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Translation and the Arrow of Time

Barbara Folkart

For David Layzer

1. Translation as a mapping of form

One view of translation, common to many if not all theoreticians, is that it is essentially a transfer of meaning¹. Meaning is construed here in its broadest possible sense, to include all possible relations of the text to its extra-linguistic referents, to the text-act participants, and to other texts, whether these relationships are immediate ones such as those establishing the denoted content of lexical items, or mediated ones, as is the case of the connotations invested in lexical or formal signifiers of every conceivable nature. Within this perspective, total congruence would require that all components of meaning be mapped onto the TT, and the success of the translation process is measured by the degree of congruence.

Meaning itself, however, is mediated by a process of formalization that is evident throughout the linguistic system and in any of the utterances to which the latter gives rise. It is form alone — form in the Hjelmslevian sense — which carries meaning, whether it be the systemic meaning determined paradigmatically, for each member of an equivalency class, in relation to the other members of the class (the Saussurian notion of *valeur*), or the textual meaning arising from the combinatorial interaction of individual items with their micro-, meso- and macro-contexts. And this form, whether lexical, semantic, syntac-

1. This is a source-text oriented view of translation. It is not shared by theoreticians such as Gideon Toury, who envisages translation theory at the level of performance, i.e. of actual translations, and thus takes a target-text-oriented stance, or Nicholas Rand, whose «symbol» approach stresses the complementarity between a source-text and a target-text interacting with and influencing one another. Only a source-text-oriented theory, conceiving of the source text as the initial state and the target text as the final state, can be formalized in terms of entropy.

tic, stylistic or rhetorical, is an ordering of formants, operative at every conceivable rank of both the expression and content planes and observable along both the syntagmatic and paradigmatic axes.

1.1 Syntagmatic form

Syntagmatically, it is the integration of formants into form that produces, at the level of expression, phonemes from relevant features and morphemes from phonemes; at the level of content, phrase-, sentence- and text-level content from the ranks just below (textual meaning as opposed to the systemic meaning produced paradigmatically); and at the levels of expression and content simultaneously, syntagmata from morphemes, texts from syntagmata and so on. This integration of formants into form is of course rule-governed: *He will have been singing, we went skating yesterday* and *I drank three glasses of water* are allowable sequences, whereas **He sing have will beening, *We have gone skating yesterday* and **I drank three glasses of dead leaves* violate to varying degrees the rules governing the integration of formants into form.

1.2 Paradigmatic form

The integration of formants into form occurs paradigmatically also: equivalency classes are sets of elements structured by an ordering principle that constitutes their form.

1.2.1 Semantic and lexical fields

Semantic and lexical fields, as is well known, are formalizations of the referential continuum, which they conceptualize and express as entities differentiated by the features relevant from the perspective retained. Such formalization may be rigorous, as is the case of terminologies, where the lexical and semantic grids are congruent and there exists (ideally) a one-to-one correspondance between bundles of semantic features and the terms actualizing them. In the general lexis, on the other hand, formalization is less rigorous, the grid of lexical actualizations is not completely congruent with the semantic grid underlying it and there is considerable overlapping among lexical items. Despite such overlappings, however, any given lexical field results from a process of formalization, as the area covered by a multivalent item is crisscrossed by a network of increasingly marked and increasingly «oligovalent» items differentiated by semantic discriminators. Whereas a multivalent item such as *good* could be used in any of the contexts illustrating its hyponyms:

milk and vegetables are beneficial to / good for the growing child
wholesome / good food
a wholesome / good movie for the entire family

a profitable / good business in a profitable / good location
propitious / good weather that promised a calm voyage

these hyponyms are too highly formalized to replace *good* in most of its contexts or to interchange with one another throughout the full range of their contexts / collocates:

milk and vegetables are *advantageous / *profitable / *propitious to the growing child
a *propitious / * wholesome / ?beneficial business in a *propitious / * wholesome / ?beneficial location

In Hjelmslevian terms, the relationship between the low-valency terms and their common denominator *good* is one of selection (unilateral implication): *beneficial* and *moral* imply *good*, but *good* does not necessarily imply *beneficial* or *moral* (cf. «that was a *good* / **beneficial* / **moral* joke»).

1.2.2 Stylistic and thematic fields

Whereas lexical fields are formalizations of the referential continuum (and thus constitute orderings of denotata), stylistic fields may be conceived of as paradigmatic orderings of lexical and syntactic items differentiated by the connotations — registral, pragmatic or intertextual — attaching to them. Within this perspective, stylistically marked items may be defined simply by their degree of formalization relative to all the other referentially synonymous items capable of filling the same slot, rather than as deviations from a forever elusive norm.

The stylistically marked item unflinchingly evokes its less formalized referential equivalent, thus setting up an equivalency class. The pretentious *time-sensitive mail* emblazoned on the envelopes in which certain companies send out coupons to be redeemed prior to a certain date automatically evokes the less marked *urgent mail*, from which it is differentiated by the registral marker «(pseudo-) hi-tech». Clearly, though, *urgent mail* cannot possibly evoke the neologism *time-sensitive*: only relatively marked items create a paradigm around themselves, and their stylistic impact is due precisely to the creation of such a paradigm.

The paradigm effect is what accounts for the impact of stylistically marked syntactic items also: «Son conseil convoque des dieux le père mais des hommes le roi» is operative as a deformation of a less marked syntactic order, from which it diverges by a supplementary level of formalization, the work done on the «normal» order to force it into the mold of Latin syntax («Conciliumque vocat divum Pater atque hominum rex»).

Intertextually marked items also function by setting up paradigms around themselves: *robot pensant*, in a text on artificial intelligence, designates the extra-textual referent, *roseau pensant*, which determines

its connoted meaning, and in so doing taps into a reservoir of Pascalian connotations accessible to the receptor having the required intertextual competence. Metatext and prototext are integrated into a paronomastic equivalency class by the expression-form /ro-pasa/.

At discourse level, thematic fields are the paradigms into which the textual chain can be recondensed, reversing Jakobson's «projection of the principle of equivalence from the axis of selection onto the axis of combination».

1.3 The transfer of meaning as a mapping of form

Ultimately, then, all components of meaning — from the purely denotative to the most elusive pragmatic components conveyed through rhetorical, registral or stylistic markers — emerge through the forms of the text, be they expression-forms or content-forms, and whether they structure syntagmatic or paradigmatic orderings. Furthermore, the greater the degree of formalization, the more information is conveyed: in the tree that branches out from the omnivalent *good*, an item such as *beneficial*, with its distinctly more limited range of collocates, conveys significantly more information than an item such as *good*. Hence, the normative criterion that as many components of the ST meaning as possible be projected onto the TT implies that the translator should work at the highest possible rank so as to transfer form, not formants: in the limit, then, the unit of translation is the entire text (see Folkart, 1986).

2. The regression of form to formants

In practice, however, the translation process tends to produce a regression from form to formants, from a higher to a lesser degree of ordering. Explication — which G. Toury has argued is a «translation universal» — whether it is imposed by the structures of the TL or due merely to less than optimum performance, is very often a regression from the highly formalized to the less formalized, as in the following example, which verges on over-translation:

As president of the Union, her main aim is to increase consultation with, and involvement by, the *grass roots* of the Union's membership.

Comme présidente du syndicat, elle se propose surtout de multiplier et de resserrer les contacts avec tous les membres du syndicat, *au niveau des Comités, des départements et des facultés*, afin de promouvoir la participation et d'intensifier la consultation.

In this particular case regression could have been avoided by working from the virtual ST segment *rank and file* (= grassroots + «union») and rendering by the union-specific *à la base*, which would have exhibited an even higher degree of adequation than does *grass-roots*.

2.1 The «translation effect» and interlanguage

The tendency for form to regress to its formants is of course most pronounced in less than adequate translations. Typical is the following system, where the «translation effect» observable in the TT is produced by regressions at the levels of syntax, lexical selection and rhetorical structures:

A stylish reworking of the uneven though often brilliant 1948 Preston Sturges film about a jealous conductor and his stunning child bride, with an outstanding comic performance by Dudley Moore. Strong script, cast and elegant New York locale should spell good news for this comedy of errors.

