

# THE ANSWER IS IN A BLINK OF THE EYE

## POTENTIAL NLP APPLICATIONS TO ASPECTS OF FL LEARNING

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“Ce qui se conçoit bien s'énonce clairement”<sup>1</sup>

“Quand on a une fois été mordu par un chien, on se méfie de tous les chiens pour le reste de sa vie”<sup>2</sup>

### 1. Introduction

- What do you call somebody, who speaks three languages?
- Trilingual.
- What do you call somebody, who speaks two languages?
- Bilingual.
- What do you call somebody, who speaks one language?
- ... Japanese!<sup>3</sup>

Listening around you, there is no doubt that the Japanese, among the highly industrialized nations, figure in the top rank of those who have a hard time to domesticate foreign languages (FL).

Especially when it comes to speaking skills, their performance generally receives a poor rating by foreign observers, be they FL teachers, business partners, foreign residents in Japan, trying to make sense of NHK's simultaneous translations into English, or grassroot representatives of the hotel and entertainment industry abroad.

Reasons for this apparent inability to reach a performance standard in this field of human interaction comparable to that of Taiwan, Germany, France, the Scandinavian countries, Belgium, the Netherlands, the Philippines, Malaysia or many Black African countries, to name only a few, are abundant:

Japan's geographical isolation, not seldom cultivated as a kind of splendid cultural isolation 'à la japonaise' in the face of its Asian neighbors, its strictly controlled education system, under which free speech, even in Japanese, is almost a non-value, and in which, consequently FL are not seldom taught the way Latin, Greek or Tibetan are taught all over the world, i.e. as “dead languages”, its relatively simple phonetic system, that is often, in our opinion wrongly<sup>4</sup>, invoked as a huge obstacle to FL speaking skills acquisition, or the fact that the country has never been under foreign occupation, historically a “strong incentive” to learn the language of the occupying power<sup>5</sup> nor the target of major migratory movements from abroad.

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<sup>1</sup>What is clearly understood can be clearly expressed.

<sup>2</sup>“Once bitten, twice shy.” French survivor of German concentration camp, A2 news, October 12 1997

<sup>3</sup> Joke also targetting the Americans.

<sup>4</sup> Major languages in Black Africa such as the Bantu group, have comparably simple phonetic systems, which has not stopped many Africans from learning and mastering French, Dutch or English, that have rather complex phonetic systems.

<sup>5</sup>In Northern Taiwan (especially the Tamshui area) elderly people still speak Japanese, remainder of the Japanese colonisation which ended at the end of WWII.

In this contribution we will attempt to interpret this issue from a neuro-linguistic programming (NLP) viewpoint, and focus on the following questions:

- A. What is NLP?
- B. Why can NLP contribute to 'cure' FL proficiency deficiency among Japanese students.
- C. How does NLP explain the apparent FL speaking deficiency of Japanese students?
- D. How can NLP contribute to improve FL acquisition?

#### A. What is NLP?

NLP, as conceived by its founders, R. Bandler and J. Grinder in the late 70's, is, like T.A. (Transactional Analysis), a highly performing communicational therapy, based upon core concepts such as designing positive strategies to counter communicational deficiencies, elaborating techniques to re-design an individual or group's map of the world, and helping an individual or a group to reach a state of (neurological) excellence, considered a prerequisite for 'success' in various types of human interaction.

The theoretical foundations of NLP include 5 major fields<sup>6</sup>:

##### 1. Psychology:

- Freud and Psychoanalysis
- Pavlov and the Stimulus-response theory
- Miller, Galanter and Pribam, "TOTE"
- Maslow's "Human Needs Theory"
- C. Rodgers' concept of congruence and empathy
- Gestalt Therapy
- V. Satir and Family therapies
- M. Erickson and Ericksonian hypnosis
- E. Berne's Transactional Analysis
- School of Palo Alto

##### 2. Neurology:

- Perception systems
- Representation systems
- Anchoring

##### 3. Linguistics:

- N. Chomsky, deep and surface structures
- A. Korzybski, general semantics

##### 4. Mathematics:

- Cybernetics
- concepts of models and feed-back
- data-processing and binary organisation of data.

##### 5. Western and Eastern philosophies:

Furthermore NLP relies, for its theoretical foundations, on Creativity Techniques, the Coué Method, or Kepner-Treggoc Problem Solving Techniques.

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<sup>6</sup>René De Lassus, "La Communication Efficace Par la PNL", Marabout, 1995

### B. Why can NLP contribute to 'cure' FL proficiency deficiency among Japanese students?

Neurolinguistic programming techniques have been used, for about 30 years now, as an efficient therapeutic tool to "cure" communicational disfunctions between a subject and its communicational partners in the family or in the working place. NLP techniques such as calibration, anchoring, reanchoring and synchronisation eventually have found their way to the non-therapeutic world as they have been found, like graphology and morphopsychology, to be quite efficient assistants to personnel managers, headhunters or employment agencies in their search for the 'perfect' match for an open job position.

