



Department of Methodology

Workshop in Applied Analysis Software
MY591

Introduction to Alceste

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Part I: Background Information

The **Alceste** software bridges the gap between quantitative and qualitative methods of textual analysis. It is very different from qualitative packages such as NVivo, Atlas.ti, and MAXQDA. These programs allow the researcher/analyst to create their own coding for the analysis of the text; they help organising data, storing categorisations and raw text. In some ways they are simply textual database programs. Alceste takes the opposite approach. Very little user-intervention is required to begin with. The program generates an empirically based classification of text units according to the pattern of co-occurrences of word tokens within these units. The researcher then begins to make interpretations based on the output from the program

- Alceste stands for *Analyse des Lexèmes Co-occurents dans les Énoncés Simples d'un Texte* (Analysis of the co-occurring lexemes within the simple statements of a text). Its algorithm, based on Benzecri's contribution to textual statistics, was created by Max Reinert at the CNRS. It is not a free software. It is developed and marketed by the company Image: http://www.image-zafar.com/english/index_alceste.htm
- The program integrates a multitude of sophisticated statistical methods into an 'organic whole.' Taken together, the program realizes a complex descending hierarchical classification, combining elements of different statistical methods like segmentation (Bertier and Bouroche, 1975), hierarchical classification and dichotomization based on reciprocal averaging or correspondence analysis (Benzécri, 1981; Greenacre, 1993; Hayashi, 1950) and the theory of dynamic clouds (Diday et al., 1982).
- Alceste is not a technique for a-priori hypothesis testing, but for exploration and description. While, unlike manual methods of qualitative analysis, it is insensitive to meaning and context, its advantage is that within a short time the researcher can gain an impression of a voluminous data corpus. The program is only available in a French language version which means that all the menus, commands and outputs are in French.

Key Academic papers using Alceste

Early academic works using Alceste include:

- **Reinert. M. (1993).** Max Reinert analysed 212 nightmares reported by French adolescents. By comparing and contrasting the vocabulary distributed across three classes, Reinert identified three main topics in nightmares: (1) Separation - which refers to the social world of the dreamer; (2) being enclosed and threatened by an aggressor - which refers to the perceptible world of the subject (3) falling and plunging - which refers to the archaic, proprioceptive world of the individual (for more details about Reinert's work, please see: <http://www.image-zafar.com/english/biblio.htm>)
- **Lahlou. S. (1996; 1998).** Saadi Lahlou applied Alceste separately to interviews and entries in an encyclopaedia that referred to eating and related activities. He was able to show that the classes appearing from analysing the interviews, with the exception of

one class, are virtually identical to the classes derived from the encyclopaedia (for more details about Lahlou's work, please see:

[http://eprints.lse.ac.uk/32994/1/A_method_to_extract_social_representations_from_linguistic_corpus_\(lsero\).pdf](http://eprints.lse.ac.uk/32994/1/A_method_to_extract_social_representations_from_linguistic_corpus_(lsero).pdf)

- **Beaudouin et al. (1993)**. Valérie Beaudouin et al. analysed responses to the open-ended question 'what is an ideal breakfast?'. The analysis yielded six classes that can be summarized on a more abstract level as two categories: (1) the name of products associated with breakfast, (2) the spatial, temporal and social context of breakfast. See: http://www.revue-texto.net/Inedits/Beaudouin_Statistique.html (in French).

Recent academic research using Alceste (esp. Political Science and Methods)

include:

- Critical research employing the Alceste method has been carried out by Cheryl **Schonhardt-Bailey** who has used the software extensively to analyse *inter alia*: Bush and Kerry's national security speeches in the 2004 United States presidential campaign (2005); the deliberative process in the Federal Reserve's Federal Open Market Committee (2008a); and, Congressional debates on the 2003 Partial-Birth Abortion Ban Act in the United States (2008b). Please see: <http://personal.lse.ac.uk/schonhar/>
- **Bara, Weale and Biquelet** have used Alceste to analyse deliberations on the issue of abortion in the UK House Commons (*Political Studies*, forthcoming 2011). They have compared the use of Alceste with classical dictionary based approaches such as Hamlet. (Swiss Journal of Political Science, 2007) See: <http://onlinelibrary.wiley.com/doi/10.1002/j.1662-6370.2007.tb00090.x/abstract>. Biquelet and Weale have also used the program to analyse public consultations *Internet & Policy* (forthcoming 2011). This paper provides an example on how to import a specific class yielded by a standard analysis and then re-run a simple classification on a class of interest (procedure which will later be explained in this handout).

Preconditions to obtain 'good' results with Alceste

1. Text data which are to be analysed with Alceste must show a certain thematic coherence. This is normally the case when data such as responses to an open question, interviews, oral accounts, media data, articles or book chapters focus upon one topic.
2. Text has to be sufficiently big. The program is suitable for text data from a minimum of 10 000 words up to documents as voluminous as 20 copies of Madame Bovary!

How does it work?

Assumptions

In Alceste, a statement is considered an expression of a point of view, that is, a frame of reference, uttered by a narrating subject. This frame gives order and coherence to the things being talked about. When studying text produced by different individuals, the aim is to understand points of view that are collectively shared by a social group at a given time. When thinking about an object, there always exist different and contrasting points of view. The assumption of Alceste is that different points of reference produce different ways of talking, that is, the use of a specific vocabulary is seen as a source for detecting ways of thinking about an object. The aim of an Alceste analysis, therefore, is to distinguish *word classes* that represent differing forms of discourse concerning the topic of interest.

Dictionaries

Although the program menus are all in French, there are dictionaries for other languages -- at present, English, French, Italian, Portuguese and Spanish are covered. The purpose of the dictionary is to exclude articles, conjunctions, prepositions and similar words from the analysis. This improves the results substantially. Even without a dictionary for any particular language it is still possible to use the program, although the text needs more preparation to begin with and not advisable. Before the analysis, you may change the language of the dictionary which you are using for the analysis to correspond with the language of your text. This function can be found in the dialogue box 'Voulez vous lancer l'analyse', by right clicking on 'Dictionnaire' in the top right hand corner of the box.

Procedure

Alceste substitutes sentence meaning by analysing co-occurrences of words. The underlying idea is that the meaning of propositions and sentences can be captured if one finds those words that go together in sentences and that are produced by as many respondents as possible.

Example

Imagine the following example. Suppose we conduct a survey about what people think about biotechnology. An open question is added asking respondents to write down whatever comes to their minds when they think of biotechnology. We may get something like the following series of statements:

0001 ... Biotechnology produces new food. This will make us ill ...

0002 ... People might get all sorts of illnesses from eating engineered vegetables ...

0003 ... We do not know yet if genetically engineered food produces allergies ...

Given that a qualified number of respondents produced such or similar statements that basically express the same meaning, we will be able to observe a high number of co-occurrences between 'biotechnology', 'engineered', 'genetically engineered' and 'food' and 'vegetables' on the one hand, and 'ill', 'illness' and 'allergies' on the other hand.

The respective terms co-occur either in the same or in subsequent sentences. The program must just be told that the relevant terms are synonyms with respect to the present research question. For this reason programs either allow us to define synonyms by hand, or they already possess a dictionary of their own. The result for our example will be that the program produces a graph that depicts the terms 'biotechnology', 'food' and 'illness' in close proximity. This lets the researcher conclude that a substantial number of respondents think of biotechnologically manipulated food as detrimental to human health.

Synonyms

Verbal responses need to be homogenized with respect to synonyms. What counts as a synonym is a tricky question, and depends on the specific research problem and the particular data which is being analysed. 'Headgear', 'hat', 'cap' and 'bonnet' can be synonyms in some research contexts but not in others. Hence, the researcher must decide which minor semantic variations he or she wishes to retain. If it is acceptable to homogenize these expressions, then we can replace the less frequent expression in the sample by the most frequent one. So, if 'hat' is the most frequent word in the data, any other synonymous expression, such as 'headgear', 'cap' and 'bonnet', can be replaced by 'hat'.

The data often also need to be homogenized with regard to semantically equivalent words across word classes. In a specific research context it might be perfectly correct to equate nouns, adjectives and verbs expressing a related thing, state or activity. One of the two expressions 'to fight' (a verb) and 'battle' (a noun) can be replaced by the other with no loss of relevant detail. The same rule applies to 'beauty' (a noun) and 'beautiful' and 'pretty' (adjectives). Generally the most frequent synonym should replace the less frequent ones.