Though Dudley Moore bears very little resemblance to Rex Harrison, he is a fitting successor to the role of the jealous maestro in Howard Zieff's «Unfaithfully Yours», a film originally conceived, written and directed by the comic master Preston Sturges. As Claude Eastman, a renowned conductor who becomes unglued at the thought of his beautiful young wife [...] being unfaithful, Moore once again demonstrates the precision of his comic timing. [...]

Ce film est une refonte stylisée [sic] du film réalisé en 1948 par Preston Sturges qui relatait l'histoire d'un chef d'orchestre jaloux et de sa ravissante jeune épouse et qui bien que souvent brillant comportait de moins bons passages.

Par son rôle comique, Dudley Moore donne tout son éclat au film. Le scénario solide, la distribution et l'élégant cadre new-yorkais ne laissent présager que du bon pour cette comédie pleine de quiproquos.

Bien que Dudley Moore n'ait que très peu de points communs avec Rex Harrison, il est son digne successeur dans le rôle du maestro jaloux de «Faut Pas en Faire un Drame», d'Howard Zieff. Infidèlement vôtre a été conçu, écrit et mis en scène à l'origine par le grand comique Preston Sturges [...]

Claude Eastman est un chef d'orchestre qui devient fou à l'idée que sa jolie jeune femme le trompe. Une fois de plus, Moore prouve son grand talent de comique.

Syntactically, regression occurs as the simple sentences underlying the complex structure of the first and third sentences, with their multiple embeddings, move nearer to the surface in translation:

SOURCE TEXT		TARGET TEXT
Form (complex surface structures)	Formants (simple underlying structures)	(surface structures)
A stylish reworking of the uneven though often brilliant 1948 Preston Sturges film about a jealous conductor and his stunning child bride	the film is often brilliant	[le film] qui bien que souvent brillant
	the film is uneven	comportait de moins bons passages
	the film was made in 1948	[le] film réalisé en 1948 par Preston Sturges
	the film was made by Preston Sturges	[le film] qui relatait l'histoire d'un chef d'orchestre jaloux
	the film is about a conductor	

	the conductor is jealous	
	the film has been reworked with style	Ce film est une refonte stylisée
... he is a fitting successor to the role of the jealous maestro in Howard Zieff's «Unfaithfully Yours», a film originally conceived, written and directed by the comic master Preston Sturges.	he is a fitting successor to the role of the maestro this role is in «Unfaithfully Yours» this film was originally conceived ... by Preston Sturges	... il est son digne successeur dans le rôle du maestro jaloux de «Faut Pas en Faire un Drame» d'Howard Zieff. Infidèlement vôtre a été conçu, écrit et mis en scène à l'origine par le grand comique Preston Sturges.

Lexical regression is evident in translation products such as *jeune épouse*, which would derive more immediately from the relatively unmarked *young wife* than from the more highly formalized *child bride*. Mappings such as *becomes unglued* > *devient fou*, *should spell good news for* > *ne laissent présager que du bon*, *strong script* > *scénario solide*, *the precision of his comic timing* > *son grand talent de comique* are equally regressive, entailing as they do a distinct loss of the registral markers «trendy journalism» and «theater lingo». Rhetorical form, also, regresses to its formants, as the metatextual paradigm created by *comedy of errors* collapses into the unidimensional *comédie pleine de quiproquos*, which substitutes a descriptor devoid of intertextual resonances for a segment perceived in the ST as the pirating of a Shakespearian title.

Form may run even further downhill in translations characterized by a rank-bound approach:

les autres puisent dans les répertoires ornementaux pour régénérer leurs écritures architecturales > Others borrow from the ornamental repertoires to regenerate their *architectural writings* (vs borrow from different styles of ornamentation to renew their idiom)

Here the distortion produced by the word-bound rendering of *écritures architecturales* as *architectural writings* destroys both the pattern of meaning (i.e. the form of the denoted content) and the registral impact of the text. This loss of both paradigmatic and syntagmatic orderings entails a loss of meaning and a blunting of the text.

In the limiting case, the result is *interlanguage*, as the consistent choice of units of translation at ranks significantly lower than those at which the message of the text is generated produces distortions of both expression and content and results, not only in less than adequate congruence, but above all in a lesser degree of conceptual, lexical, syntactic and rhetorical ordering. Newmark's eloquent example:

sa faible viscosité	en solution,	son	bas poids moléculaire	suffisants
its feeble viscosity	in solution,	its	low molecular weight	sufficient

pour l'empêcher de franchir à l' état normal les parois
to prevent it crossing at the normal state the partitions

des capillaires, rénaux en particulier, expliquent qu'
of the capillaries, renal in particular, explain that

une de ses grandes fonctions biologiques soit représentée
one of its great biological functions is represented

par son rôle dans le maintien du volume sanguin
by its role in the maintenance of the blood volume

is the product of a centrifugal and fundamentally anti-syntactic process that segments the text right down to the rank of the word, dislocating combinatory units and negating syntactic form.

2.2 The regression of semiotic systems

But interlanguage is merely a limiting case: even competent translations exempt from both interlanguage and the translation effect may (and indeed regularly do) exhibit regressions of form to formants.

In literary translation, particularly, which manipulates semiotic systems of the utmost complexity, any number of localized losses can «flatten out» the TT at specific points, reducing to mere formants what in the ST was form. Comparing his own translation of *l'Immoraliste* with Dorothy Bussy's, Richard Howard (1970, pp. v-vi) cites the following example:

... l'eau, sagement et parcimonieusement répartie, satisfait à la soif des plantes, puis leur est aussitôt retirée. Au pied de chacun des palmiers, un étroit bassin est creusé qui tient l'eau pour abreuver l'arbre; un ingénieux système d'écluses que l'enfant, en les faisant jouer, m'expliqua, maîtrise l'eau, *l'amène là où la soif est trop grande*. (Paris, Mercure de France, 1963, p. 62)

With its superimposed isotopies, «irrigation» (*conduits, amènent, l'eau*) and «human» (*soif, abreuver, trop grande* [= excess]), Gide's sentence turns the thirsty palm trees of the oasis into a metaphor of human desire. Bussy's rendering:

... At the foot of each palm the ground is hollowed out into a small cup which holds water enough for the tree's needs; an ingenious system of sluices, which the boy worked for me to see, controls the water, *conducts it wherever the ground is thirstiest*. (New York, Alfred A. Knopf, 1948, p. 50)

explicates to provide a single-valued support for the state of thirst (which becomes merely a state of dryness), suppresses the human isotopy which constituted the tenor of the metaphor, reduces the original to a single-valued and more highly predictable reading, destroying the intersection that gave rise to the metaphor and leaving a vehicle without content. Form — the stereoscopic paradigmatic structure which fused vehicle and tenor into metaphor — has been reduced to one of its

formants, with an increase in predictability and a loss of meaning: *the ground is thirstiest* is merely a lexicalized metaphor that says nothing whatever about human desire. Howard's own rendering:

an ingenious system of sluices which the child demonstrated for me controls the water, *leads it where the thirst is too great* (Howard, 1970, pp. 40-41)

preserves the human (and ideological) resonances of the original.

Smoothings-out such as Bussy's inevitably «de-formalize» the text, robbing it of its complexity and producing losses of meaning. Auguste Morel's otherwise admirable rendering of *Ulysses* glosses over some of the syntactic and registral ruptures which, in Gerty MacDowell's monologue, play a crucial role in defining the conflicting levels of enunciation. Thus the *expensive* interpolated by the penny-conscious voice of the petite-bourgeoise Gerty into the carnet-mondain register in which she is daydreaming maps over, in the French version, into an *inestimable* in undesirably perfect harmony with its co-text:

Mrs Reggy Wylie T.C.D [...] and in the fashionable intelligence Mrs Gertrude Wylie was wearing a sumptuous confection of grey trimmed with *expensive* blue fox [...] (Modern Library edition, p. 345) > Mme Reggie Wylie T.C.D. [...] et dans les notes mondaines Mme Gertrude Wylie portait une somptueuse toilette grise garnie d'*inestimable* renard bleu (Gallimard, Folio, vol. 2, p. 17)

Elsewhere, the translator has suppressed the anacoluthon which in the original fused two distinct enunciations (co-formants) into a conflictual form that functioned as an index of Gerty's «succubation» by a certain type of literature for young females:

Her griddlecakes done to a goldenbrown hue and queen Ann's pudding of delightful creaminess had won golden opinions from all because she had a lucky hand also *for lighting a fire, dredge in the fine selfraising flour and always stir in the same direction* [...] (ed. cit., p. 346) > Ses petits sablés bien dorés et la consistance encore crèmeuse de ses puddings Reine-Anne lui avaient valu une vraie réputation car elle avait la main heureuse *pour faire prendre le feu, saupoudrer la farine mêlée de levain et tourner toujours dans le même sens* (ed. cit., vol. 2, p. 18)

The smoothed-out rendering that results at these specific points belies the complexity of the original, represents a lesser degree of formalization, and, with its single, homogeneous level of enunciation where two or more conflicted in the original, corresponds to a higher degree of probability (banality), thus entailing a loss of meaning.

