



# Diphone Studio Newsletter

## Volume 3 - April 2001

### Contents

Introduction 3

1. Process of the automatic creation of a dictionary 4

1.1 From Addan and Resan 4

1.2 Automatic creation of a dictionary Diphone 6

2. The presets (Addan and Resan) 8

3. The editor of an independent Bpf 10

3.1 Linear or exponential progressions 13

3.2 Example 1 13

3.3 Example 2 14

4. Modifications of the manipulation tool of Bpf 16

5. The window Plugins info 19



# Introduction

This document is intended to complete the user manual of Diphone Studio. We recall that the folder entitled *Diphone\_Studio.Français.pdf* or *Diphone\_Studio-English.pdf* concerns the versions 2.8, for Diphone, 1.8 for Addan and 1.0. for Resan

This update was undertaken for the following versions:

Diphone 3.1

Addan 2.0

Resan 1.2

If on the whole, the functions and the main lines of the interface with the applications that make up Diphone Studio stay the same, some procedures have been added, such as the automation of the creation of a dictionary or the editor of an independent Bpf.

Elsewhere a large number of other functions have been improved or renewed in their presentation.

These new additions and modifications are, for some, accessible from the three applications in the main Diphone Studio. Others are only presented in the analysis modules of Addan or Resan, or even only in the application Diphone.

In this document, we do not go back over the definitions of the fundamental notions of Diphone Studio : plugins, analyses, models, container, dictionaries, segments, Bpf and sequences. You can refer for these, to the documents : *Diphone\_Studio.Français.pdf* or *Diphone\_Studio-English.pdf* also found on this disk.

# 1. Process of the automatic creation of a dictionary

## 1.1 From Addan and Resan



Figure 1

At the bottom of the analysis window, clicking the button *Dico* launches the process of the automatic creation of a dictionary (Fig.1).

Its activation first opens the following window (Fig.2).

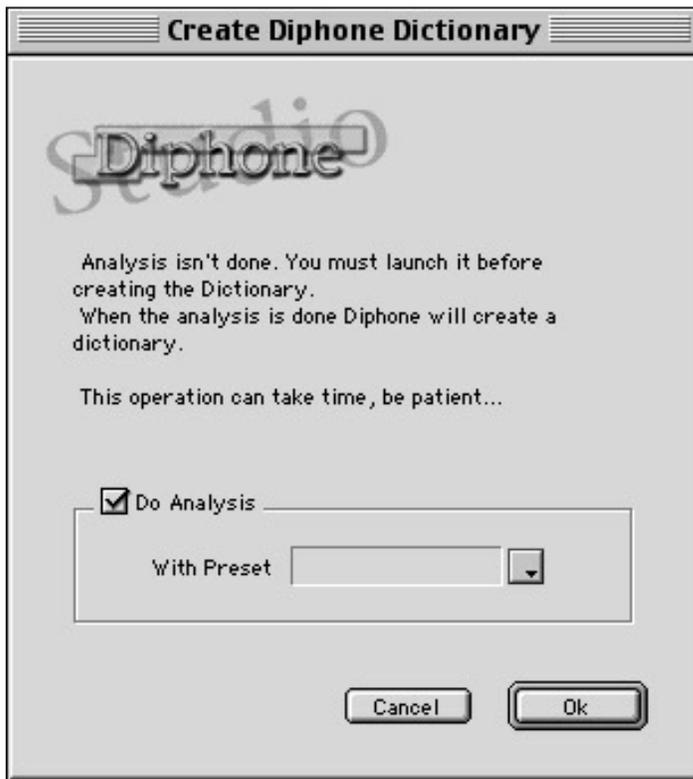


Figure 2

If you have not yet made an analysis, clicking on *OK* leads to the beginning of this according to the settings of the parameters that you have carried out previously in the analysis window, or from the preset that you may have chosen. (See in section 2 of this document for the development of the presets).

Once the analysis has been carried out, the application Diphone is automatically opened and the new dictionary is loaded. It consists of a segment of the same name and the duration of its analysis.

A container is also created on your disk in the work space of Diphone Studio.

If the analysis has already been made the creation window of the dictionary takes a slightly different form (Fig. 3).