Lemmatization

Alceste lemmatizes words where possible (ie reduces variants of words to their root-forms). The procedure is not always reliable, though, and often the researcher needs to modify the text by using the search and replace feature of Word or any other text editor. This can be done during a second or third analysis after looking at the lemmatised word lists in the ALCESTE output which show which words have been lemmatised by the package and to which root form.

Data matrices

The aim of the Alceste methodology is to investigate statistical similarities and dissimilarities of words in order to identify repetitive language patterns. Technically such patterns are represented by an indicator matrix relating relevant words in columns and contextual units (that is, the operationalization of statements in rows). Remember that an indicator matrix is a table

with '1' if a given word is present and with '0' if it is absent in a respective statement. Usually this is a rather empty matrix containing up to 98 per cent zeros.

The distribution of entries in this matrix, as well as the consequent result, slightly depends on the size of contextual units used in cutting the text. In order to reduce the ambiguity of possible results and to find a solution that is relatively stable, Alceste always calculates matrices and solutions for two slightly different unit sizes. For example, one matrix may be based on units of minimum size 10 words, and the other on 12 words. If the two classifications resulting from the two matrices are reasonably similar, Alceste, or the researcher, can assume that the chosen unit sizes are adequate for the present text. If not, the unit sizes can be varied until a relatively stable solution is found. Experimentally varying the size of text units is a kind of empirical test for the stability of a result.

Units of Analysis

ALCESTE operates with two main types of contextual unit, both of which can be defined by the user.

- An *Initial Context Unit* (ICU) represents a pre-existing division of the text and has to be specified. For example, if a book were to be analysed, one might want to define each chapter as an ICU.
- An *Elementary Context Unit* (ECU) is a unit of text within which ALCESTE calculates the frequency of word co-occurrences. The program automatically decides on the appropriate length for each ECU and partitions the corpus accordingly. The process is driven by the punctuation in the text. A hierarchy of symbols such as commas, full-stops, semi-colons, and, finally, the dollar sign allow ALCESTE to determine the correct length for each ECU by inspecting the natural flow of the text - as evidenced by the punctuation. The dollar sign overrides all other symbols in closing an ECU. This feature can be used to separate portions of text within the corpus that need to be analysed separately in order to make substantive sense.

Passive Variables

'Passive' variables can be attached to ICUs by following the ICU marker (****) with one or more 'mots étoilé'. They are 'passive' because they do not contribute to either the calculation of the lexical classes or to the factors in the correspondence analysis. So, for example, when analysing a book, each chapter might be tagged as follows:

```
**** *chapter_name
```

These variables or indicators appear in the correspondence space from the ALCESTE analysis along with the analysed words. This enables a visual representation to be made of the associations between certain words and the variables defined by the 'mots étoilé'. In the above example, using the chapter names as a 'passive' variable allows the researcher to see what words and/or lexical classes are associated with each chapter.

Hierarchical Descending Classification

The next step consists of identifying word classes. The method is a descending hierarchical classification analysis, which is suitable for large-scale indicator matrices with few entries. (Note that for descending hierarchical classification analysis we use the term ‘class’ instead of ‘cluster’ which is used for the more traditional ascending cluster analysis.)

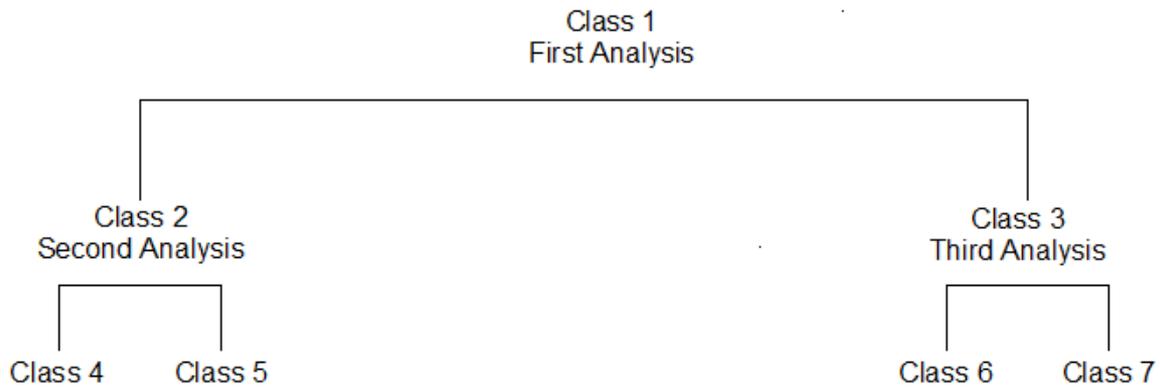
The total set of contextual units in the initial indicator matrix (contextual units by words) constitutes the first class. The aim of the next step is to find a partition of that class into two that maximally separates the resulting classes such that the two classes contain different vocabulary and, in the ideal case, do not contain any overlapping words. Technically this consists of decomposing the matrix into two classes through optimal scaling and cutting the ordered set of words where a chi2 criterion reaches a maximum.

Table 1 and Graph.1 below shows an idealized example of such a decomposition. The two resulting subsets or classes 2 and 3 are optimally separate in the sense of having as little overlap as possible in terms of words. The numbers in the table (k_{2j} , k_{3j}) indicate the frequency of contextual units for each class containing a specific word (word j). In our example, class 2 consists of statements containing words like ‘food’ or ‘fruit’, while words like ‘cancer’ or ‘cure’ are typical for class 3. Of course, it will rarely be possible to separate statements such that words occurring in one class do not appear in the other. There will always be some overlapping vocabulary, like the word ‘say’ in the example.

- Table 1

	Class 2 specific vocabulary			Overlapping vocabulary			Class 3 specific vocabulary		
	<i>food</i>	<i>fruit</i>	...	<i>say</i>	<i>word</i>	...	<i>cure</i>	<i>cancer</i>	
	<i>j</i>								
Class 2	45	12	...	20	k_{2j}	...	0	0	k_2
Class 3	0	0	...	21	k_{3j}	...	33	20	k_3
Total	45	12	...	41	k_j	...	33	20	k

- Graph 1



Chi2 value

The chi2 procedure consists of comparing an observed distribution with an expected one. In more technical terms, the procedure finds of all possible partitions those two classes that maximize a chi2 criterion.

In the present case, the distribution of words in each of the two classes is compared to the average distribution of words. If there exist different forms of discourse employing differing vocabulary, then the observed distribution will deviate systematically from a distribution where the words are independent from each other. In this context, the chi2 criterion is not used as a test, but as a measure of a relationship existing between words; the procedure searches maximally separate patterns of co-occurrence between the classes. To determine when this chi2 maximum is reached, Alceste uses other statistical procedures.

Classes and Word lists

The descending hierarchical classification method is an iterative procedure. In the following steps, the bigger of the classes `2' and `3' is decomposed next, and so on. The procedure stops if a predetermined number of iterations does not result in further divisions. The final result is a hierarchy of classes (Graph 1).

Alceste computes for each class a list of words that are characteristic for that class. The strength of association between each word and its class is expressed by a chi2-value, and all words exceeding a certain chi2-value are listed. The larger this value, the more important the word is for the statistical construction of the class. These word lists are the basic source for interpreting the classes.

Output

The Alceste output file contains not only contain words, but also function words and -- if introduced -- also attributes of the respondents. Note that function words and attribute variables

do not enter the classification analysis, but serve as illustrative variables for class description. They are 'passive' variables.

The results can then be represented graphically in a correspondence space. For this purpose, a matrix cross-tabulating classes and words in their reduced (root-) form is subjected to a correspondence analysis. This provides a spatial representation of the relations between the classes, where their positions reflect their relationship in terms of proximity. Three graphs are produced: the first represents the relationships between the content words, the second the function words, and the third projects the passive variables, that is the attributes of the respondents, into the space of the content words and of the discourse classes. The three graphs can be superimposed and read in conjunction.

Finally, the results have to be interpreted. This is where the researcher and his or her knowledge of the field comes into play, to give an empirically justified theoretical interpretation. In the ideal case, this interpretation should give semantic content to the purely structural information about the discursive space produced by Alceste, by drawing on other methods of text and discourse analysis.