To our knowledge, no scientific connection has, to this day, been established between NLP techniques and FL teaching/learning processes.

A major reason for this absence of NLP in the debate about FL teaching/learning methods lies, in our opinion, in the uncontested fact that FL teaching/learning has hardly ever been considered as a THERAPEUTIC PROCESS either by the providers or by the learners.

We think that the FL teaching/learning process is a therapeutic process in that the existing neuron-connections network, representing the inner grammar of the mother tongue (MT) and its associated non-verbal languages, is to be brought to cohabitate with a parasite type, brain invading, new set of neuron connections that represents the inner grammar of the FL, its associated non-verbal languages, and its deeper socio-cultural values, which, through the FL teaching process, are in some way grafted onto the existing MT network. As for every graft, FL data input is subject to being accepted or rejected by the receiving body<sup>7</sup>. With respect to grafting realized through VAKO<sup>8</sup> signals, the successful graft would be the result of a data transfer through what are for the receiver the most appropriate VAKO channels. Using what are for the receiver inappropriate VAKO channels would result in partial or total rejection.

### C. How would NLP explain the apparent FL speaking deficiency of Japanese students?

Close observation, using videoscopies, of the ocular movement patterns of first year Japanese learners of French, German, Dutch and Crosscultural Communication Techniques during the learning process at Shinshu university over the past 5 years, has raised strong suspicion -if not evidence- that storage (or memorization) of Auditively Input Data (AID) is not principally done in the Auditive Memory but in the Visual Memory. This means that the Japanese students observed seem to show a tendency to prefer remembering a visual representation of a vocal message rather than its auditive original/correspondant. In other words:

Am (Auditif memory), while being crucial in vocal reproduction or vocal construction of communicational sequences both in the mother tongue and in FL, becomes subordinate to Vm, which, in turn, means that when a student has only a VISUAL representation of a vocal message to rely upon, he/she is much less likely to be able to reproduce the VOCAL original or to constructively play (Auditif construct) with the data contained in the vocal original.

The way the observed students seem to memorize communicational building blocks, sequences or patterns in A- (Auditive) mode looks much like plugging the audio cable of a video camera into the video entry of a videocorder. When invited to reproduce or create vocal messages in the FL, the

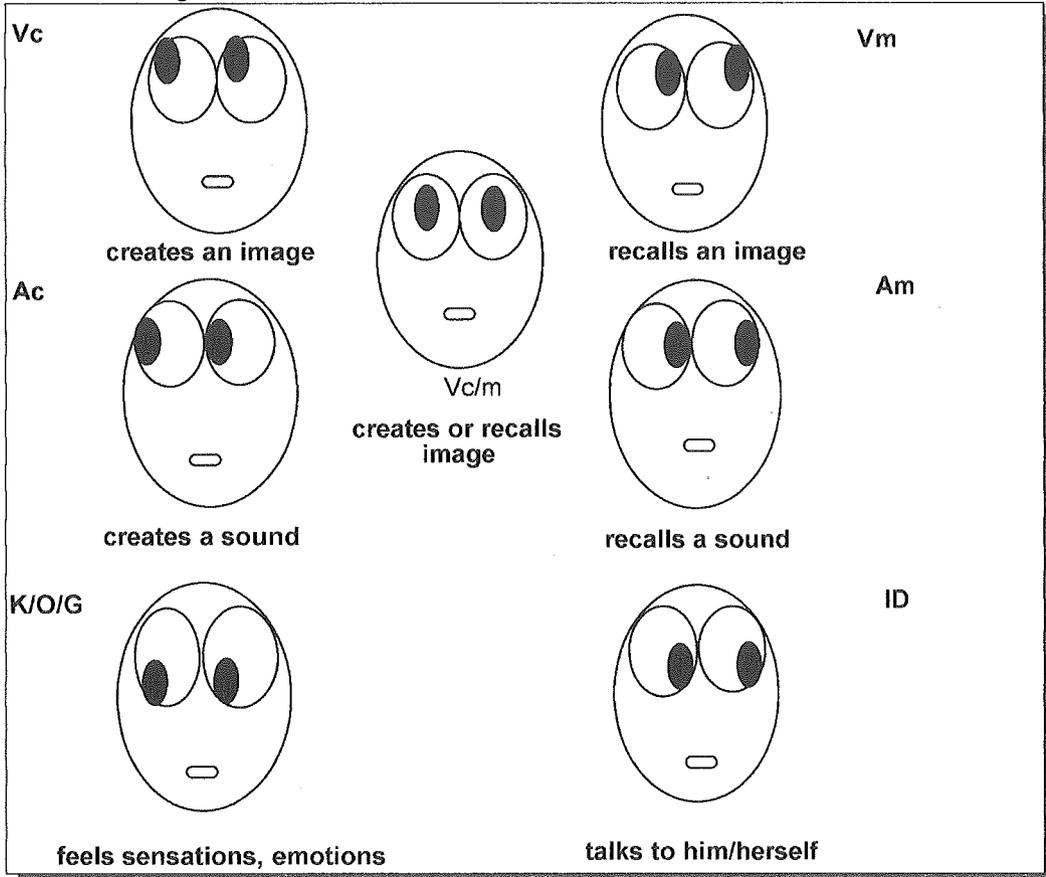
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<sup>7</sup> We suspect 'motivation' to be a combination of bio-chemical impulses that, generated by a complex input of VAKO data, is a crucial factor that decides whether the graft will hold or be rejected.