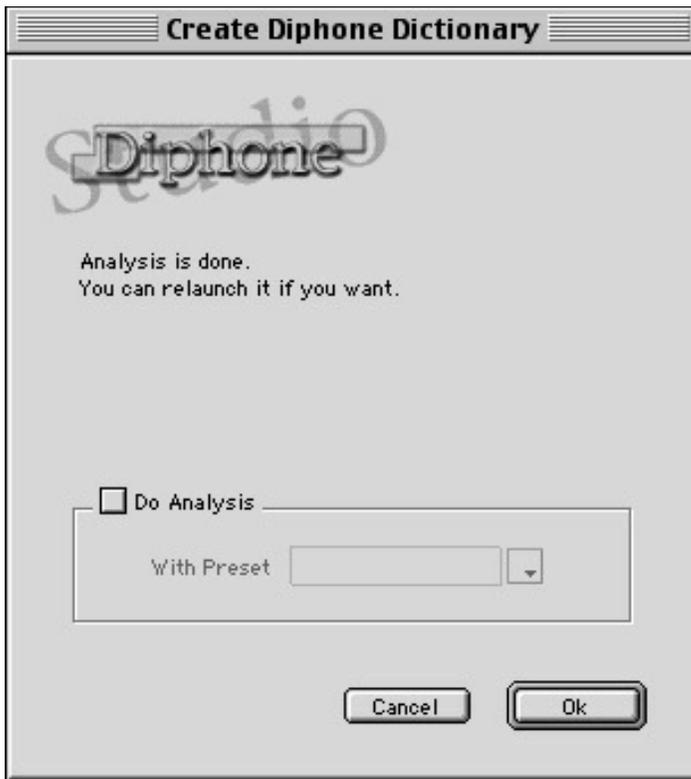


Figure 3

It is sufficient in this case, if one does not want to do the analysis again, to click on *ok* to activate the creation of the dictionary and the opening of the application Diphone under the conditions described above.

---

## 1.2 Automatic creation of a dictionary Diphone

To access this procedure one chooses the icon on top of the mobile *Launcher* window (Fig. 4).



Figure 4

*NB : if this window is not visible, you can show it by going to the window menu for the option Show Launcher.*

A window called Create Dictionary From Sound appears (Fig. 5).

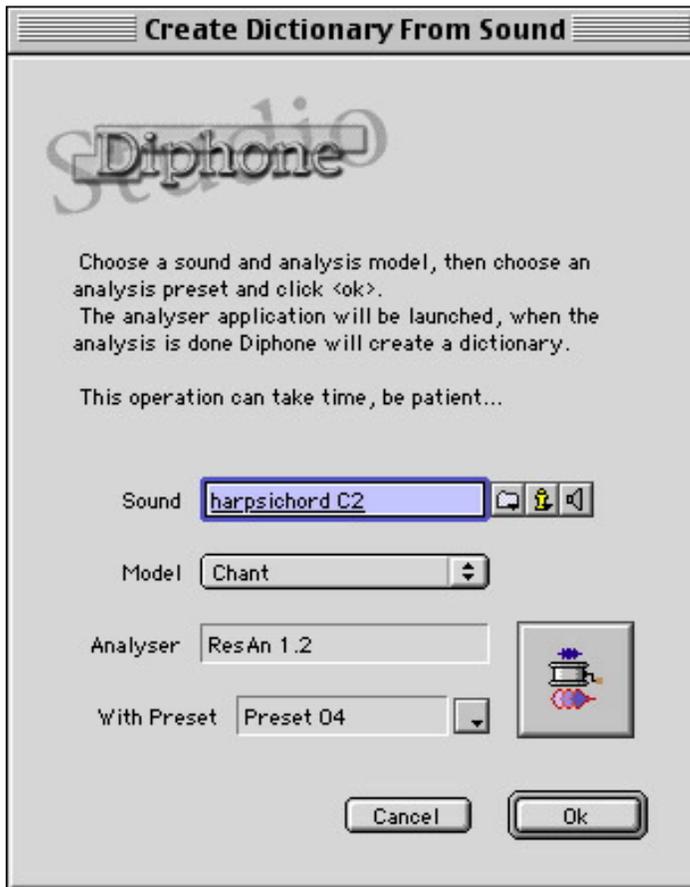


Figure 5

You are now asked to open a sound from a folder of your choice to analyze. Choose a model of analysis and eventually a preset. Click *ok* and wait for the creation of a dictionary which will automatically open in Diphone once the analysis is finished.