Part II: Preparing and coding the text

There is a little 'cleaning exercise' required before you enter your text into ALCESTE:

1. Certain symbols are used as tags by Alceste. These are the asterisk (*) and dollar sign (\$). Since they have special functions, **THEY SHOULD BE REMOVED FROM THE TEXT (or replaced with another symbol or word)**
2. Capital letters at the beginning of a word are automatically changed to lower case by Alceste. Words which are all in upper case remain so, but are not included in the main analysis. It is necessary to search for uppercase words – usually acronyms - and replace them with lower case letters if they are required to be analysed.
3. Apostrophes have an important function in English which is, of course, different to that in French usage; consequently they need to be handled carefully in Alceste. Apostrophes should be replaced by underscores (_) in order for Alceste to recognise words like that's as a single word, and not two (i.e. that and s). Search for apostrophes or inverted commas (') and replace with underscore (_)

Coding

How to code efficiently?

1. **Define your sampling Units (ICUs):** If you are analysing parliamentary debates, for instance, each 'speech-act' or utterance could constitute an I.C.U.
2. **Define your Variables:** Passive variables can include: Name/Party/ Sex/Vote/Title, etc. If you are analysing political manifestos, for instance, each manifesto could constitute an I.C.U. If you are analysing open-ended

questionnaires or surveys, each answer could constitute an I.C.U. If you are analysing a book, each chapter could constitute an I.C.U, etc...

3. Your Corpus does not necessarily need to comprise of many sample units (ICU): **One unit is enough** provided your text is long enough for Alceste to run the analysis.
4. Importantly: Your first I.C.U needs to be specified at the very top of your text. **Extra lines (space) between the top of the document and the first ICU need to be deleted.**

Star Lines, Star Words and Dollars

- As already mentioned, stars (*) and Dollars (\$) play a crucial role in the coding process insofar as they define the sampling units and the variables.
- The first thing to check before starting the coding process is thus that the **Corpus does not contain any * or \$.**
- I.C.U.s and Passive variables should then be coded according to the following example:

```
**** *name_Brown *party_Lab *gender_m *vote_yes
```

4 Stars/ Space/ One star, first variable and underscore/ Space/ One star, second variable and underscore/ Space/ One star, third variable and underscore...

- **Star words** such as *name_Brown **must not include more than 18 Characters** (with spaces)
- **Star lines:** **** *name_Brown *party_Lab *gender_m *vote_yes **should not include more than 255 Characters**
- Any space between the four first stars and the margin on the left should also be deleted.
- There must be no text on the star line.
- Once you've finished the coding: save under **Plain text** and **tick the box 'insert break lines'** if your paragraphs go over 1800 Characters.

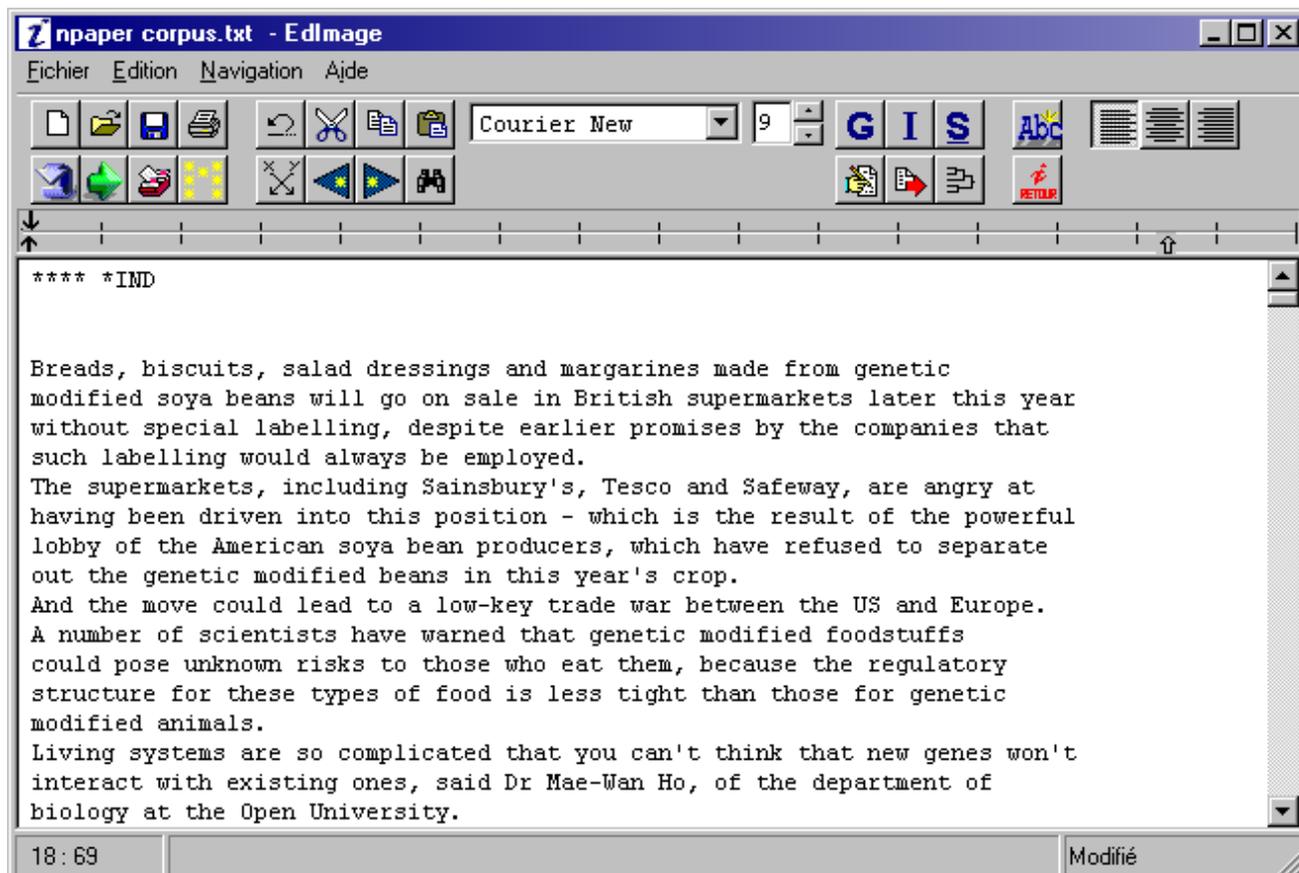
Part III: Running the Alceste Program

- ⇒ From the 'Start' button, open /programs/qualitative analysis/Alceste 4.7
You should see this screen.



- ⇒ Go to 'Plan d'analyse' and click on 'Nouveau'
- ⇒ Find the text file (*.txt) that you just saved and select it in the file window that has opened.
- ⇒ Click 'Enregistrer'
- ⇒ The next dialogue box states 'Voulez vous verifier le formatage de votre corpus'
- ⇒ Click 'Oui'

This should bring up the text editor which should look like this:



The program tells you if there are any errors in the tagging of the corpus. Here we seem to have some errors:



⇒ Click ‘Atteindre...’ and correct each error in turn, using the toolbar buttons to delete characters (for some reason, the keyboard doesn’t always work in this window).