Passages from unpublished translations into English of short stories by the Cameroonian writers Guillaume Oyono Mbia and René Philombe exhibit similar levellings. *Nés avec des étoiles sur le front* becomes *born under a lucky star*, as the peculiarly African flavor of the original expression is exchanged for a colorless referential synonym.

Interjections such as *Mille tombes!* and *Ekyé! Ekyé!* are flattened into conformity as *My God!* and *They asked apprehensively*, respectively. While the French STs were crafted with discontinuities at points where African signifiers, rhetorical traits or proverbs were embedded in them as «foreign» bodies, the English translators have smoothed out these asperities, neutralized the Africanisms into conformity with their new co-text, replaced them with ready-made functional homologues and, by so doing, produced TTs characterized by a distinctly lower degree of formalization and the loss of vital components of meaning.

Such renderings impoverish the text. The «pusillanimity» for which Richard Howard has faulted translations such as Dorothy Bussy's results from the failure to project, if not to perceive, the audacious new forms («the radical outrage») in which reside the uniqueness and the originality of a literary work. The «circumlocutions» and «compliances» rejected by Howard are *l'en deçà de la forme*, so to speak, the formants into which degenerate forms inadequately projected and perceived:

[...] a first translation errs on the side of pusillanimity, plays it safe. Each decade has its circumlocutions, its compliances; the translator seeks these out, [...] falls back on period makeshifts instead of confronting the often radical outrage of what the author, in his incomparable originality, ventures to say. That is just it: the translator, it is seen in the fullness of time, so rarely ventures in this fashion. Rather he falls back, as I say; and it is his peculiar privilege, even his obligation in his own day and age, to sally forth, to be inordinate instead of placating or merely plausible. [...] we translators [...] must overtake each other. (Howard, 1970, p. vi)

The regression from the innovative to the clichéd represents a loss of formalization that runs counter to the creative process of fashioning new forms from old formants, or rather, of converting old forms into the formants that will be vaulted over by new ones.

In certain cases, however, the regression of form to formants is inevitable, at least in specific segments of the text. Metatextual systems such as *trailing clouds of self-esteem*, *robot pensant*, *tout suffoquant et blêmoquant*, or indeed entire forms such as the limerick are more likely than not to be amputated of their intertextual referents in the process of translation, leaving the TT with unidimensional segments where the ST burgeoned into intertextual paradigms uniting prototext and metatext (see Folkart, 1986bis). And every time an intertextual reference is lost, just as every time an anomaly is smoothed out or a segment is naturalized to the point of assimilation, there is a loss of form — and of meaning — as the paradigm (form) collapses into a single member (one of its formants).

2.3 Loss of ordering and irreversibility

This «de-formalization» results in configurations of distinctly higher probability. In the tree branching out from the nearly omnivalent *good*, the «trunk» item, with its vastly greater collocational range, is a much more predictable and banal item than the oligovalent items representing the «twigs», which accept far fewer collocates. Low-valency items, obtained through a more extended process of formalization, show a higher degree of adequation to their context, and this better contextual fit corresponds to a less probable configuration: *the precision of his comic timing*, in the example given in §2.1, not only targets a highly specific referent but also exhibits a very high degree of registral adequation to the theater lingo of its co-text.

It follows that when, through translation, there is an observable regression of form to formants, the TT segments, be they lexical items, syntactic patterns or rhetorical units, correspond to a more highly probable and more nearly random distribution than do their ST images. Hence, the relative banality often exhibited by the TT as compared with the ST: *child bride* degenerates into the conceptually and registrally less marked *jeune épouse*, which could just as well have come from *young wife*; *the precision of his comic timing* is blunted, both conceptually and registrally, into *son grand talent de comique*; *nés avec des étoiles sur le front* runs downhill into *born under a lucky star*. In none of these cases is it likely that the ST segment could be retrieved from its TL image through «back translation»: too much of the work of formalization has been lost in the mapping, and the translation process is in this respect irreversible: *nés avec des étoiles sur le front* > *born under a lucky star* > *nés sous une bonne étoile*.

To the extent that it allows form to degenerate into formants, producing a loss of ordering that results in a TT only partially isomorphic to the ST, translation is an irreversible process. In this very real sense, one may say that the translation process has brought about an increase of textual entropy.

3. Translation and entropy

A useful parallel can in fact be made here with the increase of entropy observable in naturally-occurring physical processes (or, to put it more precisely, between the loss of ordering revealed by a *semiotic model* of the translation process and the loss of ordering revealed by the *statistical mechanics model* of thermodynamic processes).

3.1 Entropy of thermodynamic systems

Entropy, as defined in statistical mechanics, is a measure of the degree of disorder of a system. In naturally-occurring processes such as the

flow of heat from a warm to a cold body, entropy increases as the ordering of the system and the amount of available energy decrease: in a system comprising a warm body and a cold body which are allowed to come into contact with one another, the initial distribution of energy among the particles comprising the two bodies exhibits a sharp discontinuity and thus corresponds to a low-probability configuration (the probability of achieving such a configuration without putting additional work into the system is infinitely small). Were heat to flow «uphill» from the colder to the warmer body, the discontinuity — and the ordering of the system — would become even more pronounced and the distribution of heat among the particles would become even less probable. In actual fact, heat will flow from the warm to the cold body, thus smoothing out the distribution of thermal energy among the particles and producing a more nearly random distribution which, because it corresponds to a distinctly lower degree of ordering, is distinctly more probable. At the same time, the availability of this heat to do further work has diminished, since it can «go downhill» no further (unless of course an even colder body is introduced into the system). The system has gone from a configuration exhibiting a high degree of ordering to one in which the distribution of thermal energy is more nearly random: the entropy of the system is said to have increased and the amount of energy available for further work has decreased. The process is therefore irreversible.

3.2 Entropy of the translational system

To return to the translation process, which may be considered, in the first approximation, as a path leading from an initial state, the ST, to a final state, the TT², the regression of form to formants is in many ways analogous to the loss of ordering observable in natural processes, with both translation and the natural processes entailing a «banalisation» of the initial configuration. It is this regression of form to formants

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2. This is the simplest in what would ultimately be a series of increasingly sophisticated models.

A second-degree approximation would take into account the fact that, as opposed to physical processes, where the initial state ceases to exist and only the final state subsists at the end of the process, the translation process leaves the initial state intact. In this perspective, the final state would be the constellation comprised of the source text plus the target text. This view could be developed in conjunction with the «symbol» theory expounded by N. Rand and others, in which source text and target text complete one another mutually (constituting, in fact, the two halves, reunited, of the etymological symbol).

An even more refined, third-approximation model would take into account the polysystems in which are embedded the source- and target-texts respectively. The initial state would be the source text and the source polysystem; the final state would be the source text and its polysystem, together with the target text and its polysystem.

which explains why translation, like these processes, tends to be irreversible: once the text has «gone downhill», so to speak, from a higher to a lesser degree of ordering, or formalization, it is highly improbable that «back-translation» from a TT that is relatively less marked, or ordered, at the syntactic, lexical, registral or rhetorical levels will ever recover the original, more highly formalized configuration. Once *child-bride* has been rendered by the less marked *jeune épouse*, it is doubtful that «back-translation» will yield anything other than *young wife*. Naturalized to *born under a lucky star*, the Africanism *nés avec des étoiles sur le front* would regress, in back-translation, to *nés sous une bonne étoile*, losing the markers of its Africanness. *Grassroots*, rendered by *au niveau des comités, des départements et des facultés*, would degenerate into *at the committee, departmental and faculty levels*, and so forth.

Each of the translations just cited has brought about an increase of entropy and, just as in the physical systems referred to a certain amount of energy has been made unavailable, so in the translational system some of the work of formalization has been lost.