*NB : This operation legally opens the analysis programme, Addan or Resan according to the model. The lists of folder names are filled and the analysis parameters are put with their default values or those of the preset.*

## 2. The presets (Addan and Resan)

Already present in the previous versions of Resan, the presets are now also available in Addan. To have access, open the pop-up menu to the right of the *Settings* indications in the analysis window (Fig. 6).



Figure 6

Thanks to the presets, one has now direct access to the analysis parameters, optimized for certain sound families.

For this version, two collections are supplied in Addan : High pitch and low-pitch voices... (nothing stops you from applying them to other types of sounds). One can see in the fundamental parameter settings of the analysis, the choices used for the size of the analysis window and for the increment step. (Fig. 7 & 8).

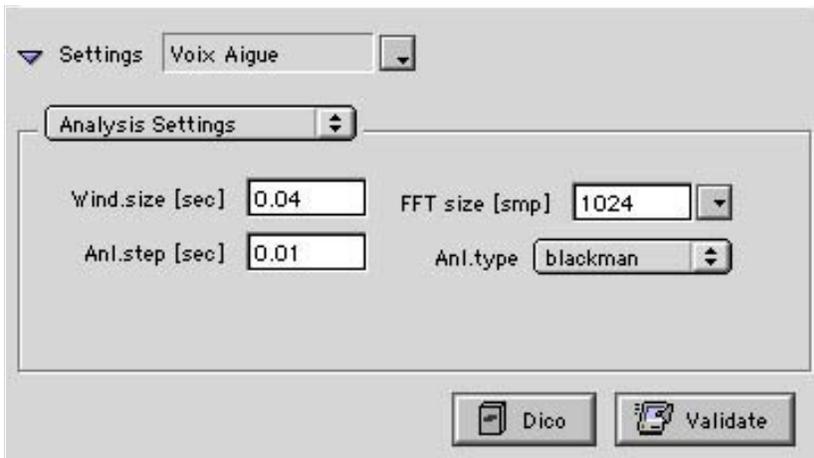


Figure 7

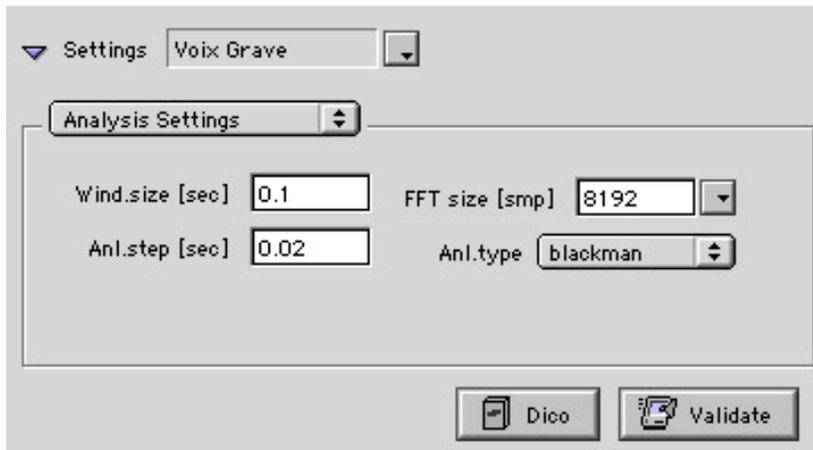


Figure 8

Survey of the presets in Resan.

In Resan, the presets are simply numbered from 1 à 10. They are not, a priori, specialized for specific sound typologies. One should try, for the analysis of one sound, several of these presets and choose the best rendering for the work in progress.