You can re-run the check by clicking 

⇒ When you have fixed the errors you can review the tagged information by clicking



⇒ When complete, save your changes and click  to return to the main Alceste window

ALCESTE’s default dictionary is English. Check that this is the case by ensuring that in the next dialogue box, on the top right hand side by Dictionnaires: it says ‘Anglais’

The Dialogue box says : ‘Voulez-vous lancer l’analyse’

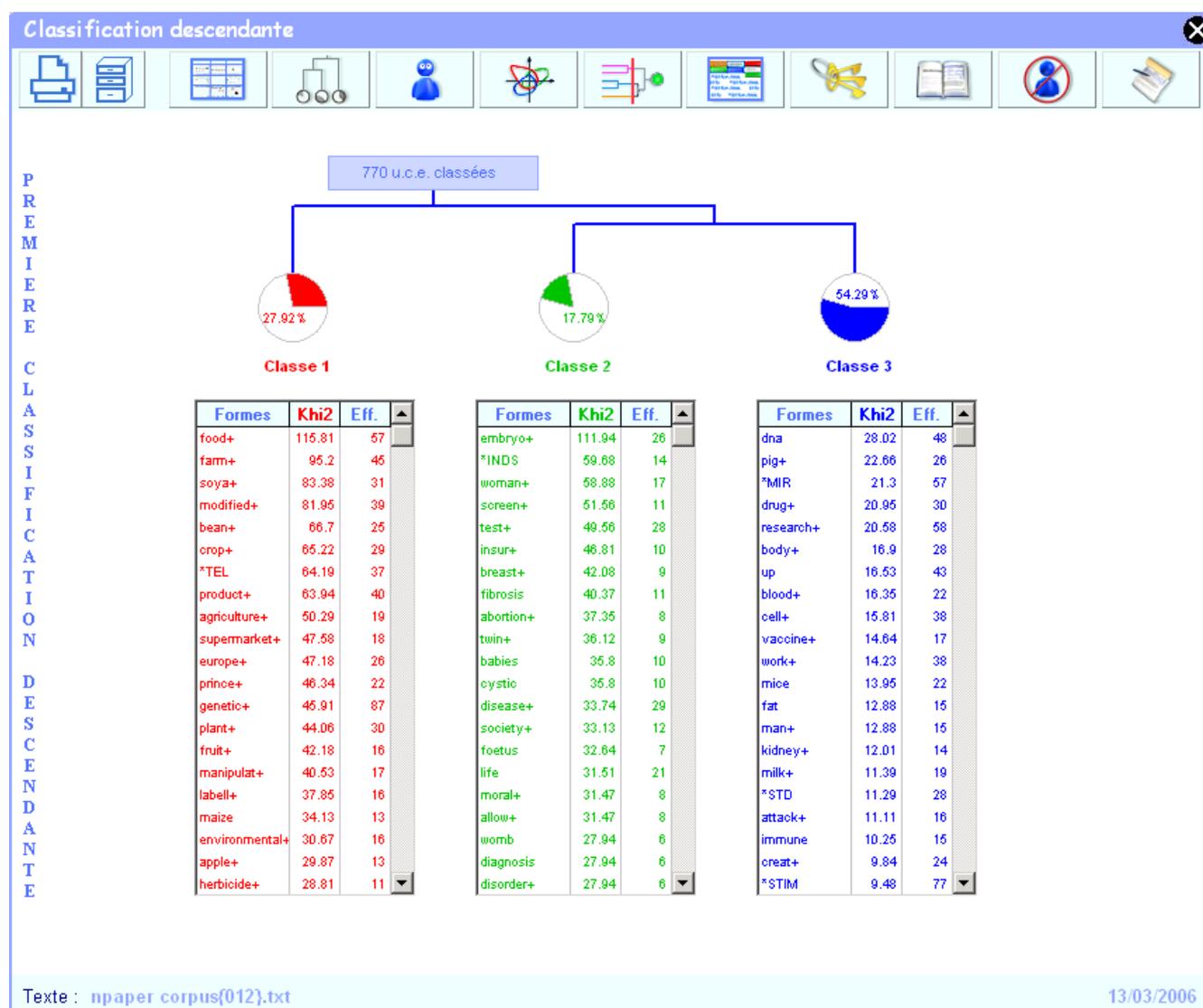
Click ‘Oui’. Then wait...

A few minutes later, the analysis will be finished!

NB. The package should take no more than 20 minutes to run. If it does appear to do so it means that programme is not running properly. In that case shut ALCESTE down, Go back to your folder containing your data on the C drive and delete any files that have been created (ensuring that once again the folder contains simply the *.txt file) and try running ALCESTE again.).

Part IV: Analysing the Alceste results

Presented below are the key parts of the output file produced by Alceste. The initial screen shots, the word lists, correspondence analysis, and example ECUs are the principal tools used in interpreting your corpus.

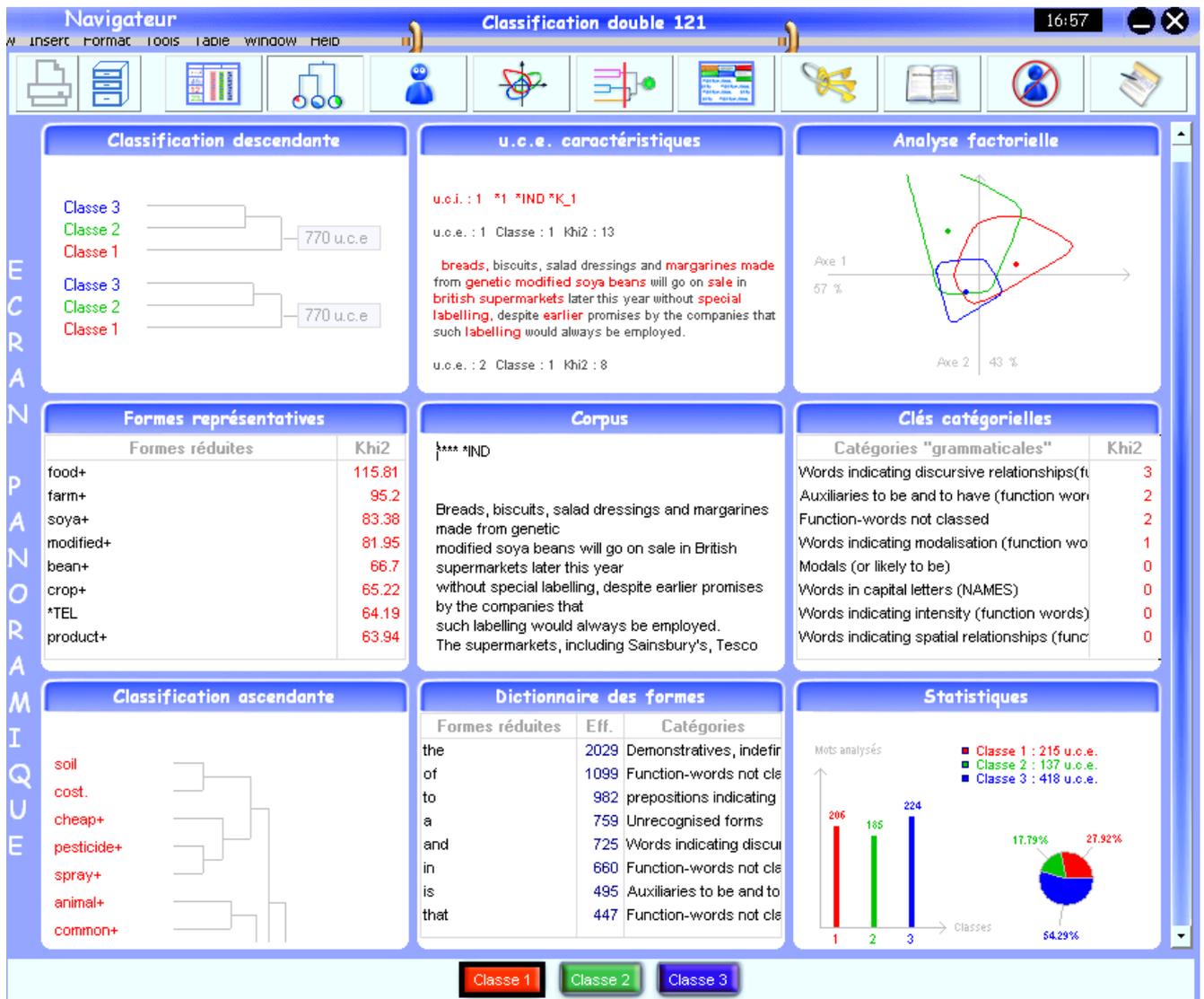


This is the first screen that you will see when the analysis is complete. It gives you a first glance at the number of cluster produced by your analysis. In our example there appear to be 3 primary clusters.

Along the top of this screen there are a number of further screens which can be investigated to look closer at the analysis.

Click 'OK' at the bottom of this screen.

You will reach the screen below which is displays all the various different output screens produced by the ALCESTE analysis.



The 9 screens seen above may be reached by clicking on the appropriate link on the Navigateur Menu at the top of the screen or by clicking on the title of the screen you would like to see in more detail.

Remember here that you are looking at the detailed results for Class 1 (as it is highlighted at the bottom of the screen, is in red and all the highlighted sections eg. Within the wordlists, are in red). If you want to see the results of further classes eg. class 2 or 3 you can do so by clicking on the appropriate link at the bottom of the screens.