<sup>8</sup>VAKOG: Visual, Auditive, Kinesthetic, Olfactory or Gustative data memorization channels.

observed learners often seem at a loss to reconstruct and/or produce audio messages from the video-input.

Observation of the subjects focussed on calibration through video-assisted analysis of their ocular movements using the reference scheme below:



Codes:  
 Vc: Visual construct  
 Vm: Visual memorised  
 Vc/m: Visual construct or memorised  
 Ac: Auditif construct  
 Am: Auditif memorised  
 K/O/G: Kinesthetic, olfactory or gustative memory  
 ID: Interior dialogue

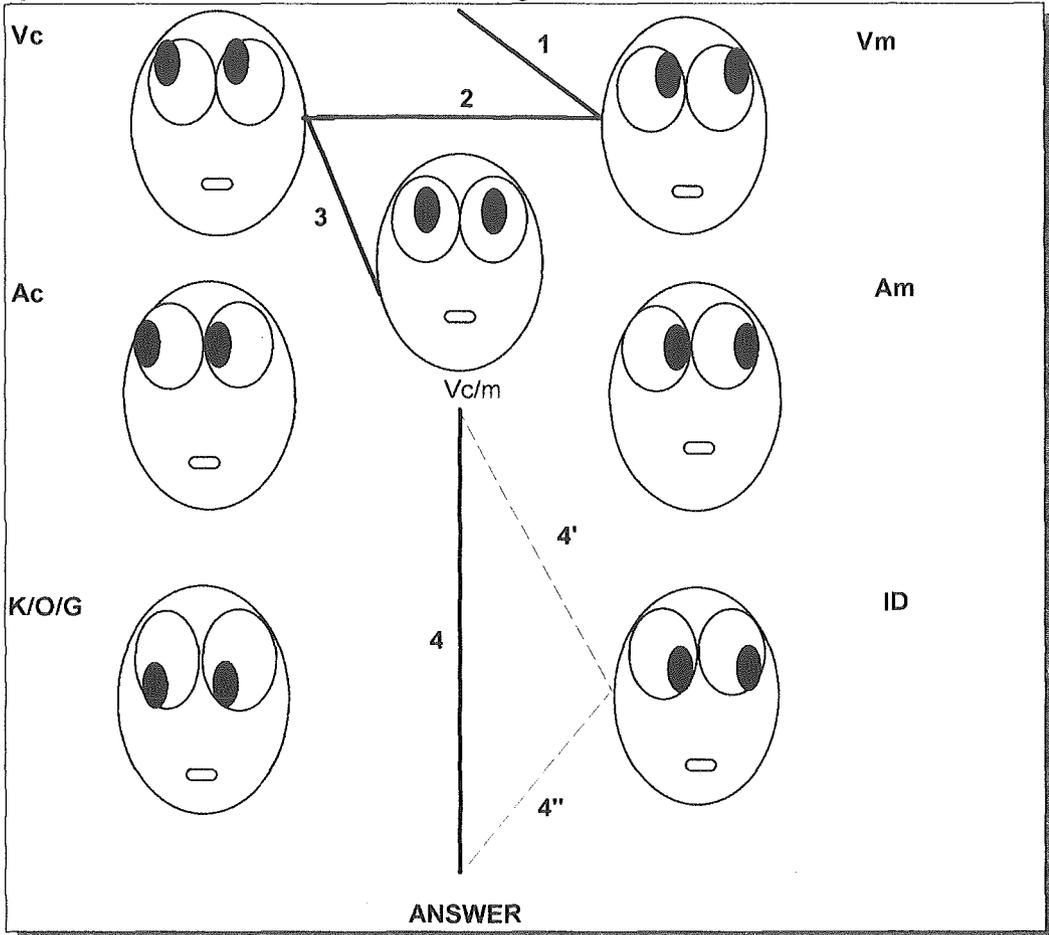
 Left and right codes are to be inverted for real left-handers!

The following schemes show:

1. The ocular movements of Japanese and French subjects recalling an FL sequence input in V-mode (blackboard, textbook, etc.):

Example: (The information contained in the correct answer was presented in V-mode, as it called upon predominantly V-memorization. The answer (black, red, yellow) was presented in an article students were assigned to read in FL (English). A picture of the actual flag was not represented in the article.

