers to serve all its department "clients". This intranet structure has a firewall, which is a program/hardware system that connects the intranet to the www. Special passwords need to be used to go through this wall, both from inside and outside. These intranet servers are just like the www servers we've seen and use the same tools.

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## Algorithms and metrics

This is the real programming subject. Just to give an overview:

There are many levels in programming. Starting from the lowest, we have Machine language. This language utilises code that interacts directly within a computer's architecture and is unique for each CPU and is for that reason very specialised. Programs written using machine language consists entirely of binary numbers.

Assembly language is very much like the above, but instead of binary code, the programmer uses commands (together with hexadecimal and binary numbers). Each CPU has its own routines (little programs) attached to it, living in a ROM. Last year we had to write some assembly for a 68000 CPU. My assignment was to write a program that prompts for a number and then rewrite that number in Roman numbers. Each action was coded on a new line. It was 6 pages long! Though a fair bit of repetition was involved.

Higher level languages: Like Basic, Algol, prolog, Pascal. These use compilers that translate your programs into machine language. This allows for the code to be more generalised. Now instead of writing several, say 20 lines to print a character, I can use the command "PRINT char". The compiler will automatically translate this code into machine code. The only disadvantage is that in the translating process, translating induced problems creep in. The CPU needs to do a lot more work (takes longer) and the program becomes less efficient. In the early days, efficiency was a big deal considering the expense of RAM, nowadays in true throwaway style, a "gig" more or less is not a problem.

C. Developed in 1978. Though C is just another high level language, it was a milestone in the programming world. This is thanks to its universality and its absence of restrictions. The Operating System UNIX is entirely written in C. UNIX, unlike Microsoft's WINDOWS is public domain. Its code is freely accessible and can even be altered for individual needs. This is the main reason every programmer needs to know C. C is also very compact, doesn't have a large base of commands.

Object oriented languages: C++ and Java are object oriented. These are programs that consists of sub-programs (classes) that, unlike the subroutines or functions in other programs, are entirely autonomous. Any class can be called by different programs. Java is especially useful since it is universal and thus transportable over the net. In essence, any computer can download a java program (java applet) and run it.

We learned java last year and this year we concentrate on C.

Higher level languages: Prolog, Clips, Used in Artificial intelligence fields.

*Ok, you're still there?*

## Artificial intelligence

This is a great subject. It involves philosophy. I like in particular the hypothesis that "even if you can't understand something as complex as yourself, maybe you can create something as complex as yourself". From Greek

philosophers using logic, we explore the various languages and systems of logic. We try to define intelligence.

An interesting feature of AI is that as soon as a goal is reached it ceases to be AI. (eg chess programs are now regarded as "mechanical").

AI is leading strongly into biological fields. AI evolution runs something like this:

- symbol processing : Uses extensively logic languages (like prolog). Game programs such as chess
- Little programs imitate neurons and are allowed to interact like a (very much simplified) brain in neural network processing. This type of processing is especially effective in perception tasks.
- Or there's the idea of the intelligence in an ants nest. This forms the basis of intelligent agents. Intelligent agents are autonomous virtual entities which can be instructed but which can also learn. An application would be for intelligent agents to act in cyberspace on our behalf. This would include cooperation and negotiation, which leads us to...
- Game theory. This theory describes the interaction of two or more autonomous entities.
- From here onwards AI becomes so strongly associated with biology that it is renamed AL (artificial Life field).

The evolution of AI is especially useful on the WEB. Internet networks are evolving from today's WWW to the SEMANTIC WEB. Whereas now the WWW provides information in a human-accessible form, the Semantic Web will be able to provide this information in computer-accessible form.

So this is my little contribution. As a last point, I have been thinking about developing a forum web site for all the family. You just call up a URL and everyone can contribute his/her own comments on whatever topic, with the option of real time communication and whatever else. The sky's the limit

Until later, greetings to everyone

Dirk

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*Whereupon Father, having read and not understood, desperately rammed his computer...:*