The 9 possible screens that you can reach from the direct links are:

1. **Classification descendante** – This screen shows a dendrogram illustrating how the classes were constructed.
2. **U.C.E. caractéristique** – This screen shows the location of words within the elementary contextual units as seen in the actual text.
3. **Analyse factorielle** – A factor analysis showing the coordinates, correlations and contributions of each word class.

4. **Formes representatives** – This screen shows the most representative words for each class and their chi 2 value in descending order. It also shows the word which have been lemmatised indicating them by a '+' sign. It also shows the tags used in the analysis within the cluster in which they are found.
5. **Corpus** – The actual body of the text as seen on the initial editor screen.
6. **Cles Categorielles** – This shows the key of predefined grammatical categories which the words fall into within the ALCESTE dictionary per class.
7. **Classification ascendante** – This is the dendrogram of the analysed words within classes.
8. **Dictionnaire de formes** – a dictionary of grammatical words which are not analysed.
9. **Statistiques** – This screen presents some of the pstatistical possibilities from presentation of the analysis like general results, ecu's and icu's per class and the prevalence of the classes in comparison to the whole text

The 3 additional links on from this screen are

1. Ouvrir l'archive
2. Presences significative
3. Abscences significative

If you wish to see the overarching classes once again (ie. return to the previous screen) you can do so by clicking on 'Synthese du traitement'

Looking at the ALCESTE analysis reports

The last link on the 'Navigateur' is 'Rapport'. This link will take you to a summarised report of your analysis. But for the purpose of most research you will need to look at the detailed analyses that you have created. This is done by closing this screen by clicking in the 'x' at the top right hand of the 'Navigateur'.

Once you return to the ALCESTE screen which you have seen before follow:

Plan d'analyse/ ouvrir le rapport d'analyse/ Rapport detaille

```

-----
* Logiciel ALCESTE (4.7 - 01/12/02) *
-----

Plan de l'analyse : npaper c.pl ; Date : 14/ 3/**; Heure : 07:23:33

C:\alceste\&&_0\
npaper corpus{012}.txt
ET 1 1 1 1
A 1 1 1
B 1 1 1
C 1 1 1
D 1 1 1 0 0
A1 1 0 0
A2 3 0
A3 1 1 0
B1 0 4 0 1 1 0 1 1 0
B2 2 2 0 0 0 0 0 0
B3 10 1 1 1 0 0 0 0 0

```

Copy the entire contents of this screen and paste it into a blank word document. Save this word document onto your H: space and you can now take this away for interpretation.

This report is normally approximately 50 pages long. There are some key sections of this that we need to look closer at for the interpretation. These are given below.

NB. Please ensure that this is the last analysis you have conducted by checking the time, the date and the name of the analysis found in the first line of the report.

Interpreting the ALCESTE results (from the Rapport Detaille)

Key result 1: C1: intersection de classes

Classification Descendante Hiérarchique :

Dendrogramme des classes stables (à partir de B3_rcdh1) :

```

-----|-----|-----|-----|-----|-----|-----|-----|
Cl. 1 ( 215uce) |-----+
                18 |
Cl. 2 ( 137uce) |-----+
                16 |-----+
Cl. 3 ( 418uce) |-----+

```

Classification Descendante Hiérarchique...
Dendrogramme des classes stables (à partir de B3_rodh2) :

```

-----|-----|-----|-----|-----|-----|-----|-----|
Cl. 1 ( 215uce) |-----+
                18 |
Cl. 2 ( 137uce) |-----+
                16 |-----+
Cl. 3 ( 418uce) |-----+

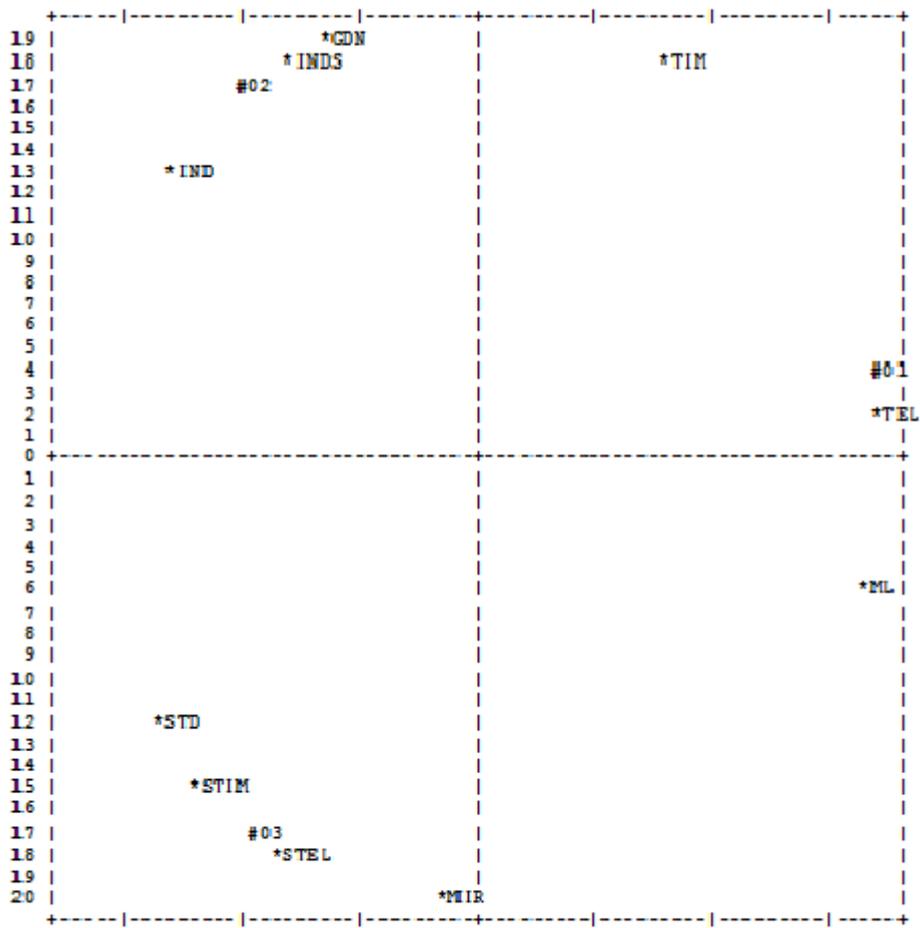
```

C2: profil des classes

Chi2 minimum pour la sélection d'un mot	:	2.57
Nombre de mots (formes réduites)	:	1316
Nombre de mots analysés	:	1116
Nombre de mots "hors-corpus"	:	10
Nombre de classes	:	3
770 u.c.e. classées soit		86.809470%

NB. This percentage given above shows the volume of the text that has been analysed. If this figure is very low, it is an indicator that the analysis is poor. 80% and over is the accepted indicator of a strong analysis

Key Result 2: C3: A.F.C.du tableau C2_dicb.121



Nombre de points recouverts 0 dont 0 superposés

x y nom

```

+-----+-----+-----+-----+-----+-----+-----+
21 |                                     case+
20 |                                     fertilitypolitical+
19 |          factreason+short+. raise+fertilis+question+
18 |          certaint+ . . . .moral+foetus+society+
17 | embryo+couple+ . . . .born+fibrosis+screen+
16 | age+strike. . . .design+woman+abortion+
15 | test+lung+ .defect+limit+inherit+                consider+
14 | lifefreeze. author+debate+
13 |          die tocausing                technolog+
12 | prevent+treat+                modernprocess+
11 |          disease+                home+
10 | doctor+cancer+                varie+approved
9  | mother+ today+future                genetic+clear+ method+
8  |          science+                adopt+choice+ environmental+
7  |                                     committee+.consumer+
6  |          product+prince+ supermarket+
5  |          manipul+soya+. apple+
4  |          bean+fruit+ .labell+
3  |          farm+modified+ sell.
2  |          food+europa+ allerg+
1  |          plant+danger+ resist+
0  |-----bsebill+ .spray+
1  |          eat.including poss+
2  |          industr+grow.
3  |          market+animal+
4  |          organ+
5  |          engineer+
6  |
7  |
8  |
9  |
10 |          patient+
11 |          old+system+                say.
12 |          cell+
13 |          heart+
14 |          infect+
15 |          obesity+mice universityresearch+
16 |          body+therap+ sheep+drug+creat+
17 |          work+start+ .. attack+blood+break.
18 |          dna+pig+man+ up+transplant+
19 |          vaccine+ aid+.. fat+build.cattlediscover+
20 |          immune                into
+-----+-----+-----+-----+-----+-----+-----+