Question: "What are the colors of the German flag?"



Step 1: Subject calls upon his Vm...

Step 2: checks in his Vc...

Step 3: counterchecks in his Vc/m

Step 4: produces answer.

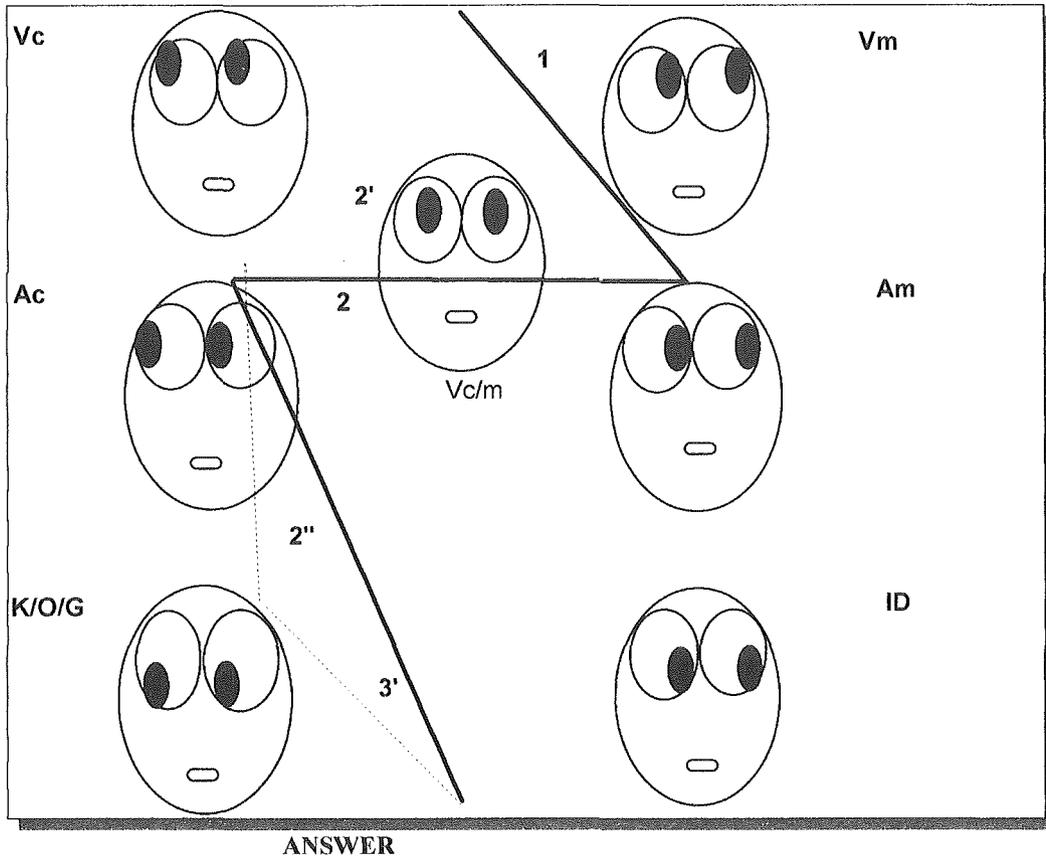
Step 4': searches in ID mode

Step 4'': produces answer.

Discussion: ocular movement patterns of Japanese and French subjects show little or no differences, although a small proportion of the French subjects were observed to also call on the Am/Ac between steps 3 and 4.

2. The ocular movements of French subjects<sup>9</sup> recalling an FL sequence input in A-mode:  
 Example: The information contained in the correct answer was presented in A-mode, as it called upon predominantly A-memorization.

Question: "How are you doing?" (Subject hears the question in English)



Step 1: Subject consults Am to locate Q and possible A

Step 2: Subject checks Ac in preparation for the Vocal answer.

Step 2': Subject may check Vm, to visualize a situation in which the appropriate answer to the question might be used.

Step 2'': Sometimes subjects also consult their K/O/G memory, as the Q calls also upon kinesthetic memory.