The apparent exception to the rule of irreversibility is processes involving interlanguage, as illustrated by Newmark's example given above, or, even more radically, by Catford's *it is raining cats and dogs* > **il est pleuvant chats et chiens*. It might be argued that in these examples the ST is trivially recoverable from the «TT», using the crudest possible rank-bound techniques (word-for-word or morpheme-for-morpheme «translation»). But reversibility is possible here only because the path leading from *it is raining cats and dogs* to *il est pleuvant chats et chiens* is a highly unlikely one, a «perverse» process that only a linguist intent on demonstrating the concept of morpheme-bound translation (which Maurice Pergnier has since shown to be an illusion anyway) would follow. «Back-back-translation» would in all certainty lead, not to **il est pleuvant chats et chiens* (which is, after all, a monstrosity spawned *in vitro*), but to *il pleut des cordes, il pleut à verse* or one of the other well-formed variants which abound in idiomatic French.

4. Translation as a reversible process

Taken even further, the analogy with the statistical mechanics model of thermodynamic processes provides a possible basis for a typology of translation.

4.1 Reversibility and «back-translation»

In thermodynamics, certain physical processes are shown to be reversible because they take place along «quasi-static paths», i.e. because the change in state of the system and the corresponding increase in

entropy are so small that the process may be reversed to lead backwards from the final to the initial state. The translation analogue of the reversible process is of course back-translation, in which a TT can be translated back into the SL to produce an utterance that is identical (back-translation in the strong sense) or virtually identical (back-translation in the weak sense) with its point of departure, the SL text.

Clearly, this sort of situation is far more likely to occur in the realm of physical phenomena, where the final state emerging from an initial state is single-valuedly determined by the conditions prevailing within the system³, than it is in translational systems, where «conditions within the system» are ill-defined and the number of final states (TTs) derivable from a given initial state (the ST) is in most cases virtually unlimited, even within a given SL.

Nonetheless, back-translation is a possibility in the case of texts in which formalization, both conceptual and registral, has been carried so far that 1) code and message are totally congruent, since all features of the signified are relevant in all contexts, making the sign a one-to-one substitute for the referent or class of referents which it designates, and 2) there exists a precisely defined register appropriate to the subject.

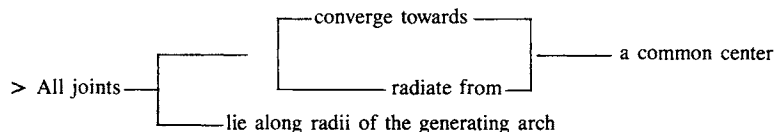
Both these conditions refer to what might be termed «sharpness of focus». Sharpness of conceptual focus means that the referent is conceptualized from one and only one viewpoint, so narrowly in fact that it is impossible for the TT, as long as it remains true to the primarily referential intent of the ST, to verbalize features other than those verbalized or implied by its model. Sharpness of conceptual focus leads to transparency: the textual and pragmatic features of the utterance may in a first approximation be considered to be of negligible importance, since the text functions essentially as a substitute for its referents.

Sharpness of registral focus means that both the terminology and the support phraseology used to integrate it into discourse are formalized to such a degree that they will admit of at most a very limited number of discrete variants, all of which, since they are perfect registral and referential synonyms, correspond to the same degree of formalization, so that no work is done or lost in going from one to the other. As opposed to the free variants that may be generated in literary or general translation, any variants arising in such texts and their transla-

3. Actually, this naïvely deterministic point of view is in conflict with recent trends in scientific thinking and turns out to be inadequate even for physical phenomena.

tions are *constrained* ones, in that they belong to a closed set comprising a very limited number of elements:

Les joints convergent tous vers le centre



Sharpness of both conceptual and registral focus would seem to be a pre-condition for machine translation.

4.1.1 The mathematical text: a limiting case

The limiting case is that of the mathematical text. The extent to which both conceptual and registral formalization have been carried in this type of text is eloquently attested by the extremely high degree of redundancy between verbal and symbolic sub-texts, which are very often in one-to-one correspondance with one another:

[...] le complémentaire d'un ensemble X par rapport à un ensemble Y , $X \in Y$, est l'ensemble des éléments de Y qui n'appartiennent pas à X . On le note:

$$C_Y X = \{x / x \in Y, x \notin X\}$$

Even more significant from our point of view is the fact that the symbolic sub-text generates verbal equivalents quasi-automatically: there is a relatively high probability that several mathematicians, given a symbolic segment to read aloud, would verbalize it (intersemiotic translation) in exactly the same way.

From the standpoint of intrasemiotic, interlingual translation, the high degree of stylization characteristic of the mathematical text means that extended segments of the verbal SL text will generate TL segments quasi-automatically:

The complement of a set X with respect to a set Y is the set of all elements of Y that are not elements of X .

The mathematical text constitutes a limiting case because both conceptual *and* registral formalization have been carried so far that even constrained variants are virtually non-existent. Back-translation thus becomes possible: if the ST quasi-automatically generates TT segments which themselves quasi-automatically generate verbal and symbolic equivalents, there is a relatively high probability that the image produced by a second mapping from the TT back into the SL will be very nearly congruent to the ST. Note that, unlike the spuriously reversible *it is raining cats and dogs* > **il est pleuvant chats et chiens* > *it is raining cats and dogs*, the true reversible process is *iteratively* reversible: successive back, back-back, back-back-back- translations will keep bouncing back and forth between the same SL and TL texts:

le complémentaire d'un ensemble X par rapport à un ensemble Y > the complement of a set X with respect to a set Y > le complémentaire d'un ensemble X par rapport à un ensemble Y > ...

To return to our thermodynamic analogy, the translation of mathematical texts involves no change of state, or rather a change of state so infinitesimal that the process is reversible: mathematical translation is thus a quasi-static path.

4.1.2 The technical text: reversibility in the weak sense

The reversibility of technical translation depends, in the first instance, on the extent to which it is possible to consider the technical text as a transparent entity devoid of pragmatic and textual properties competing with the purely referential function.

4.1.2.1 The transparency approximation

Technical discourse is distinctly less stylized than the language of mathematics, and the notion of reversibility cannot be applied as rigorously. Even in technical texts which may be conceived of in the first approximation as transparent entities, the notion of reversibility is conditioned by the fact that, generally speaking, the technical text is characterized by a somewhat lesser degree of conceptual and registral fine-tuning than the mathematical text. Admittedly, the referent of the technical text is an artefact, i.e. a manufactured, *pre-conceptualized* object; it may nonetheless be verbalized in terms of properties which, while technically relevant, differ from those represented at the surface of the ST. This may be true even within the SL, where competing designations may verbalize different, although equally relevant properties of the referent: *L-head engine*, *side-valve engine* and *valve-in-block engine* are all perfect referential synonyms, but function differently as descriptors. The search for compact designations in another language may well bring to the surface of the text properties of the referent left un verbalized in the SL term (see Folkart, 1983, pp. 162-163).

Technical translation is thus characterized by a certain latitude of expression which makes back-translation in the strong sense of verbatim recovery of the ST distinctly less likely to be achieved than in mathematical translation. Nonetheless, since, in the transparency approximation, the technical text is still a perfect referential and registral equivalent of the ST, the translation process entails neither a loss nor a gain of formalization.

Thus, in the case of the technical text that can be approximated as a transparent entity, one can speak of back-translation in a weak but still significant sense (as opposed to general or literary translation). Even with the latitude of expression that characterizes it, the technical translation system constitutes a closed system admitting only a limited

number of discrete variants, all of which are referentially and registrally equivalent. This means that even though a finite number of TTs may be generated from a given ST, these TTs form a closed class, as do the SL images that can be generated from them by back-translation. It is not entirely inconceivable, then, that, sooner or later, back-translation from one of the TTs generated by the ST might lead back verbatim to the ST or at least to significant portions of it. One can consider the aggregate produced by successive and cumulative back-translations as a closed system within which successive translations bounce back and forth off one another, never diverging beyond a fixed envelope, a sort of oscillating series that never strays away from the referential and registral givens of the original ST.

4.1.2.2 The non-transparent text

In actual fact, the transparency approximation does not provide an entirely adequate description of technical discourse. In technical texts whose pragmatic or textual properties cannot be neglected, the overall transparency of the text is «flawed» in places by opacities that are language- or culture-bound and cannot be mapped over in the same immediate way as the transparent, purely referential segments of the text.