```

Key Result 3: D1: Selection de quelques mots par classe

D1: Sélection de quelques mots par classe

Valeur de clé minimum pour la sélection : 0

Vocabulaire spécifique de la classe 1 :

agriculture+(19), bean+(25), crop+(29), farm+(45), food+(57), modified+(39), product+(40), soya+(31), europa+(26), fruit+(16), genetic+(87), manipul+(17), plant+(30), prince+(22), supermarket+(18), environmental+(16), labell+(16), maize(13), sell.(11), allerg+(11), animal+(30), apple+(13), charles(12), consumer+(13), danger+(12), engineer+(35), harvest+(10), herbicide+(11), label+(8), oil+(11), resist+(19), speech(10), grow.(19), say.(57), adopt+(7), american+(11), borer(5), bread+(5), bse(11), clear+(11), commercial+(8), committee+(8), consider+(8), contain+(16), current+(9), fagan(6), flour+(6), foodstuff+(7), garden+(5), gooseberr+(5), grower+(6), introduce+(10), ministry(6), monsanto+(5), novel+(7), nut+(5), pesticide+(9), ripen+(5), roundup(7), sainsbury+(7), seed+(6), september(7), shelves(5), shops(5), soil(6), strawberr+(6), tomato(5), trace(6), varieties(6), varie+(9), vegetable+(9), welfare(6), buy.(5), eat.(10), stand.(4), address+(4), advisory(4);

Vocabulaire spécifique de la classe 2 :

embryo+(26), screen+(11), woman+(17), breast+(9), fibrosis(11), insur+(10), test+(28), abortion+(8), allow+(8), babies(10), cystic(10), disease+(29), foetus(7), life(21), moral+(8), society+(12), twin+(9), affect+(8), age+(9), avoid+(6), born(7), certaint+(7), couple+(9), diagnosis(6), disorder+(6), embryolog+(5), informat+(6), inherit+(8), ivf(5), pregnanc+(5), termination(5), womb(6), see.(13), author+(5), boy+(4), cancer+(14), case+(10), causing(5), culture+(4), defect+(6), dilemma+(5), doctor+(10), dystrophy(4), emerge+(4), employ+(5), fact(7), faith(3), famil+(8), fertility(5), future(11), hereditary(4), implant+(5), individual+(5), limit+(5), lung+(5), middle(3), muscular(4), neil(5), practice(4), predict+(5), predisposition+(3), pregnant(4), preimplantation(4), premiums(4), procedure+(4), reason+(8), science+(14), sense(5), short+(6), social(5), somatropin(3), specific(5), usual+(4), vary+(4), wide+(6), winston+(4), to(105), freeze.(4), seek.(4), strike.(4);

Vocabulaire spécifique de la classe 3 :

dna(48), drug+(30), pig+(26), research+(58), up(43), attack+(16), blood+(22), body+(28), cell+(38), fat(15), kidney+(14), man+(15), mice(22), milk+(19), vaccine+(17), work+(38), into(61), break.(9), build.(8), lead.(26), aid+(12), cattle(14), creat+(24), discover+(14), game+(9), gun+(10), heart+(19), immune(15), infect+(16), inject+(11), institute+(11), ladder+(8), mammoth+(8), molecule+(9), mosquitoes(8), obesity(14), old+(16), operation+(8), patient+(18), published(8), repair(8), sheep+(13), start+(14), surface+(8), system+(22), therap+(11), times(9), transplant+(21), university(16), virus(9), white+(9), wife(8), fight.(7), find.(33), hold.(6), put.(14), send.(6), take.(31), appear+(10), arter+(6), base+(7), brown+(7), chillingham(7), cow+(20), cure(6), dinosaur+(6), donor+(6), each(18), flaw+(6), fosb(7), goto(6), hiv(13), hospital+(12), laborator+(13), little(10), live+(15), malar+(7), match+(7), microbe+(7), monkey+(7), mutation+(7), obese(6), paper(7);

Mots outils spécifiques de la classe 1 :

as(45), first(16), he(26), least(5), sir(5), that(94), we(32), could(31), no(20), perhaps(3), on(50), there(29), already(11), later(3), yet(7), a-lot-of(3), every(8), without(7), and(131), between(7), by(50), or(34), per(16), throughout(4), our(11), something(2), these(17), be(79), been(30), being(13), should(11), would(24), ones(2), EU(3), HRI'(3), HRI(3), THE(2), US(13);

Mots outils spécifiques de la classe 2 :

an(32), for(54), in(81), lord(4), of(107), time(7), very(9), what(11), can(20), will.(23), ever(3), not(26), forward(2), further(3), here(3), within(3), after(8), ago(7), before(8), during(3), late(4), often(4), until(11), many(17), more(15), most(8), about(15), but(32), however(7), if(20), rather(4), such(15), than(12), unlike(2), whether(3), her(10), my(4), she(10), their(19), themselves(4), all(13), another(6), none(3), only(21), other(14), sometimes(2), then(7), this(25), those(10), who(19), whose(3), doing(3), got(2), had(14), has(25), having(4), is(67), might(7), must(3), was(21), eight(2), five(7), one(25), ten(2), three(5), I(6), O(3);

Mots outils spécifiques de la classe 3 :

at(81), you(21), cannot(11), need.(3), never(6), across(5), away(12), beyond(3), far(13), near(10), while(16), now(28), enough(10), everything(3), fewer(4), half(6), how(18), less(12), much(17), nearly(3), against(23), although(11), despite(3), either(4), like(25), once(8), otherwise(3), still(5), though(6), through(10), too(9), why(13), him(9), itself(7), me(4), them(43), they(82), us(14), your(7), its(26), the(382), does(11), done(11), get(14), have(99), need(15), needed(6), own(16), were(33), four(10), six(8), two(24), AAT(7), B(6), CKR5(5), CSA(4), HGS(9), PPL'(4), PPL(5), TB(4), a(241), t(28);

Mots étoilés spécifiques de la classe 1 :

*ML(27), *TEL(37), *TIM(50);

Mots étoilés spécifiques de la classe 2 :

*GDN(27), *IND(42), *INDS(14);

Mots étoilés spécifiques de la classe 3 :

*MIR(57), *STD(28), *STEL(9), *STIM(77);

Key result 4: D1: Tris de u.c.e. per classe

D1: Tri des uce par classe

Clé sélectionnée : A

425 42 they #include #breads, pastries, #vegetable #oil, salad dressings, #margarine, sweets, cereals, some drinks and meat #products, and chocolate. geraldine schofield of the #food and drink federation #says that two #thirds of #items on #supermarket #shelves #contain #soya #products.

731 42 the #warning comes as the first #american #harvest of #genetic #manipulated #soya superbeans is about to #arrive in #britain. two #thirds of #items on #supermarket #shelves #including #breads, pastries, #vegetable #oils, ice cream, chocolate, #margarine, cereals and #processed meat #products #contain #soya.

741 42 A #spokesman for the #ministry of #agriculture #said yesterday that the #advisory #committee on #novel #food was #considering #changes on #labelling #guidelines for #genetic #manipulated #food. each #product is #considered on a case by case basis.

10 32 but people who were #allergic to #brazil #nuts were #allergic to the #soya #beans. we have been forced to #accept that we #won' t be able to #label them #separately, #said a spokeswoman for #sainsbury' s which #last february #issued a customer leaflet with a #genetic #engineered #tomato #products that #said:

732 29 by december, 60 per #cent of #processed #food could #contain #oil or #flour from #genetic #manipulated #soya #plants. dr #john #fagan, a professor of #molecular biology from fairfield, iowa, #said the mechanisms used for #genetic #manipulation of #foodstuffs are inherently risky,

435 28 SEVERAL #genetic #modified #food preceded #soya on to #british #supermarket #shelves. the #co op #sells its own brand #vegetarian #cheese that is #manufactured by using a #genetic #modified #enzyme called chymosin.

734 28 although there is not a #danger with every #genetic #manipulated #food, once you #introduce #genetic #manipulated #plants or #animals into the #environment you cannot recall them, he #said.