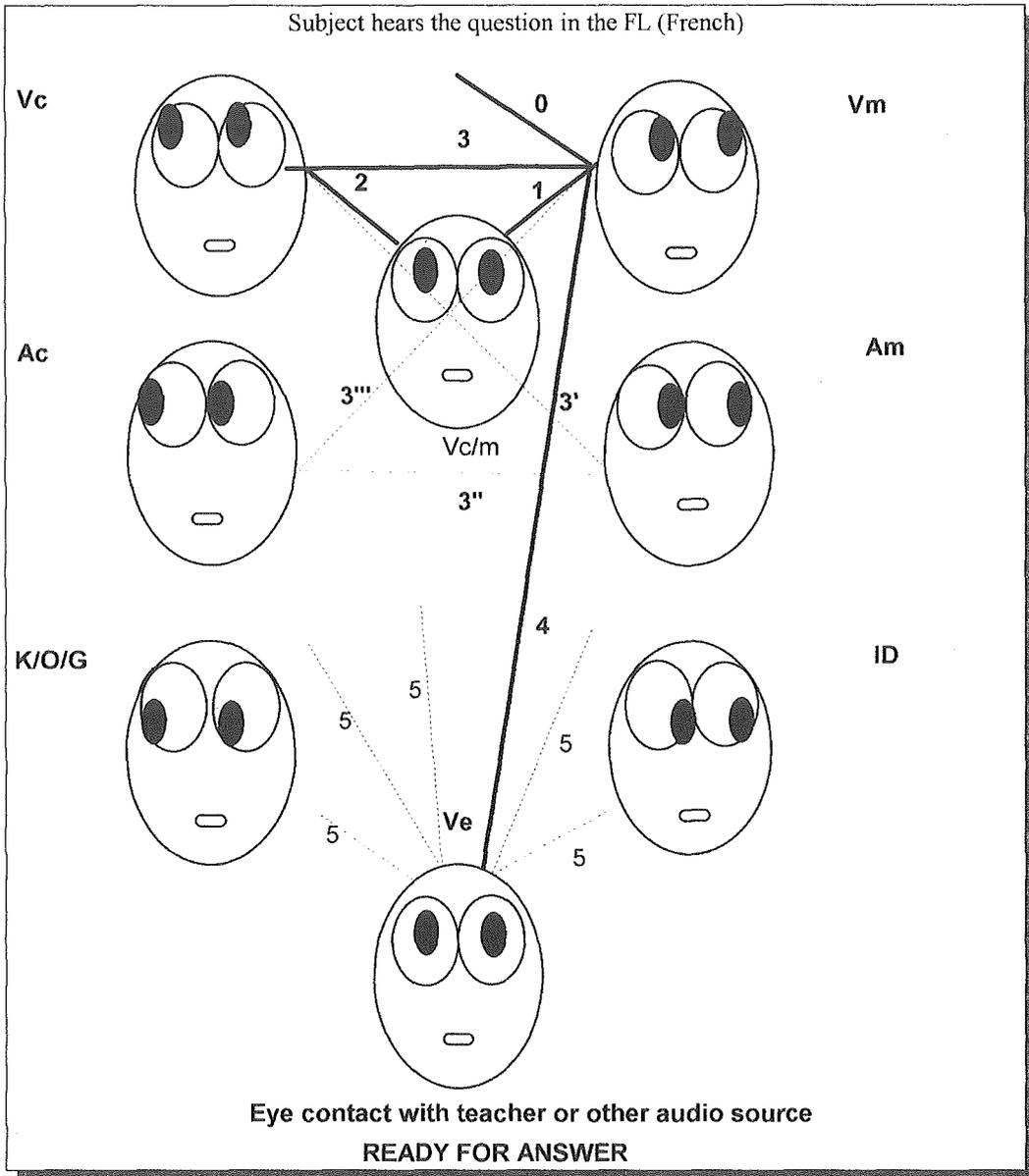
Step 3/3': Subject is ready for answer.

3. The ocular movements of Japanese subjects recalling an FL sequence input in A-mode:

Example: The information contained in the correct answer was presented in A-mode, as it called upon predominantly A-memorization.

Question: "Comment s'appelle le président de la république française?"

<sup>9</sup>Experiment conducted at Dauphine, Sorbonne University in the Crosscultural Communication Department, November 1991.



Step1: Student tries to recognize form and content elements of the question and a possibly associated answer in his/her visual memory. ("What did I SEE in the textbook, my notes, lexicon or on the blackboard or the video screen?")

Discussion: if all data related to both Q and A had indeed been presented in V-mode and duly anchored by teacher-teaching medium-student interaction, the student might be able to retrieve answer from his/her Vm. He or she will establish Ve (Visual external) contact with the Q-source (teacher, answer sheet, etc.)

Step 2: Student's "staring" indicates not all formal, structural and semantic elements have been stored in his/her Vm. He/she, therefore, tries to fill the gaps by combining V-remembered data with more or less logically V-constructed data.

Discussion: Student's eyes may shuttle back and forth between Vc and Vc/m positions, the former being the source of constructive V thinking, the latter being as it were a laboratory where Vm and Vc are mixed into a cocktail that should generate understanding of the question and remembering of its associated answer.

Step 3: Student doublechecks his/her understanding of the question and memory of the related answer by moving back to Vm mode.

Discussion: We have observed that this triangular ocular sequence Vm--Vc/m--Vc--Vm, when repeated more than once, often generates wrong answers, which -when the data were input by V anchoring, shows that this anchoring was incomplete, and almost always generates wrong answers when data input was done through A or K anchoring.