Thus, for example, technical texts may contain metalinguistic segments whose validity is limited to the terminology of L1 (Folkart, 1984, pp. 234-235); the modification or outright deletion of these segments in the TT precludes back-translation in any sense of the term. In addition, the rhetorics of technical discourse must be taken into account. To carry over into the TT the rhetorical markers characterizing SL technical writing but unknown or unusual in the target polysystem would be tantamount to writing SL rhetoric with TL grammar and lexis, to paraphrase Catford. Here too, the translation process may entail suppressions or modifications that will make back-translation impossible.

4.1.3 Texts subject to strong registral and pragmatic constraints

Translation may be envisaged as a fully or partially reversible process in certain non-technical, non-scientific areas of discourse as well.

4.1.3.1 Pre-encoded texts

The case of stereotypic texts such as «Peinture fraîche», «Chien méchant» and the like is a trivial one. Such pre-encoded texts, as Pergnier has pointed out, function, not as normal linguistic utterances whose signifieds are generated by the rule-governed combinatorial interplay of individual linguistic signs, but rather globally, as monolithic *signals* conveying pre-encoded messages. The very *invariance* of these mes-

sages, their status as totally stereotyped formulations of totally stereotyped signifieds, their total conformity to linguistic content- and expression-stereotypes, guarantees the existence of equally stereotyped equivalents in any TL practised in a similar cultural setting.

No work is done in the process of translating, or rather of transcoding such signals, since, as Pergnier has pointed out, «ce qui est ici codé ..., ce n'est pas l'union d'un signifiant linguistique et d'un signifié linguistique, c'est la totalité signifiant/signifié, unie à un message dont elle est le signal.» (p. 343) Since no work is involved, either in decoding the message or in re-encoding it, there can be no increase in entropy. These monolithic stereotypes are in fact such perfectly well-defined correlates of such perfectly well-defined extra-linguistic situations that the mapping from ST to TT is in every sense of the word a quasi-static path. As a result, the process is fully reversible, and back-translation (or rather back-transcoding) in the strong sense is not only possible but highly probable.

4.1.3.2 Formulaic texts

Less trivial is the case of conventionalized, or «formulaic»⁴ texts governed by strong registral constraints and characterized by a relatively high degree of conceptual and registral formalization. A formulaic text such as the collective agreement negotiated between the University of Ottawa and its teaching personnel is characterized by its recursivity, by the existence of a well-defined terminological field, and by the presence of highly standardized collocations:

25.2.1 Promotion to the rank of assistant professor shall be granted when a member:

- a. holds a doctorate — or the equivalent thereof, recognized pursuant to the provisions of subsection 23.4.2;
- b. has evidenced teaching the quality of which, evaluated in accordance with the provisions of article 24, is deemed satisfactory.

[...]

25.2.2.2 Promotion to the rank of associate professor shall be granted when a member meets the following conditions.

- a. The member holds a doctorate — or the equivalent thereof, recognized pursuant to the provisions of subsection 23.4.2;
- b. The member has evidenced teaching the quality of which, evaluated in accordance with the provisions of article 24, is deemed good.
- c. The member has produced scientific, literary, artistic, or professional works — or a combination thereof — which are, in accordance with the criteria set forth in 23.3.3.2, deemed of good quality.

[...]

4. The term «formulaic», which emphasizes both the iterative and the authoritative nature of these texts, has been deliberately borrowed from the critical discourse pertaining to medieval literature.

25.2.3.2 Promotion to the rank of full professor shall be granted when a member meets the following conditions.

a. The member holds a doctorate — or the equivalent thereof, recognized pursuant to the provisions of subsection 23.4.2.

b. The member has evidenced teaching the quality of which, evaluated in accordance with the provisions of article 24, is deemed good.

c. The member has produced scientific, literary, artistic, or professional works — or a combination thereof — which:

i. are, in accordance with the criteria set forth in 23.3.3.2, deemed of good quality

ii. have contributed, since the member's appointment or promotion to the rank of associate professor, continuously and significantly to the expansion of knowledge in the member's area

iii. [...]

As opposed to the monolithic, stereotypic texts referred to in the previous section, formulaic texts exhibit linguistic, discursive and rhetorical structuring and as such are analysable in terms of their constituents.

But the difference between stereotypic texts, or signals, and formulaic texts is as much one of degree as of kind. As Pergnier has pointed out:

... tout message linguistique comporte plus ou moins une part de signal. Chaque locuteur utilise des messages ou des fragments de messages déjà utilisés avant lui et devenus de ce fait conventionnels. (Op. cit., p. 347)

The formulaic text, whole chunks of which recur at periodic intervals, occupies a position somewhere in between the pre-coded and the general text. Just as the computer-aided reconstruction of formulaic medieval texts from mutilated manuscripts is possible only because the formulaic nature of the text allows one to make certain probabilistic assumptions about recurrences, just as image-enhancement relies on the fractal-like properties of the image, so translation exploits the iterativity of the formulaic text and the relative rigidity with which its concepts are encoded in its terminology.

The very predictability of formulaic or quasi-formulaic texts favors back-translation, at least in the weak sense; the non-formulaic constituents of the text fall into much the same case as technical translation, while the *transcoding* of the stereotypic constituents is a fully reversible operation.

4.2 The non-reversible process: general and literary translation

In general or literary translation, finally, the number of TTs that can be generated from a given ST is virtually unlimited, and successive back-, back-back-, back-back-back- ... translations will fan out into a

diverging series⁵, since the conceptual and registral focus of the ST is not single-valuedly defined, and since forms at one level or another (expression, denoted content, connoted contents) may be lost or distorted in the process of translation. For the same reason, the general or literary translation is far less likely to be perfectly isomorphic to the ST: translation will involve losses (or gains) of formalization, and the final state will differ significantly from the initial state.

5. Translation as an «un-natural process»: creative input and the decrease in textual entropy

Yet another concept of use as a model for the translation process is that of the «un-natural process»: while the natural process tends toward a state of equilibrium, i.e. toward a simpler, higher-probability configuration, the un-natural process tends away from equilibrium towards a lower-probability configuration. Such processes would entail a decrease in entropy: an example would be the flow of heat «uphill» from a cold to a warm body. While it is extremely unlikely that such processes will occur if the system is left to itself, they are routinely made to occur through outside interventions that do work on the system: in a refrigerator, heat is made to flow from cool to warm objects because energy is supplied to compress the fluid circulating in the cooling system. In such systems, there is a local decrease in entropy (which is of course more than compensated by the increase in entropy in the overall system — and indeed, envisaged within this larger framework, such processes cease to appear un-natural).

In like manner, the translation process may produce local decreases in entropy, with the TT actually exhibiting a higher degree of ordering than the ST:

increase consultation with the *grass roots* of the Union's membership
> intensifier la consultation à la base [= *grassroots* + the additional marker «union»]

This is true whenever there is creative input by the translator, as is obviously the case when a poorly-written ST has been edited and emended in the process of translation:

5. As has been cogently illustrated by J.S. Holmes:

[...] put five translators onto rendering even a syntactically straightforward, metrically unbound, magically simple poem like Carl Sandberg's «Fog» into, say Dutch. The chances that any two of the five translations will be identical are very slight indeed. Then set twenty-five other translators into turning the five Dutch versions back into English, five translators to a version. Again, the result will almost certainly be as many renderings as there are translators.

(Quoted by R. Van den Brœck, in J.S. Holmes, J. Lambert, R. Van den Brœck, eds. *Literature and Translation*, Leuven 1978, p. 33).

Il faut se demander si on ne doit pas procéder à un réexamen de la place occupée par la traduction [...]

> It is perhaps time to reconsider the role of translation [...]

Ces tendances [de l'architecture post-moderne] trouvent leur point commun dans la réaction au style international: leurs attitudes oscillent entre le rejet pur et simple de cette référence, jadis obligatoire, la distance critique ou sa légitimation.

> What categorizes these tendencies is their stance in relation to international style, once the obligatory term of reference, with some of them rejecting it outright, others maintaining a critical distance with respect to it and still others striving to legitimize it.