119 27 GENETIC #altered #food #sounds like the #stuff of science fiction, but the truth is it' s already in our #shops. at the #co op you can #buy #cheese produced using gene #technology and at #safeway or #sainsbury youll find #genetic #modified #tomato #paste, all #clearly #labelled as such.

430 27 the #beans produced will not be #sold as #beans, but in a #processed form as #flour or #oil. derek burke, chairman of the #advisory #committee on #novel #food and processes, which has #given #clearance to the #new #products, #says that #processing means no #trace of the gene, or the #enzyme it produces, is present in the #final #product.

439 26 the #supermarket companies #say that the use of the #genetic #modified flavr savr tomatoes reduces waste and #gives a #naturally thicker #paste. most of the #crops that have been #approved for release and #commercial #sale are in north america. the first #crop to be #cleared for #sale in #europe was a #herbicide tolerant tobacco #plant.

424 25 the #shops want #labels #saying it has been #modified, while the #manufacturers #say this is impracticable and could be misleading. potentially, a #huge range of #products could #contain small amounts of #soya #flour or #oil produced from #genetic #modified #plants.

432 25 but for #earlier #genetic #modified #food such as the flavrsavr #tomato, #sold as #pastes and purees, the #supermarkets have #adopted informative #labels. our preference is to #label #genetic #modified #products, a #spokesman for #sainsbury' s #said. we believe customers should have the right to choose.

92 24 sir: your leading article of 20 #september discussed #bse and #organic #farming and also touched on #genetic #engineered #food. the #possible #dangers of hasty #adoption of such #food #products #make the #bse #crisis pale by comparison.

133 24 #current regulations #say the #plant #material requires #environmental risk #clearance; vetting of the #foodstuffs themselves is not compulsory. zeneca, the #british #company which developed and produces the #genetic #modified #tomato used in the #paste #sold by #sainsbury and #safeway, #says 900, 000 cans have been #sold so far in the UK.

142 24 #currently, vetting of #genetic #modified #foodstuffs by the government' s #advisory #committee on #novel #food and processes is voluntary and so is #labelling, although proposed EU legislation is #expected to #make both compulsory.

245 24 there is no possibility of segregating the #modified #crop from the #rest. according to #ciba #seeds, about 0. 6 per #cent of the 238 #million tonnes of #maize the US #expects to #harvest this year will be the #genetic #modified #variety.

118 23 and other research has suggested a #significant #decline in the #trace mineral content of our #fruit and #vegetables #over the #last 50 years. the #ministry of #agriculture #gave #britain' s small #number of #organic #farmers the lowest incentives in #europe, he #said.

263 23 THE #prince of #wales is preparing to relaunch himself as an #environmental and social campaigner in his first #significant #speech since his divorce. he will #warn later this month of the #growing #dangers of #genetic #engineered #food and #modern #farming techniques.

67 22 sir: I write in an effort to dispel the #common myth that the use of #genetic #engineering to produce #new #varieties of #crops and #farm #animals is a #natural extension of traditional #cross breeding #methods, suzanne moore, 20 #september;

Clé sélectionnée : B

401 51 we should be very circumspect in the #use of that #power. lord #winston' s #unit already #offers #pre #implantation #diagnosis of #embryos #to #couples #carrying the gene for #cystic #fibrosis, a #life #threatening #disease of the #lungs and digestive system.

161 47 in 1992, the first #babies were #born after #specific #testing for #cystic #fibrosis. since then, there has been #screening for about six different very #serious genetic #diseases, and #babies have been #born #to #couples who have previously had a #child #die from an #inherited #disorder.

367 40 the #certainty which #people #seek in #science is, of #course, an illusion. on many of the issues that #worry #people #today there is no #scientific consensus. #claims that #synthetic chemicals #contribute #to declining #sperm #levels are #strongly contested. #scientific estimates of the #risks of global warming #vary #widely.

714 40 the #certainty which #people #seek in #science is, of #course, an illusion. on many of the issues that #worry #people #today there is no #scientific consensus. #claims that #synthetic chemicals #contribute #to declining #sperm #levels are #strongly contested. #scientific estimates of the #risks of global warming #vary #widely.

166 39 she wants #to have her #embryos #screened rather than have her #children #suffer the #anxieties she #experiences. such #screening which is closely monitored by the human #fertilisation and #embryology #authority would not only #avoid this, but would also #prevent this #cancer in #future generations.

532 39 and the #termination of one or more #foetus is necessary #to ensure the wellbeing of the other, s. the #case #reported two #weeks ago was the first time in britain that a #twin had been aborted for #social #reasons because the #mother #felt that she would be #unable #to #cope A #similar #case was #reported tuesday,

397 36 there is a #strong #case for #screening these #people. #inherited #breast #cancer often does not #strike until a #woman is in her forties or fifties and can sometimes be successfully #treated.

165 35 one patient at #risk has #seen five #young #woman in her #family #suffer #breast #cancer; she herself has had both #breasts #removed prophylactically #to #try #to forestall the #disease.

159 32 this technique was first #used in 1990, when cells were #removed after #ivf #to #test for the #sex of the #embryo. this was #to help #couples

who might have a baby which, if male, could #suffer a #sex #linked #disorder such as duchenne #muscular #dystrophy.

331 32 however successful the trial may be, PPl' s sheep have a secure #future in providing AAT #to #treat another #lung #disease, #hereditary emphysema a #fatal #disorder #causing #lung #damage #similar #to that #resulting from #cystic #fibrosis.

515 31 finally there was the tragi comic #case of mandy allwood, #pregnant with octuplets after disregarding her #doctor' s advice #to #remain chaste while #undergoing #fertility #treatment, who with her errant partner paul hudson has since been strapped #to the roller coaster of tabloid celebrity. the outcome of her #pregnancy #remains #to be #seen.

393 29 #woman having in vitro #fertilisation #treatment may #soon be able #to #screen out #embryos #carrying the genes that cause #breast #cancer, #to #reduce the #risk of their #children #developing the #disease.

194 28 existing #tests can already uncover genetic #predispositions #to heart #disease, #breast and colon #cancer and #diabetes. but under current #practice, #insurance #companies and #employers are not #allowed #to #ask for a #test #to be #carried out before #offering #insurance or #health cover, or #employment.

403 27 the #average #life expectancy of an #individual with #cystic #fibrosis, however, is only 27 or 28 years, whereas #breast #cancer might not #strike until #middle #age. A minority of those #carrying the gene will not #develop #cancer, since the #risk over a whole #life time is 85 #to 90 per cent.

177 26 in a pluralistic #society it is #reasonable #to #allow #individuals #to take #decisions which #affect only them and their #families. spurious arguments about practising #eugenics, about slippery slopes, and about #designer #babies, are a poor #reason #to #prevent work doing much #to promote #healthy #life.

152 25 they are #short of #stature and have a variety of other #symptoms, #usually a webbed, broad neck, a low hairline on the neck and drooping eyelids. there is a #failure #to #develop reproductive organs. #somatropin, without #affecting many of the #signs of #turner' s, adds an inch or two #to #height.

514 25 after #claiming that she would be #unable #to #cope with both. again, #mass #moral panic ensued. the anti #abortion #campaign had not had such a shot in the arm for years, and its efforts #to induce the #mother #to be #to bear both #twins were only cut #short when it #emerged that the #abortion had already been performed.

519 25 the widespread anguish about the incineration of unwanted #embryos or the #abortion of a #twin merely confirms them in their fundamental #faith that we are reaping the #moral #disaster that sixties permissiveness sowed.

146 24 when kendal #returned #to oxford afterwards, he was an immense forward. for those #boys who are not as fortunate as prince william and who show #signs of #remaining #abnormally #short, the outlook has been #improved by the introduction of #synthetic human #growth #hormone.

Clé sélectionnée : C

565 21 now, further genetic tests on two of the 15 have #found they have a #flaw in a #matched pair of genes, #leading to #cells in their #immune #system

#lacking a #particular #surface #protein which #hiv #normally uses to #infect the #cells.

51 20 she #blames the subsequent #break #up of her marriage to a soldier on the army' s reluctance to #send him abroad with a sick #wife. she has undergone about 100 #blood transfusions and 34 #operations to #keep her #going. #brown, who is now virtually housebound, said she would also welcome a #pig #kidney.