Step 3''/3''': Dissatisfied with the information yielded through browsing his/her Vm-Vc databases, the student may try to browse his/her Am-Ac databases.

Discussion: We have observed that Japanese FL students tend to anchor data, transmitted orally (by teacher or audio source) in the Am mode in their Vm. Which explains Step 3''''

Step 3''''': Whatever the result of the A-mode browsing, the Student returns to Vm for a final check.

Step 4: Student produces an incorrect answer.

Step 5: Student establishes brief eyecontact with teacher or Q-source, produces no answer at all and starts browsing his/her different databases in an obviously uncoordinated way .

Discussion: this desperate browsing is often accompanied by a disruption of the natural rhythm of the student's micromovements: accelerated breathing, blushing, fingerwrangling, feet tapping, leg crossing, head scratching: all simultaneously expressing a condition of stress and an attempt to regain composure -or in NLP terminology: an attempt to return to a neurological state of excellence. This random browsing and its bodily manifestations are usually aborted by external factors (time pressure, teacher intervention, group intervention, etc.) or internal factors (resignation, time pressure, shame, etc.)

Why do a majority of the Japanese students I was able to observe over the last 5 years so heavily rely on Vm for anchoring FL data, even when they concern conversation?

Efficient FL learning and in particular acquisition of FL speaking skills cannot, without any doubt, be the result of an 'l'art pour l'art' exercise. Whereas in Western Europe the proximity of FL speaking economic partners, hence job opportunities, represents an extremely strong motivational factor for people of all walks of life to master a second or third FL, mastery of a FL as an essential asset for successful jobhunting in Japan is only starting to take root; in the absence of clearly defined objectives, it comes as no great surprise that in FL learning often not the most efficient but the most relied upon anchoring modes are used to meet the minimum requirements of FL testing. For reasons mentioned above, that would suggest that V-mode anchoring, even of A-input data, is preferred because A-output is for most students not on the cards, and credit earning generally is Vm related, with oral tests in FL speaking skills almost non-existing; a situation underscored by teaching methods consisting of having students learn by heart a 100 some German written replicas of conversational sentences, which most of them will be perfectly able to reproduce in writing but unable to use in a real conversation.

We also suspect that a majority of the students observed score considerably lower in oral FL tests than in comparable written tests because in the FL acquisition process, they are very distrustful of their own Am capabilities:

The relative complexity of the French, Dutch or German phonetic systems, as compared to Japanese, and, despite recent attempts in Germany and the Dutch speaking countries to simplify orthography, the lingering absence of a generalized and systematic phonetism policy, i.e. a policy that aims at altering the orthography of basic semantic units for better agreement with pronunciation, seem to be strong incentives for the Japanese FL students observed to opt for the more reassuring Vm mode, rather than to face initial confusion by letting Vm and Am cohabitate.

#### D. How could NLP contribute to improve FL acquisition?

NLP suggests anchoring input data through the most appropriate VAKO channel is the cornerstone of efficient memorization and hence of efficient management of the output data. This requires of the FL teacher a permanent awareness of the efficiency of his/her anchoring techniques and a readiness to re-anchor data in an other VAKO mode or any of its possible combinations (VA, AK, VO, V/ID, A/ID, etc.) when the previously used anchoring mode does not generate the expected results in terms of proficiency in the FL.

Hence, attention could be paid to such techniques as calibration, anchoring/re-anchoring and synchronisation.

##### 1. Calibration

Calibration, or the close observation of all verbal and non-verbal components of a communicational act, and especially calibration through observation of ocular and other micro-movements by teachers can considerably contribute to provide the teacher with data about how efficiently, if at all, each individual student has stored (or anchored) the transmitted FL data.

##### 2. Anchoring and re-anchoring

Anchoring, as indicated above, can be paraphrased in NLP terms as the process of creating neurological connections in the receiver's brain, that are the result of a data transfer between a data source and that receiver through the most appropriate VAKO channels.

Re-anchoring, as used in therapy, is the process of overruling the existing VAKO anchoring mode of input data, that are the source of psycho-pathological behavior, by modifying the anchoring mode, in the course of the therapeutic process. A child's fear of lightning at night, anchored in Vm will be offset by the reassuring voice of its mother, who re-anchors a bad experience in Vm mode into Am mode.

Applied to FL teaching/learning processes, anchoring data through the most appropriate VAKO channel(s), while being a challenge for the teacher him/herself (who, like their students, are tributary to their favorite, but not always most appropriate VAKO anchorings), has shown, in the limited number of experiments I have conducted, that considerable progress can be achieved, especially in the field of FL speaking skill stimulation.

1. Shift from Vm to Am

2. Reinforce existing anchors by combining them with other anchoring modes or by replacing them by other anchor combinations.