5.1 Compensation

Less trivial than emendation is the case of compensation, where the increase of entropy within the translational system is equal to or less than zero not, as in back-translation, because the process is reversible, but because losses at specific points in the text are cancelled out by gains elsewhere. When the translator compensates, he is in fact producing decreases in entropy at certain points of the text, e.g. by introducing an item that is stylistically or rhetorically more marked and therefore more highly formalized than the «corresponding» segment of the ST, in order to make up for the increases of entropy that inevitably occur at other points of the text. Thus, in translating the following passage from *Ulysses*, much of whose humor derives from the discontinuities arising where fragments of French are embedded in an English co-text:

[...] Caviare. Do the grand. Hock in green glasses. Swell blowout. Lady this. Powdered bosom pearls. The *élite*. *Crème de la crème*. [...] White hatted chef like a rabbi. Combustible duck. Curly cabbage à la *duchesse de Parme*. [...] May I tempt you to a little more filleted lemon sole, Miss Dubedat? Yes, do bedad. And she did bedad. (Ed. cit., pp. 172-173)

Auguste Morel has replaced the ruptures smoothed over in a French co-text by others of his own devising (the *élite* > le *highlife*) or by plays absent in the original: *du vin du Rhin dans des verres verts* creates a paronomastic ordering of signifiers where none existed in *Hock in green glasses*:

Du caviar. Faire son Grand Duc. Du vin du Rhin dans des verres verts. Ripailles du gratin. Lady une telle. Gorge poudrée perles. Le Highlife. Crème de la crème. [...] Chef en bonnet blanc comme un rabbi [*sic*]. Canard combustible. Chou frisé à la *Duchesse de Parme* [italicized in text] [...] Me feriez-vous le plaisir de reprendre de ces filets de sole-limande, Mademoiselle de Saint-Prix? Je vous en prie. Et elle en prit srapristi. (Ed. cit., vol. 1, p. 253)

5.2 Adaptation

Another non-trivial case of zero or even negative entropy increase within the actual translational system is that of adaptation, where creative input by the translator leads to the reactualization, in ways assimilable by the target polysystem, of components of form that would otherwise irretrievably have been lost. In such cases, segments of the ST are replaced by TL segments designed to preserve, not the ST segment *qua* segment, not the formants, in other words, but the functionally relevant *form* into which they were integrated in the ST. This is what underlies, for example, the common practise of replacing one play on words by another.

5.3 The inter-text

Whereas adaptation preserves the functionally relevant traits of the ST by reinvesting them in such a way as to favor constructive assimilation by the target polysystem, the translator may, on the contrary, choose to violate TL norms of acceptability as a creative strategy aimed at preserving the ST in its otherness. E.D. Blodgett has referred to the renderings thus produced as «inter-texts», or as «textes d'arrivée that never arrive» (Blodgett, 1983, p. 33) — at least into ready-made slots of the target polysystem.

The inter-text reverses the processes of destructive assimilation, the smoothings-out referred to earlier as annihilating important components of meaning and producing a decrease in the ordering of the system. It operates, in fact, as a smoothing-out in reverse, actually creating asperities (ruptures of isoglossy, of rhetorical register, etc.) where none existed in the ST. In this respect, it actually *increases* the ordering of the system. Where assimilations such as *nés avec des étoiles sur le front* > *born under a lucky star* produced a loss of meaning by negating the Africanism of the ST, renderings such as *born with stars on their foreheads* or *Once upon a time a Fille du Roy named Anne crossed the Atlantic without once feeling seasick* or *Thin and pale, Seeta shone like the streak of the moon in the beginning of the bright half of the month [..., resembling] a lovely lotus obscured by miry moss* graft onto the text, as an additional component of meaning, a certain amount of local color. The inter-text, like Catford's transference, thus imposes on the TT certain features of the SL and/or its rhetorics: as Laugier has remarked, its ideal is to allow the reader to read the SL through the TL, as it were. In the true inter-text, this transference of purely linguistic structures or rhetorical conventions does not occur at the expense of discourse-level forms: unlike many so-called literal translations, which lose sight of the overarching forms and focus on what I have referred to elsewhere as *the grain of the text* — i.e. the microstructures of its linguistic substratum — the

inter-text preserves the discursive ordering of the original, and even enhances it by adding to this «macroscopic information» a certain amount of «microscopic information»⁶. By functioning as a superposition of two enunciative isotopies, that of the SL author and that of the translator, the true inter-text represents a higher degree of ordering, its linguistic and rhetorical discontinuities signalling ruptures of enunciation.

5.4 Trans-figuration

A process even more strongly counter-entropic than the production of inter-texts is that in which the TT actualizes more fully than did the ST the matrix of forms underlying the original and recoverable from it either intuitively or through the work of critical analysis. Such processes might be designated by the term *trans-figuration*, which, deriving both from Steiner's *transfiguration* and from Greimas' *figure*, or form, has both the esthetic resonances of Steiner's term (a «betrayal upward», a translation which «surpasses the original in stylistic quality or in emotional scope», p. 402), and the technical sense of Greimas (for our purposes, the underlying forms manifested only imperfectly by the ST but more fully perceived by the translator and more fully remanifested by the translation.)

The canonical example of trans-figuration is Paul Celan's rendering of Supervielle's *Jésus, tu sais chaque feuille*. As Steiner has put it:

Celan, in a way which is unique to his own genius, at once contracts and magnifies [...] Beyond Supervielle, the translation fulfils the intention of gravity, of a dragging dark (an intention weakened in the original by the banality of *infini*). [...] And the translator even surpasses Supervielle's finest stroke [...] After this it is almost impossible to go back to Supervielle; translation of this order being, in one sense, the cruellest of homages. (Steiner 1975, pp. 404-405)

It is of course the input of creativity which accounts for this negative increase in entropy.

5.5 Trans-creation

A final category to be considered in our hierarchy of counter-entropic processes is that of trans-creation, as exemplified by Ezra Pound's translations or by Robert Lowell's *Imitations*. While the *Imitations* and their prototexts share a discernable core of metatextual invariance, it seems clear that the prototexts are merely a jumping-off point. What

6. Concerning the conversion of macroscopic to microscopic information in the realm of physical phenomena — a process which could well be used as a metaphor for literal translation —, see Layzer 1975.

has been so splendidly recreated in English is one poet's very personal (and perhaps even tangential) reaction to the STs. The input of creativity is so considerable here as to make of these «TTs» the residu of an autonomous act of writing. The prime intent of such an enterprise is to re-create in the fullest sense, to *trans-create*. And clearly, trans-creation is a counter-entropic process of the highest order, imposing as it does radically new orderings on pre-existing ones (form becomes a formant of a higher-order form, which in turn becomes the formant of an even higher-order form, and so forth...).

6. Limitations of the entropy model

In the processes with which thermodynamics and statistical mechanics concern themselves, decreases in entropy can only be local ones that are more than counterbalanced by the increase in the entropy of an overall system containing the sub-system under consideration. In a refrigerator, for example, entropy decreases within the cooling cycle as heat is pumped from cooler to warmer objects, but if one enlarges the system to take into account the compressor that keeps the cycle running, it becomes apparent that the amount of energy degraded through the operation of the compressor more than equals the energy «upgraded» within the cooling cycle proper.

Thus, if the analogy between thermodynamic processes and the translation process is to be carried to the limit, one must address the question of whether the system constituted by the ST and the TT is not embedded in some larger system whose overall entropy increases even when creative input by the translator brings about a localized decrease of entropy. In other words, is there a systemic entropy which unfailingly increases even as textual entropy decreases?

6.1 Possible entropic systems

The intuitive analogue of the larger system in which such an increase could occur would at first sight appear to be the polysystems in which are embedded the ST and the TT. But close scrutiny of the translation process from this extended point of view reveals no decrease in overall ordering comparable to that which invariably occurs in physical processes. The polysystem is, of course, very definitely affected by the process of translation, which not only creates a new category, «translated texts», but may even exert pressure on the categories already existing: as Even-Zohar has pointed out, translation may act as either a conservative or an innovative factor, and in the latter case it allies itself with the forces militating for change within the polysystem. But this pressure of translation on the polysystem only serves to increase the ordering of the latter by adding new «branches» to the «tree»

(translation as an innovative factor) or at the very least to maintain the existing ordering (translation as a conservative factor militating against change).

Yet another system that offers itself as an analogon for the larger system of thermodynamics is the «symbol» constituted by ST and TT viewed as mutually complementary and mutually completing entities: N. Rand has argued very cogently that the TT is not only a reading of the ST but that its very existence influences one's reading of the latter⁷. In this perspective, literary translation is characterized by the sort of hermeneutic feedback G. Charron has called attention to in psychoanalysis, where «la causalité psychique va autant dans le sens présent-passé que dans le sens passé-présent» (Charron, 1984, p. 81): literary translation, like psychoanalysis, becomes a retroactive process which reverses the arrow of time, or at least renders it bi-directional.