*NB: if one saves the values of an analysis in the folder:Presets :Addan or Resan, these analysis parameter settings become available as a preset and appear in the pop-up menu for preset choices.*

### 3. The editor of an independent Bpf

This option, already present in previous versions of Diphone, has been considerably filled out. It now offers a powerful tool for the manipulation of parameters during the creation of the sequences. In fact it is sufficient by simple copy/paste to substitute the segments of the Bpf that is being defined by those that have been made with the help of the editor.

The editor of the independent Bpf is accessible from Diphone in the menu *File :New Bpf*. The choice of this option opens the following window: (Fig. 9).

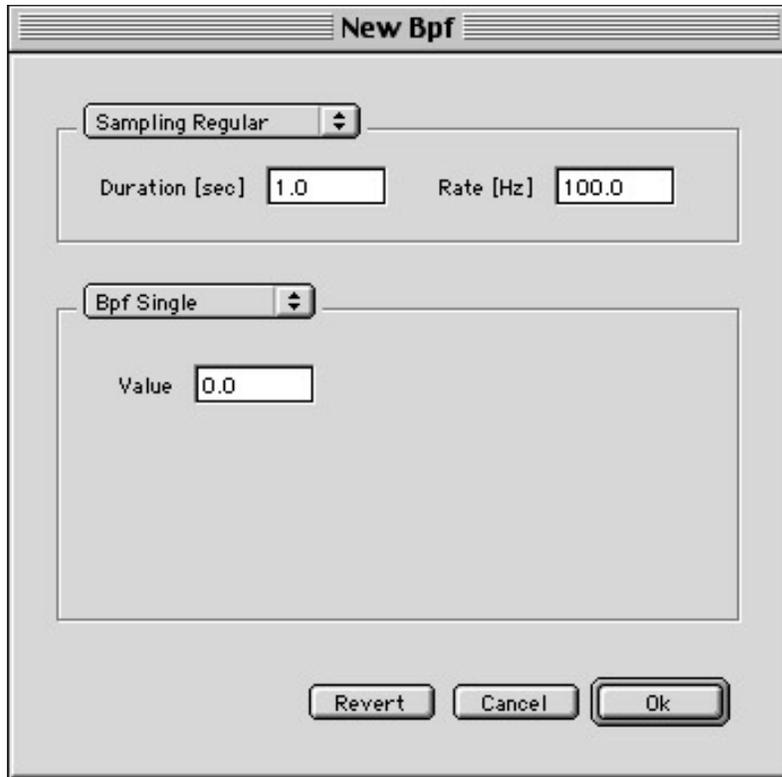


Figure 9

From this window *New Bpf*, one can construct a constant value Bpf, simple Bpf's, multi-Bpf's as well as signal Bpf (Fig.10).

*NB : One can consult the window Plugins Info in order to determine the kind of Bpf for each parameter of a given model. (See section 5 of this document).*

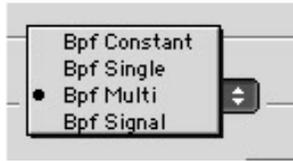


Figure 10

No matter what type of Bpf, one can set the duration in seconds as well as the sampling frequency (*Rate*) in Hertz. For the signal Bpf, the sample frequency is chosen in a pop-up menu (*Presets*) that appears on the right-hand edge of the display " Rate ". The value 44100 is given by default (Fig. 11).

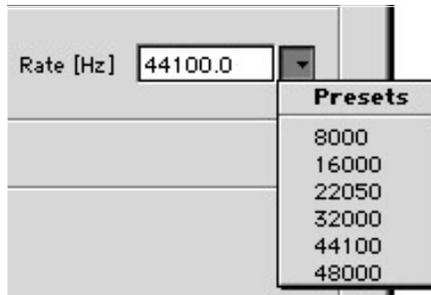


Figure 11

For the multi-Bpf, one must define the number of curves, the initial value of the first curve (Offset) and the type of progression for the generation of the following curves (Fig. 12).