3. Especially to enhance FL speaking skills, reanchoring through a combined Am/ID mode seems effective. While teacher/student transfer possibilities of surface and deeper socio-cultural values and associated FL patterns in K, O or G mode continues and will continue to be hampered by a K/O/G-unfriendly classroom environment, combined anchoring techniques that create pair anchorings (V/A, V/ID, A/ID) have been shown to be achievable in a traditional classroom

environment and to yield success even more so if combined with other, more traditional FL teaching methods.

### 3. Synchronisation

Most FL video materials do not feature real life characters but FL actors, which confers to the whole V-document a weird sense of artificiality.

Creating and constantly updating a video database with sequences of popular and great communicators in the FL, and making them available to students, would allow the practise of verbal and non-verbal synchronisation; shaping one's own verbal and non-verbal behaviour, by adopting (not just mimicking) with the verbal and non-verbal (body movements, positions, micromovements, rhythm, respiration, etc.) patterns of one's great communicating models in the FL, be they sitcom stars, athletes, politicians or anchorwomen, has, in my observation, shown to coat from within students' communicational "présence" in the FL, thus giving them more reassurance, and reducing considerably any form of stage fever. Especially for those, shy of adopting the body-language that is inherently linked to the communicational performance of FL native speakers, synchronisation exercises have proven beneficial.

### E. Examples of NLP techniques applied to FL excercises.

It should be pointed out that the following exercises yield the best results when done after more traditional didactic sequences during which any new lexical, grammatical, phonetical and/or syntactic items present in the exercises as well as the underlying socio-cultural values have been duly explained.

#### - Back to the Middle Ages

Description: students are invited to reconstruct a text in which all spaces (for false beginners), all spaces, capital letters and punctuation (for intermediate students) have been deleted. For advanced students the complexity of the exercise can be enhanced by adding lexical mistakes.

For further stimulation of the A/ID pair, the teacher can initiate the exercise by one or two blind readings of the text.

Purpose: By disturbing Vm recognition, ID and Am recognition are being stimulated, generating multiple anchoring with A/ID dominant and V minor.

Example:

"jhallucine!  
commechaqueautomesbrigadesdegendarmeriedelestde lafrancepartentàlchasseauxramasseursde  
champignonsdumoinsdeceuxquisontàlarecherchedunspécimenassezparticulierlepsylocybe"...<sup>10</sup>

#### - Medeaval writing

Variation to the exercise type I.

Step 1. The teacher presents the text in normal dictation mode, omitting any reference to punctuation. Students write down the text in Middle-Age style (connecting all words).

Step 2 as above: student rewrites text in contemporary mode.

Purpose: create strong connexion between V and A anchoring.

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<sup>10</sup>L'Evènement du Jeudi, N° 673, p. 33

- Reverse reading

Description: Students are invited to read aloud and from left to right a text the words of which have been written from right to left (EASY) or to read from right to left (INTERMEDIATE) a text the words of which have been written from right to left and bottom up, or to read from right to left a text the words of which have been written from right to left in the Medeval style (ADVANCED).

Purpose: Again the purpose is to disrupt common anchoring modes and replace them by rather unusual multiple anchoring modes

Examples (using French articles):

1. EASY

“no dnerpmoc xueim iourquop al ‘éssuahcéram enrahca’s: tse’c tuot ‘l erdro laicos iuq tse écanem, ua tniop ed erdner seriassecén sel sengapmac ed noitcurtsedne sruoc snad seniatrec seiriarp.”<sup>11</sup>

2. INTERMEDIATE

“seiriarp seniatrec snad sruoc noitcurtsedne ed sengapmac sel seriassecén erdner ed tniop ua , écanem tse iuq laicos erdro ‘l tuot tse’c: enrahca’s éssuahcéram ‘al iouqurop xueim dnerpmoc nO”

3. ADVANCED

“seiriarpseiatrecsnadsruocnoitcurtsedneedsengapmacsel seriassecén erdneredtniopua , écanemtseiuqlaicoserdro‘ltuottse’c:enrahca’s éssuahcéram‘aliourquopxueimdnerpmocnO”

- Reverse writing

Description: Teacher reads in ordinary dictation mode short to medium length sentences.

1) V/A memorization of words through stimulation of ID: the student writes down the sentences in the given order from left to right but each word is written from right to left.

2) V/A anchoring of syntactic structures through stimulation of ID:

The student writes down the sentence from right to left (starting with the S-end punctuation), each word being written from left to right.

3) Combined exercise aiming at word memorization and S-structure anchoring:

The student writes down the S from right to left (starting with the S-end punctuation), each word being written from right to left.

Purpose: This exercise is particularly useful to improve memorization of difficult words and anchoring of syntactic structures by stimulating the ID/Am pair to connect to the V mode. As it

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<sup>11</sup>ibidem

requires the student to often repeat the proposed sequence in the right order while writing it down in inverse mode it represents a very strong anchoring method.