Given the hermeneutic feedback that exists, at least for the receptor having access to both the ST and TT, two distinct cases may arise: either the TT results from an entropic process and restricts the range of interpretations of the ST or, on the contrary, it results from a creative process and extends the interpretive potential, adding virtualities and resonances of its own. While the former case is indeed one of entropisation, the latter is one in which translation brings about an increase in the ordering of the overall system and thus functions as a counter-entropic process.

One might conjecture, finally, that in trans-figuration, at least, the work involved in extracting from the ST the constellation of underlying forms (work which is «lost» in the sense that it does not appear directly at the surface of the TT) may exceed the gain in esthetic information achieved through fuller remanifestation of these forms. Within the larger system comprising the ST, the TT and the «map», or translator's reconstruction of the constellation of forms underlying both the source- and the target-manifestations, the «loss», or «dissipation» of this critical, hermeneutical work (which, like the terminological and conceptual research done by the technical translator, becomes «unavailable», in the sense that it is not immediately recoverable at the surface of the text), would then represent an available-energy sink, an increase of entropy that more than outweighs the increase in the degree of ordering observable in the TT. But it might be argued that the increased availability of the esthetic information gives a much broader spectrum of readers, including the TL reader,

7. Rand's choice of the term *symbol* is, of course, etymologically motivated. The symbol of the Greeks was an object which could be broken in two, one piece remaining with the sender, the other being entrusted to the message bearer: reassembled, the two pieces reconstituted the original whole and attested to the authenticity of the message returned.

much readier access to it and thus obviates the need for critical analysis. And it must be borne in mind that the very term trans-figuration denotes the incommensurability of the TT with its model, implying a gain in available esthetic information (and ultimately in truth-value) which transports the text into another order of orderings (a phenomenon which obviously cannot occur in technical translation). If, finally, one envisages the problem from the standpoint of the creative translator, it is not impossible that, in trans-figuration, the prototext is merely a stimulus, the imperfect manifestation of a constellation of underlying forms perceived intuitively, and «fulgurantly», the «betrayal upward» having taken place *sans projet critique explicite*, or «unwittingly», as Steiner might say (op. cit., p. 402) and with no need for even a scholarly «pre-reading» to show the translator-creator «the texture (the threads and weaving technique) of the work». (Klöpfer, 1981, p. 31)

6.2 The epistemological clash: creative translation as an entropic or a counter-entropic process?

The problematics of apparently counter-entropic processes such as trans-figuration and trans-creation are analogous to those of evolutionary processes in general, which, like the translation that enhances the original, bring about a progressive increase in ordering.

One such evolutionary process is the cumulative increase in the body of existing knowledge, an increase which is perhaps the ultimate meaning of human history. Is the augmentation of orderings such as the canon of cumulative knowledge (including esthetic forms) an entropic or a counter-entropic process? Is there, somewhere in the universe, some larger system which eventually «pays the price» for the increasing diversification of human knowledge? Or does this historical process differ from the thermodynamic processes in being somehow exempt from the law of entropy?

6.2.1 The increase in intellectual ordering as an entropic process

A popular author like Jeremy Rifkin has claimed, as did Henry Adams at the beginning of this century, that the accumulation and the diversification of human knowledge contribute to the increasing entropy of the world. Rifkin's somewhat paradoxical stance is that the increase in conceptual ordering is accompanied by an increase in the disorder of the world, human society being presumably the larger system which pays the price for the lavish expenditure of intellectual energy (no wonder the rednecks have it in for us intellectuals!):

[...] the development of human thought over the ages has proceeded in the same direction as every other activity in the world; that is, toward a more and more complex, highly dissipating state. [...] the accumulation and use of greater knowledge has led to greater disorder and fragmentation in the world. [...] each succeeding mental construct [has] exhibited

greater ordering, a higher energy flow-through, and, consequently, a greater dissipation of energy in the process. [...] the history of human mental development has been a history of removing the human mind farther and farther away from the reality of the world we live in. (Rifkin, 1981, pp. 166-167)

What Rifkin is saying, essentially, is that as the canon of accumulated knowledge becomes increasingly bulky and ramified, the effort to acquire it (and, presumably, to add to it) increases incommensurably (law of diminishing returns). What he fails to take into account, however, is the fact that the hard-won conceptualizations of any given generation are absorbed (almost osmotically) into the intuitive background of subsequent generations: Copernicus and Galileo spent their lives demonstrating what every twentieth-century schoolboy «knows», and the physics major of the 1980's invests no more time and effort in mastering quantum mechanics than his medieval counterpart did in imbuing himself with the lore of alchemy or of astrology.

And, as erroneous as it may be, Rifkin's remark about the law of diminishing returns, his notion of «a higher energy flow-through», applies to the *process of acquiring* this body of knowledge, *son appropriation par un sujet individuel*, as well as to the work expended by a given subject in adding to canonical knowledge, *not* to the increasing diversification of the system of knowledge itself.

6.2.2 The historical arrow of time

Contrary to Jeremy Rifkin's fundamentally anti-intellectual⁸ assertion, there seems to be no limit to the complexity achievable through cognitive and esthetic activity, nor does the law of diminishing returns apply to the processes of conceptualising and expressing the world around us. Indeed, even in the world around us, the very view that there must be some larger system which foots the bill for the increase in ordering brought about by evolutionary processes in general, be they geological, biological, cosmogonic (or, I would add, conceptual) ones, is vigorously refuted by the astrophysicist David Layzer (1975).

Layzer's position, in a nutshell, is that, far from running down, or «unraveling», the universe is unfolding in time, that it is «becoming constantly more complex and richer in information» (p. 56), that «the

8. The driving force in Rifkin's book would seem to be the nostalgia for a simpler, golden age, when life was far less «complex» and the body of existing knowledge could — in Rifkin's view at least — be assimilated with little effort. Thus, while Rifkin's contention that the man in the street ultimately has to foot the bill for the lavish expenditure of energy by the intellectuals of this world would seem to justify the hostility of the man in the street, it is in fact Rifkin's essential, if articulate hostility towards things intellectual which generates his view of the spendthrift intellectual.

evolution of the universe represents a growth of macroscopic information», and hence of ordering (pp. 66-67), that «it is at least possible that the astronomical universe, with all its richness and diversity, has evolved from a state wholly devoid of information and structure» (pp. 68-69). It is because subsystems of the universe, notably newly formed astronomical systems, lack certain distinctive properties of the universe as a whole, and notably because they initially lack microscopic information, that they run down, manifesting a constant increase in entropy and thus exhibiting the thermodynamic arrow of time. (p. 69)

Layzer's distinction between the information-generating processes which, at the macroscopic level, define the historical arrow of time and the entropy-generating processes which, in subsystems of the universe, define the thermodynamic arrow of time is of the utmost relevance to our discussion. History, whether that of mankind, of the living species in general, or of the universe as a whole, moves from the simple to the complex, from the undifferentiated to the increasingly differentiated, from states exhibiting little or no ordering to states manifesting an increasingly high degree of ordering, or information. As opposed to the thermodynamic arrow of time, which points in the sense of disintegration, the historical arrow of time points in the sense of increasing complexity.

Taken in conjunction with both the empirically observable tendency of much translation to regress to a lower degree of ordering and the empirically observable fact that some translation actually produces a higher degree of ordering, Layzer's constructs have an immediate metaphorical value for translation theory. Like the processes that define the thermodynamic arrow of time, run-of-the-mill translation, characterized by the conversion of macroscopic information (form) to microscopic information (formants), generates entropy. Like the processes that define the historical arrow of time, translation with creative input generates information by converting microscopic information (formants) into macroscopic information (form): creative translation is an «historical», i.e. a meaningful event, leading as it does from a state of lesser to a state of higher information.