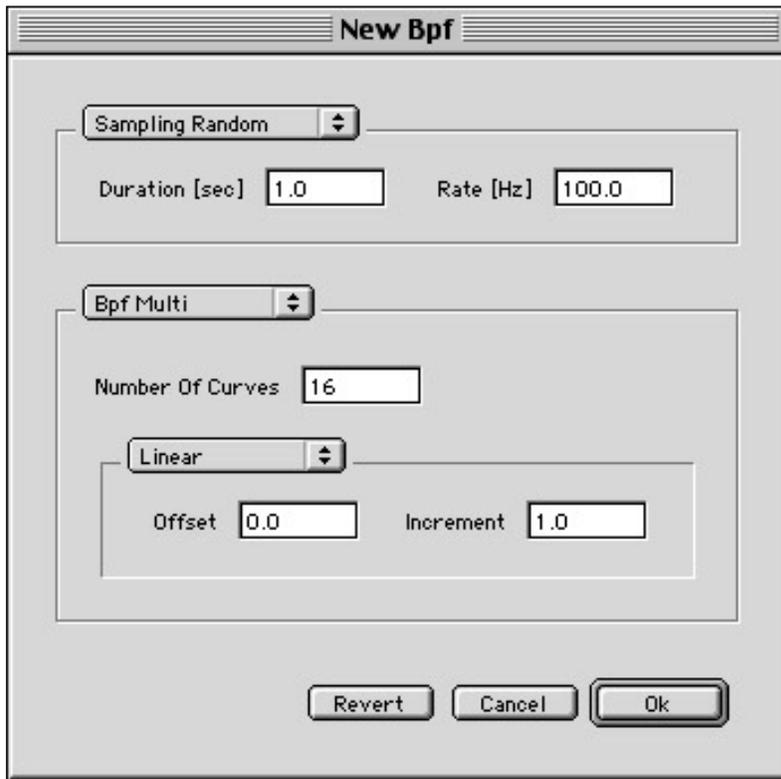


Figure 12

According to the chosen type of progression, the increment value must be specified for a linear progression or the multiplication factor (the index) for the exponential case. The option *Constant* creates a Multi-Bpf of which all the curves are fixed at the same value (Fig. 13)

*NB : In the case of a Multi-Bpf of constant values the graphical representation may appear incorrect. Indeed if one has not in mind that this is really a multi-Bpf one might confuse it with a simple Bpf. In the graphical representation only one curve appears because all of them are in condensed into one.*

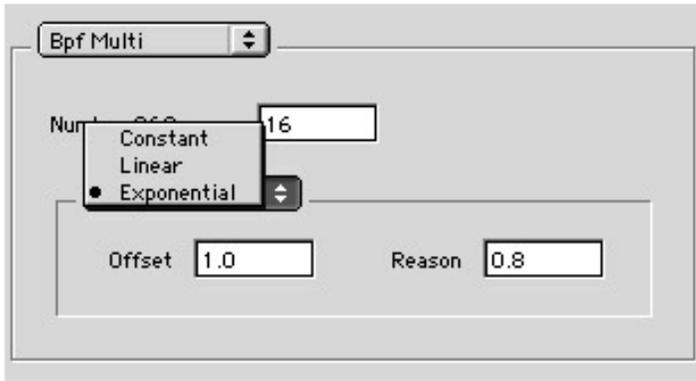


Figure 13

### 3.1 Linear or exponential progressions

The following examples illustrate these two types of progression.

#### 3.2 Example 1

First of all one creates a multi-Bpf of 5 curves organised as a harmonic scale, that is to say as multiples of a fundamental; in this case 55 Hz. One uses for this the linear mode with the following settings: (Fig. 14).

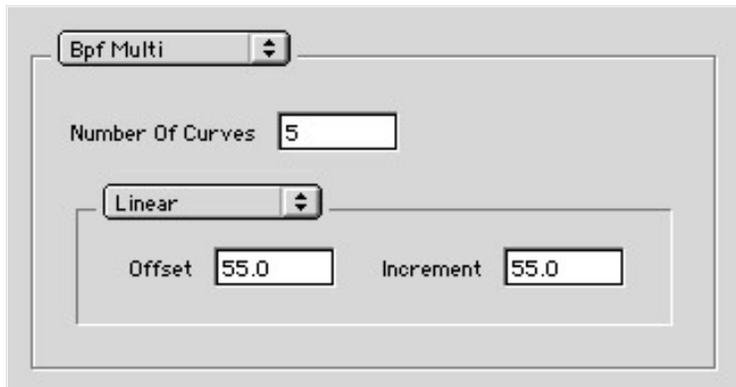


Figure 14

The multi-Bpf then takes this appearance, with as successive values: 55,110,165,220,275. (Fig. 15) One can simply increase the number of curves to obtain more harmonics