Example:

Type 1.

e  
 me  
 mme  
 omme  
 comme  
 comme e  
 comme ue  
 comme que  
 comme a que  
 comme ha que  
 comme chaque  
 comme chaque e  
 comme chaque ne  
 comme chaque mne  
 comme chaque omne  
 comme chaque tomne  
 comme chaque u tomne  
 comme chaque automne,  
 comme chaque automne, s  
 comme chaque automne, es  
 comme chaque automne, les  
 comme chaque automne, les s  
 comme chaque automne, les es  
 comme chaque automne, les des  
 comme chaque automne, les ades  
 comme chaque automne, les gades  
 comme chaque automne, les igades  
 comme chaque automne, les rigades  
 comme chaque automne, les brigades  
 comme chaque automne, les brigades e  
 comme chaque automne, les brigades de  
 comme chaque automne, les brigades de ie  
 comme chaque automne, les brigades de rie  
 comme chaque automne, les brigades de erie  
 comme chaque automne, les brigades de merie  
 comme chaque automne, les brigades de rmerie  
 comme chaque automne, les brigades de darmerie  
 comme chaque automne, les brigades de ndarmerie  
 comme chaque automne, les brigades de endarmerie  
 comme chaque automne, les brigades de gendarmerie...

Type 2.

**champignons.**

**de champignons.**

**ramasseurs de champignons.**

**aux ramasseurs de champignons.**

**chasse aux ramasseurs de champignons.**

**la chasse aux ramasseurs de champignons.**

**à la chasse aux ramasseurs de champignons.**

**partent à la chasse aux ramasseurs de champignons.**

**gendarmerie partent à la chasse aux ramasseurs de champignons.**

**de gendarmerie partent à la chasse aux ramasseurs de champignons.**

**brigades de gendarmerie partent à la chasse aux ramasseurs de champignons.**

**Les brigades de gendarmerie partent à la chasse aux ramasseurs de champignons.**

Type 3.

s.  
ns.  
ons.  
nons.  
gnons.  
ignons.  
pignons.  
mpignons.  
ampignons.  
hampignons.  
champignons.

e champignons.  
de champignons.  
s de champignons.  
rs de champignons.  
urs de champignons.  
eurs de champignons.  
seurs de champignons.  
sseurs de champignons.  
asseurs de champignons.

masseurs de champignons.  
 amasseurs de champignons.  
 ramasseurs de champignons.  
 x ramasseurs de champignons.  
 ...ux ramasseurs de champignons.

Les brigades de gendarmerie partent à la chasse aux ramasseurs de champignons.

### - Cut-outs

Description: While traditional teaching methods have familiarised students with fill-out exercises, in which a blank stands either for a word, a group of words or some grammatical or structural morphemes, in this type of exercise, texts are subjected to random cut-outs, impairing the student's V-understanding and obliging him/her to appeal to his/her other (Ac, Am, ID) modes to establish meaning through a series of linguistic reconstructions.

Purpose: This type of exercise also aims at temporarily impairing the Vm mode by stimulating alternative or complementary anchoring modes, especially the V/ID and A/ID pairs. Random cutting may be replaced by design cuttings, suggesting the essential message of the presented text, such as in example 3.

Examples 1, 2, 3:

#### LES CORBEAUX PASSENT A L'ATTAQUE

Le directeur du zoo U de Tokyo  
 ne sait plus où donner sa tête. Son parc  
 est la proie de corbeaux plus en plus har-  
 dis. Les sinistres volatiles se contentent  
 plus de déposséder les résidents de leur pop-  
 corn. Ils arrachent le poil du dos des bisons  
 et des pandas géants afin de garnir leur nid.  
 Les poussins des flamands roses sont extirpés  
 de leurs oeufs et les bébés animaux tués et dévo-  
 rés sans pitié. De guerre lasse, la direction du zoo  
 a dû faire appel à une équipe de trappeurs. En cinq  
 ans, le nombre de corbeaux a doublé à Tokyo. On  
 compte plus de 20.000 oiseaux.  
 Les humains ne sont pas à l'abri de leurs assauts.  
 Un cycliste qui a percuté un lampadaire en  
 fuyant une attaque en piqué.

## LES CORBEAUX PASSENT A L'ATTAQUE

Le directeur du zoo Ueno de Tokyo ne sait plus où donner de la tête. Son parc est la proie de corbeaux de plus en plus hardis. Les singes volatiles ne se contentent plus de déposséder les visiteurs de leur popcorn. Ils arrachent le poil sur le dos des bisons et des pandas géants afin d'en garnir leur nid. Les poussins des mandarins roses sont extirpés de leurs oeufs et les animaux tués et dévorés sans pitié. De guerre lasse la direction du zoo a dû faire appel à une équipe de trappeurs. En cinq ans, le nombre de corbeaux a doublé à Tokyo. On en compte plus de 20.000. Les humains ne sont pas à l'abri de leurs assauts. Comme ce cycliste qui a percuté un lampadaire en esquivant une attaque en piqué.

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