Ultimately, then, there would seem to be no larger system in which one might expect to observe an overall increase of entropy counterbalancing the decrease in textual entropy produced by creative input. Our analogy with the thermodynamic processes breaks down at this point: with creative input, the arrow of translation reverses direction, pointing from the less to the more highly differentiated, i.e. in the opposite sense from the thermodynamic arrow of time. One is thus forced to admit that, Rifkin's and Adams' attempts to extrapolate the thermodynamic model to the canon of human knowledge notwithstanding, there is a profound difference in nature between the thermodynamic processes, with their inevitable entropisation, and the evolution-

nary processes, including artistic and intellectual creation — even though the latter repose on a definite physical substratum and emanate from specific physical and bio-chemical processes which are as subject as any others to the laws of thermodynamics.

7. Creative input, discontinuity and heuristics

Conceptual and artistic processes (theorization, writing, translation creatively done), when carried out authentically and creatively, are a potentially limitless re-ordering of the world predating them, an indefinitely prolongable formalization of the already formalized. But this «bottomless formalization» proceeds according to its own «laws», in its own fashion, unpredictably and heuristically.

7.1 Creative input and discontinuity

Authentically creative processes generate new information (esthetic and other) in unpredictable ways. «La littérature engendre la littérature» (Félix Lecoy), it is true, but by quantum leaps of originality and creativity: indeed, G. Stent has shown that the common denominator of scientific and artistic creativity is its «prematurity», its «uniqueness», its mutant quality, in a word, its maverick nature, its brusque and unforeseeable departures from the canon of existing works and wisdom, the fact that «its implications cannot be connected by a series of simple logical steps to canonical, or generally accepted, knowledge» (p. 95). No doubt the entropy model breaks down in the presence of true creativity precisely because «conditions within the system» can no longer be defined at all, and the cause and effect relationship ceases to function, as input by the translator-writer transcends predictability and probability. Creativity is, after all, the least deterministic of processes, the one that most flagrantly defies direct extrapolation from the pre-existing, the pre-ordered, the canonical, the sanctioned, the prescriptive *auctoritates*.

7.2 Creativity and heuristics

The fundamentally non-deterministic nature of processes such as transfiguration and trans-creation is linked to the fact that these are essentially *heuristic* processes, ones whose outcome, being something that is invented *au fur et à mesure*, is almost by definition unpredictable.

Most other forms of translation, however, are non-heuristic in nature. Translation is for the most part a *teleological* activity, not just, as Toury has pointed out, because it is to a very considerable extent shaped by the purpose it serves (extratextual teleology), but in the much stronger, «endotextual» sense that the final state is *donné d'avance*, pre-determined, the end-product being to a very considerable extent defined at the very outset by the translator's «map», which constitutes

a norm, or model for optimal translation. Translation, in the overwhelming majority of cases, is a mapping of the ST onto the target system (language, rhetorics and polysystem) *under invariance conditions X*; the product of translation is thus pre-determined as an image of the ST in the target space subject to certain constraints (naturally, the output can never be wholly determinate, except perhaps in the case of the mathematical text generating TL segments quasi-automatically). In a word, the product is built into the process, so to speak.

Such being the case, translation exhibits the characteristics of a *canonical process*: it is by and large a fairly *predictable* activity, at least in the sense that revisors may use as a yardstick in judging the quality of a translation-performance the «map» of the text they have generated ahead of time. The relatively high degree of determinism leaves little room for any real novelty, nor is novelty desirable, given the expectation that the TT shall be an accurate report of what the ST author said (and in fact, some people will fault trans-creations such as Lowell's or Pound's for not giving an «accurate» picture of the original).

As opposed to the teleological processes, with their built-in finality, the heuristic process is characterized by its inventivity: in such processes, as in the universe at large, «the present moment always contains an element of genuine novelty and the future is never wholly predictable» (Layzer, 1975, p. 69). Just as the universe unceasingly invents itself, so it is that heuristic processes in general invent their finality, innovating as they unfold.

It is perhaps the non-creative, entropic process which best illustrates the difference between the heuristic and the teleological modes of producing and translating texts. When the presumably translated slogan on the back of a package enclosing a felt-tip pen reads *Avec la pointe renforcée spéciale qui Ne s'écrasera pas!!*, where the presumably original slogan on the same package is *With the special reinforced top that Won't Mush Down!*, it's because the translator was working at one remove from reality. The copy-writer who's been given an actual product to describe will come up with a formulation based on her own, immediate experience of the object. In its own way, and at the purely linguistic level, at least, her *démarche* will be an essentially heuristic one. The translator who's been given a packaging slogan to render finds herself *at one remove from the product* and, unless she makes the effort to re-establish direct, experiential contact with this reality, will be tempted to align her text with the SL slogan, thus imposing on her text a finality that is external to her dealings with the object, a finality that is pre-determined and imposed from the outside. In other words, the translator whose only experience of the

object is the mediated one afforded by the ST is likely to adopt a word-bound approach, instead of the thing-bound approach typical of direct writing.

Working at one remove from the reality she is verbalizing, the translator is generally far less, and far more superficially, involved with this reality than was the writer. Whereas the writer is «on top of» the subject, the translator's knowledge of it is generally a limited and mediated one, acquired *ad hoc*. Her commitment to a text which in most cases did not grow out of her own experience is likely to be limited. In *Via col Vento*, the Italian translation of *Gone with the Wind*, so desultory is the commitment of the translators, so inexistant their involvement with the deep south, that, to take an example that would be trivial were it not so revealing, they can't even decide how to deal once and for all with titles of address: in a mere eight lines of dialogue, one reads *il signor Butler, Mister Butler, and Mrs. Wilkes*.

The reality from which the translator is removed may also be that of the text itself, conceived and experienced as an organic whole. The person who designed a flyer for Environment Canada with the legend «HELP KEEP THE LID ON TOXIC SUBSTANCES» beside a picture of a cover slamming onto a barrel stamped «TOXIC» was presumably responsible for the entire flyer, slogan and illustration in interaction. The French side of the flyer, oblivious to the dynamics of the illustration, reads «LES TOXIQUES, C'EST AUSSI VOTRE AFFAIRE». The author of the English text conceived the flyer as a «universe», with slogan and picture echoing one another. The translator was concerned only with the verbal subsystem. And, if we may once again use David Layzer's constructs metaphorically, subsystems are subject to decay and exhibit the thermodynamic arrow of time, while the universe does not. Successful translations of texts such as these treat the text as a universe, or at least as a macrosystem comprising a graphic as well as a verbal component; in such cases, either the verbal text is adapted to match the graphic text or the graphic text is modified, or even replaced.

Needless to say, the regression of *keep the lid on* to *c'est votre affaire*, like that of *won't mush down* to *ne s'écrasera pas*, has absolutely nothing to do with any hypothetical «preference» of French for «abstract» formulations. It has everything to do with the pragmatic situation of the translator/re-enunciator, who, as opposed to the writer/enunciator, generally has far less stake in the segment of reality to be described or in the verbal and graphic product to be produced. Brian Mossop, who stresses «the difference between the translator X and the ST author A», has pointed out that «the translator — even the specialist translator — will always be in a position of not being like A as regards access to conceptual and terminological knowledge» (Mossop, 1983, p. 256), among other things.

As long as translation is practised as a purely teleological activity whose finality, like its point of departure, is the ST, as long as translators, rather than re-defining the text and its referents with respect to the new frame of reference provided by the target readers and culture, «see themselves as subordinate to something that already exists and need only be mimicked» (Mossop, 1983, p. 265), it will always be beset by the sort of irreversible losses characteristic of the thermodynamic processes.

Practised ploddingly, by people who translate like machines (and the *perles* produced by machines dealing with texts other than those specialized enough to fall into the «reversible translation» category indicate that machine translation, unsuitably applied, may be the ultimate in «perverse» translation conducive to a regression of form to its formants), practised ploddingly, translation runs downhill towards a truly degenerate product. Practised inventively, translation preserves or even augments the ordering of the texts on which it operates. It is only as a heuristic activity, whether at the relatively lower level of re-centering the text with respect to one's own coordinates, or at the macrotextual level of inventing a meta-poem, that translation can manifest its creative potential.

Creative input, whether in the weak sense of emending a poorly written ST or in the strong sense of trans-figuration and trans-creation, constitutes a new and original act of writing, a re-enunciation by a new subject who, having appropriated in the fullest sense the contents of the ST, reactualizes them through the prism of his own subjectivity, i.e. from his own position in geographic, temporal and cultural space. Ultimately, then, as opposed to the plodding, entropizing *démarche* of the machine-like translator, the true act of translation is always a re-invention, a re-enunciation that transcends the purely mimetic act of transference.

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