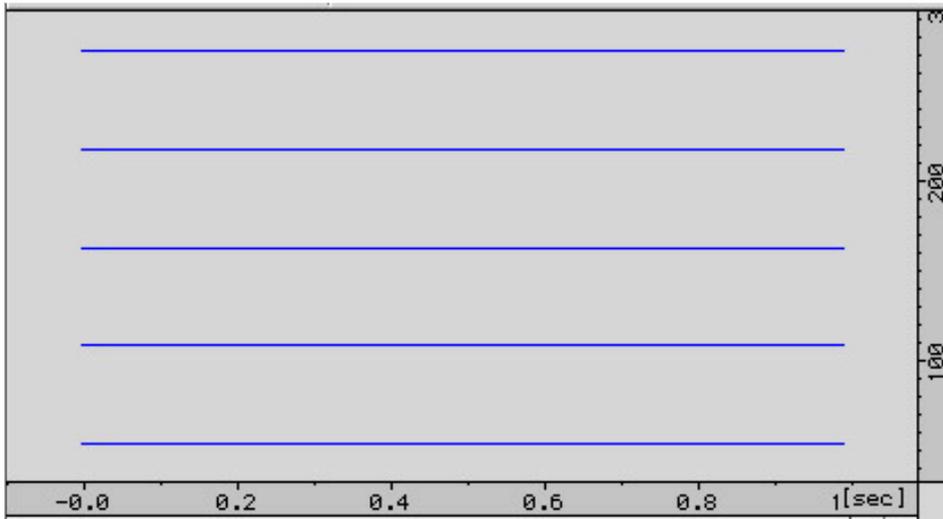


Figure 15

### 3.3 Example 2

The multi-Bpf that we wish to create now must have the first four octave harmonics of the fundamental still at 55 Hz. One would choose in this case the exponential model, with the following settings: (Fig. 16).

Figure 16

This time the multi-Bpf takes the form shown in figure 17 with the successive values: 55,110,220,440,880, all with intervals of one octave.



Figure 17

In the exponential mode, the progressions can rapidly reach extremely high values. One must carefully choose the value of the following (*Reason*).

One can also fix the reason at a lower value than 1 which generates curves of lesser value than that specified at the start Offset. This procedure can be interesting to make decreasing amplitudes for partial series.

By combining the option *Create Default Segment* in the menu *Parameters* with the editor of Bpf one can construct advanced wave tables. For the additive model, the application at the frequency of the partials of a Bpf constructed in the exponential mode permits the creation of harmonic or inharmonic spectra of rich complexity. In the Chant environment one can on the same lines, fix the amplitudes of the FOFs with complicated ratios which open very interesting new perspectives.

## 4. Modifications of the manipulation tool of Bpf



Figure 18

The button *tools* (Fig. 18) opens a tagged window in which all the tools of manipulation of the curves of Bpf, are grouped (Fig. 19).