449 20 a neat two page #paper that finally #showed how the miniaturisation could #take #place. #each #dna #molecule was #shaped like a long #twisted #ladder the famous double helix #shape.

456 20 other #ladder chunks #built chemicals that registered what was #going on in the #cell, and forced the signpost regions to #work faster or #slower as needed. the great #molecule could even fix itself. certain #stretches carried the blueprints for #repair #vessels that were #sent gliding #out to fix #rungs that had been #broken by incoming cosmic rays, or #ordinary #body heat.

39 19 this means their organs and those of their offspring should signal to a recipient' s #immune #system they are #human. last year #wallwork and #white #announced that #pig #hearts had #kept #going in #monkey recipients for #up to eight weeks in #trials.

568 19 if only one of the pair of genes has the #flaw, the #cells have the #surface #protein and #hiv can #infect them, but the #progression is much #slower.

576 19 on the #face of it, the idea is as implausible as jenner' s, but like his it #seems to #work. #dr douglas lowrie and #colleagues from the #national #institute for #medical #research in mill hill have #shown that #mice can be protected against TB by #injecting them with a #vaccine made from #naked #dna.

820 16 the half #mammoth half #elephant #created could then be #selectively #bred #into one #close to a pure #mammoth. but other #scientists are #sceptical.

453 14 chemical clusters would swarm #up to it, #matching the coded #picture in the now #closed #dna, and the needed #worker #molecule would get #built. now molecular #biology was hot.

659 14 the #team has #found a set of genetic #instructions which can be #put #into cancer #cells #created in the #laboratory, turning the #cells #into a kind of #vaccine.

843 14 the film stars sir richard attenborough as scottish entrepreneur #hammond who #builds a #dinosaur theme #park on an #island. billionaire #hammond has ploughed money #into #research which has #led to #scientists being #able to #extract #blood from #mosquitoes frozen in fossilised #tree sap 65 million years ago.

27 13 their organs should be #able to fool a #human #immune #system #into withholding its #normal #response, which is to blacken and #kill #alien #tissue in minutes. if a #pig #heart can be accepted by the #human #body, the #lives of many desperately sick people such as pritchard will be prolonged.

324 13 #it' s a painstaking business. the #injected gene may not integrate #into the #egg' s #dna and, even if it does, the animal may not #produce much of the #human #protein.

647 13 #hiv is a retrovirus: it cannot replicate unless it can smuggle itself #into an #immune #system #cell and hijack the #victim' s #dna to do its #work for it.

77 12 doctors have succeeded in growing new #blood #vessels to #bypass #blockages in the #arteries of #patients with peripheral #arterial disease commonly known as bad #circulation. while there are a multitude of theories about why #arteries #become clogged #up with the grey sludge known as atherosclerosis #diet, #smoking, #lack of exercise, #alcohol one thing is sure.

475 12 RII beta now joins this #list. of these, #obese was regarded as the most spectacular #finding. #scientists at rockefeller #university in new york #found that #obese encoded the #instructions to #produce leptin, a hormone #produced by #fat #cells.

547 12 AN UNEXPECTED #finding by a phd #student at harvard #medical #school has #put a new #twist in the #old debate between nature and #nurture. she #found that #mice without the right gene abandon their #pups, #suggesting that #nurture itself is determined in the first #place by nature.

645 12 AMERICAN #scientists #believe they have #discovered the genetic factors that might confer resistance to the #hiv #virus. A #team #led by stephen O brien of the #national cancer #institute in bethesda, maryland, report today that they have #found a gene #mutation that #seems to #explain why some people at #high risk from the #virus do not get #infected,

658 12 now #researchers at duke #university, north carolina, have #found a way of #training T #cells, which the #body uses to #attack foreign or abnormal #tissue, to seek #out and #destroy #brain #tumour #cells.

Part V: Advanced Analyses

Importing and re-analysing a class (Advanced Analysis)

An *Advanced Analysis* is the process whereby the ECUs selected for a particular class are being subjected to a further descending hierarchical classification to refine results. This procedure is useful to examine patterns of argumentations and key associations within a particular class of interest.

- Run a standard analysis
 - Click on ‘u.c.e. caracteristiques’– double click.
 - Select ‘exporter la classe’ [export the class] and save.
 - Close the window/ Close the table
 - Click on Plan d’Analyse [Framework of analysis]
 - Nouveau/ Select Class 1/open
 - Nom du Plan [name of the text]: Class1 or Class2

→ New Window: Voulez-vous vérifier le formatage de votre Corpus? [do you want to check the coding of your text?]

- Click on Yes

→ New Window: Il n'y a pas d'erreur de saisie [There are no coding mistakes]

- Click on OK

→ New Window: Voulez-vous lancer l'Analyse? [Do you want to initiate the analysis?]

- Click on No
- Click on Analyse [Analysis]

→ Paramétrage [set parameters]

→ Select 'Simplifié'.

→ Then tick the box: 'Classification simple sur les u.c.e.' [simple classification on the E.C.U.s]

- Click on OK

→ New window; 'Voulez-vous enregistrer les modifications du Plan d'Analyse' [Do you want to save the changes of the Framework of Analysis?]

→ OK

→ Voulez-vous lancer l'Analyse? [do you want to initiate the analysis?]

- Click on Oui/Yes

Tri-Croisé (Cross Data Analysis)

A *Tri-Croisé* (or Cross Data Analysis) is the process whereby a passive variable or a form (word) is crossed with the entire corpus. This is useful to identify the strongest associations between forms and variables.

- Run a standard analysis

→ Analyse [Analysis]

→ Analyse Tri-Croisé [Cross data Analysis]

→ Tri-Croisé simplifié (conseillé) [Simplified Cross Data analysis (recommended)]

→ Tri-Croisé complet [Complete Cross data analysis]

- Select: Tri-Croisé simplifié (conseillé) [Simplified Cross Data analysis (recommended)]

→ New window; Ask you to select either

Croiser une variable avec le Corpus
[Cross a variable with the Corpus]

Or - Croiser une forme avec le corpus]
[Cross a form/a word with the corpus]

→ Select; Croiser une variable avec le Corpus
[Cross a variable with the Corpus]

→ Select a variable on the left table.

→ The right table displays the ‘Modalité de la Variable’ [Modality of the Variable]

→ For instance – Toutes [all]

gender_f

gender_m

→ Select the one you wish to analyse

- Click OK

→ Voulez-vous lancer l’analyse? [do you want to initiate the analysis?]

- Click OK

→ If you select Croiser une forme avec le corpus] [Cross a form/a word with the corpus]

→ Select a word on the left table → the word should appear on the right table.

- Click OK

→ Voulez-vous lancer l’analyse? [do you want to initiate the analysis?]

- Click OK

Part VI: Resolving Potential ‘Snags’

Error	Solution
Blocage en initialisation [initialisation block]	Check that 1) There is no space in the Corpus name. 2) Access to the text is not too long.

<p>“ A1 : Plus de 1500 caractères par ligne ”</p> <p>[A1: More than 1500 characters per line]</p>	<p>Paragraphs are too long.</p> <p>Under ‘plain text’ tick the box ‘insert break lines’</p>
<p>“ A1 : Erreur dans la ligne étoilée ”</p> <p>[A1: Error in the Star line]</p> <p>or</p> <p>“ A2 : erreur dans le N° de l’u.c.i. ”.</p> <p>[A2: Error in the N° of I.C.U.]</p>	<p>Check the coding of your text with EdImage to identify your mistakes.</p> <p>Suggestion; go back to your original corpus – correct your mistake – run another coding text</p> <p>[don’t rely on Edimage to save the changes]</p>
<p>A1 : Ligne étoilée trop longue</p> <p>[A1: Star line is too long]</p>	<p>Identify the line and correct it</p>
<p>“ B3 : Erreur Baobab ”</p>	<p>Your text is too small.</p> <p>You can either run a simple classification on the E.C.U.s.</p> <p>Or ‘double’ your text by copy and paste</p>
<p>C1 : Pas de partition possible</p> <p>[C1: No partition possible]</p>	<p>The variable or form used for a cross data analysis has not been used enough in the text.</p>
<p>Pas de représentation d’A.F.C.</p> <p>[No representation in the Factorial analysis of the Correspondences].</p>	<p>The Factorial analysis of the Correspondences is produced only if there are more than 2 Classes.</p>

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