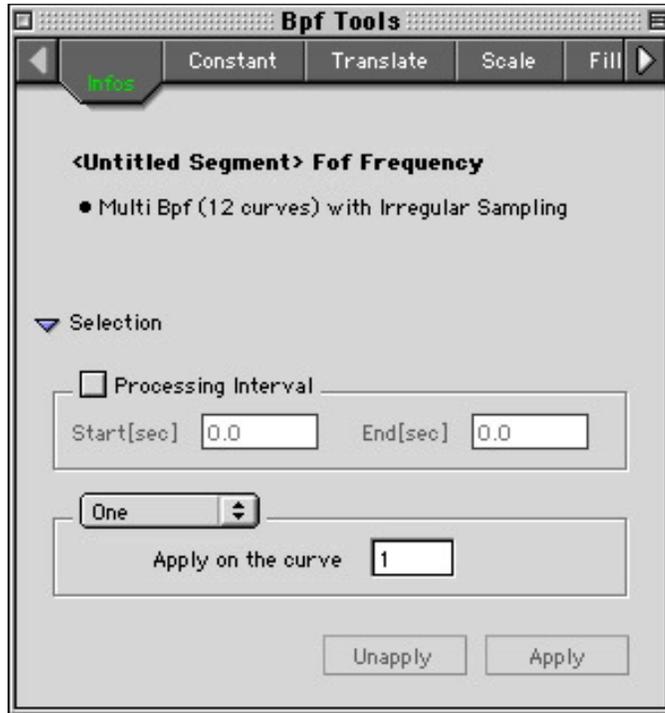


Figure 19

*NB: This window is also accessible from the menu Bpf.*

The series of tags at the top of the window gives access to the different functions to transform the curves already present in the previous versions of Diphone.

Nevertheless in this new version, one proceeds for the selection of curves depending on transformation operations on a large number of screening criteria.

The choice *Processing Interval* enables one to choose the time intervals in which the modification will be carried out. The real accuracy of this interval depends on the sampling frequency (number of points per second) of the curve.

The following sub-menu is used to choose the number of curves to be affected (Fig. 20).

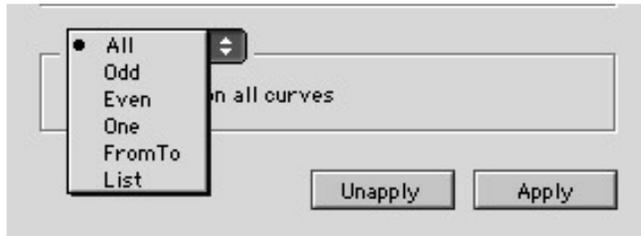


Figure 20

This choice depends on the following commands:

All the curves (All).

Odd or even curves (Odd or Even),

One amongst all of them (One).

From one curve of a certain rank to another of higher rank with an adjustable progressive step. (From to Step).

If finally, none of these gives the required selection, it is possible, with a small text message to define a list of curves to be selected. (List)

For this last operation it is necessary to make a document of the type " text extract" which can be put on the top level (bureau). This document contains the list of the numbers of to be affected, simply separated by a space. One can drag this document to the bottom of the window and your list then appears.

One can also write the list in the internal editor of Diphone as is shown in the following example.



Figure 21

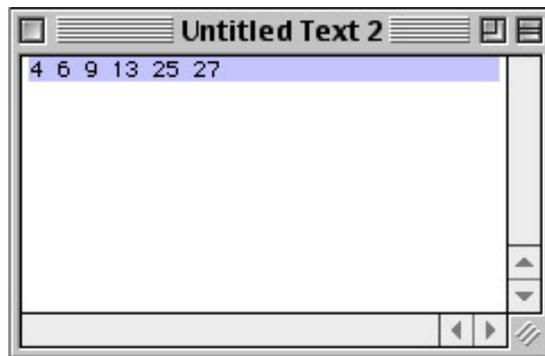


Figure 22

After having chosen *new text* in the *File* menu, make the list of curves that you wish to transform (Fig. 21 & 22).

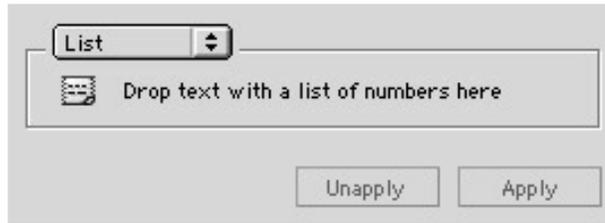


Figure 23

Choose the option " List " in the sub-menu of the *Tools window* (Fig. 23).

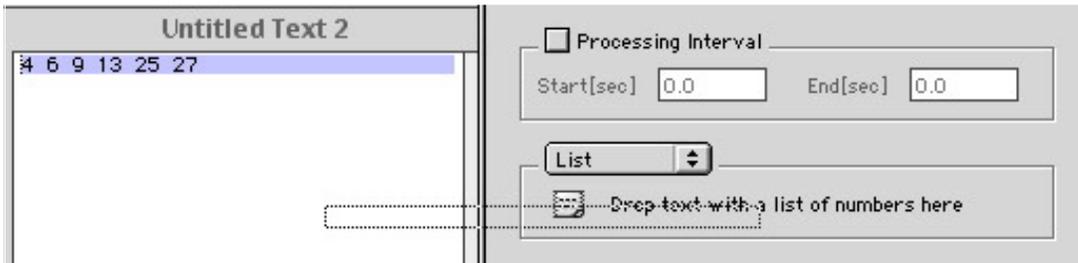


Figure 24

Drag the list from the text window towards the bottom of the *Tools window* (Fig. 24).

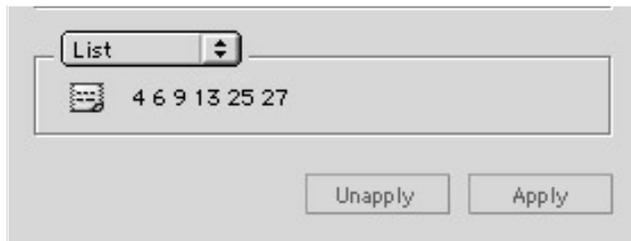


Figure 25

The list now appears in the bottom zone of the *Tools window* (Fig.25).

## 5. The window Plugins info

One can open the *Plugins Info* window with the menu *Window* (Fig. 26).



Figure 26

In this window, the list appears of all the control parameters of a segment for a given plugin.

This table that can only be read, without making modifications, enables one to consult these parameters in detail for each plugin (Fig. 27 & 28).

Name	Unit	Chunk	SdifKey	Bpf
▶ Additive 1.5				
▶ Chant 1.5				
▶ Dirsig 1.3				
▶ Gret 1.2				

Figure 27

Default	Minimum	Maximum	V	P	E	L

Figure 28

One can, for each plugin, open the relevant tag (Column *Name*).

For the musician, it is essentially the first and the four last columns which are of immediate interest.

Here are their details.

Unit : Parameter unit.

Bpf : Type of bpf (simple, constant or multiple).

Default : Initial default value with the option *create default segment*.

Minimum : Minimum allowed value.

Maximum : Maximum allowed value.

Flags: also displayed in the bottom part of the window. Vital, Precalculated, External, Locked

For instance the flags enable one, during the construction of a sequence, to select the essential parameters needed to calculate the synthesis. One can therefore, if one does not need it, delete the list of non-vital parameters.

The figures 29 and 30 show the list of parameters for the additive model.

<b>Name</b>	<b>Unit</b>	<b>Chunk</b>	<b>SdifKey</b>	<b>Bpf</b>
<b>▼ Additive 1.5</b>				
Fundamental	[Hz]	newf	Frequency	Single
Transposition	[1/2ton]	tran		Single
Energy	[Lin]	newe		Single
Gain	[dB]	gain		Single
Frequency of Partial	[Hz]	parF	Frequency	Multi
Amplitude of Partial	[Lin]	parA	Amplitude	Multi
Phase of Partial	[2 $\pi$ ]	parP	Phase	Multi
Partial Envelop Cepstral Coeffs	[]	cepC	CepstralCoefs	Multi
Partial Envelop Ratio	[]	rnpP		Single
Noise Envelop Reflection Coeffs	[]	rnxC	ARCoefs	Multi
Noise Envelop Gain	[]	gnvN	Gain	Single
Noise Envelop Ratio	[]	rnpN		Single
Original Fundamental	[Hz]	fund		Single
Original Energy	[Lin]	enrg		Single
Scaler	[]	scal		Constant

Figure 29

Default	Minimum	Maximum	V	P	E	L
110.0	0.0	40000.0			x	
0.0	-128.0	128.0				
1.0	0.0	10000.0			x	
0.0	-128.0	128.0				
frame	0.0	40000.0	x	x	x	
frame	0.0	10.0	x	x	x	
frame	-3.141	3.141				x
frame	not	not				x
1.0	0.0	1.0				
frame	not	not				x
0.0	0.0	not				
1.0	0.0	1.0				
50.0	0.0	40000.0				x
1.0	0.0	10000.0				x
0.0	not	not				x

Figure 30