

Patents Across the Pacific: Some Knotty Problems with Japanese Chemical Patents

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This presentation is loosely related to two ATA sessions on chemical patents I have presented in recent years. The first discussed an efficient method of handling the long, complex sentences commonly found in these patents ("Taming the Dragon: Handling Complex Sentences in Japanese Patents," *The ATA Chronicle*, September 2000); the second presented some basic information about chemistry which translators considering entering this field might find useful (the hand-out for this session is available at <http://homepage.mac.com/zenner41/>) (click on the download button next to "Chem for translators.pdf").

In this presentation, I want to consider a few examples of problems that often come up with patents in chemical and related fields that fall outside the areas of those discussions. These have to do with such things as making adjustments in what would at first sight be the most obvious or "direct" translation (直訳) of certain terms in order to obtain a more natural-reading English translation, translating in ways which are dictated by the functions of patents as legal documents, and dealing with the aforementioned long-sentence problem.

I assume, as a general "theory of translation," that the general role of the translator is to facilitate communication between writers of one language and readers of another one in such a way that this communication will proceed, as much as possible, as though the writer and reader were sharing one language. If this is so, I would say that any translator will discover, after even a little experience, that "literal" or "direct" translations will not accomplish this purpose in many cases. The translator must often exercise her or his creativity in order to play the translator's role effectively, and thus every translation, even in supposedly "dry" technical fields, is creative.

A. “Creative adjustments”

Example 1

【解決手段】 ポリウレタンフォーム弾性体から構成され、リムに装着されるリング状の中子型ランフラットタイヤ支持体であって、ポリウレタンフォーム弾性体は、平均気泡径が20～200 μmの気泡内に非反応性気体が充填された独立気泡で形成された発泡体である。該ランフラットタイヤ支持体は、イソシアネート基末端プレポリマーにシリコン系界面活性剤を添加し、非反応性気体と攪拌混合して気泡分散液とする気泡分散液製造工程、気泡分散液に活性水素基含有化合物を混合して反応性組成物とする混合工程、及び反応性組成物を金型内に注入して反応硬化させてポリウレタンフォーム弾性体とする成形工程を有する。

Means of Solving Problem: A run-flat tire support of the ring-shaped core type consisting of an elastic polyurethane foam; the elastic polyurethane foam is a foam formed from independent bubbles which have a mean diameter in the range of 20–200 μm and are filled with a non-reactive gas. This run-flat tire support [is produced by a method which includes] a process of producing a liquid bubble dispersion in which a silicon surfactant is added to a prepolymer with an isocyanate group end and stirred with a non-reactive gas, dispersing said reactive gas in the prepolymer with an isocyanate group end as fine bubbles, to make a liquid bubble dispersion; a mixing process in which a compound containing active hydrogen groups is mixed with the liquid bubble dispersion to make a reactive composition; and a molding process in which the reactive composition is injected into a mold and reaction-cured to make an elastic polyurethane foam.

This passage is from an abstract of a patent. One point of possible contention about this translation is that the first “sentence” is, of course, a sentence fragment. I would consider this allowable, despite what our childhood English teachers insisted, because it is simply a phrase which follows the colon after “Means of Solving Problem” (and because my English teachers aren’t looking). Secondly, I added the words in the brackets because a “direct translation”

This run-flat tire support has a process of ... a mixing process ... and a molding process ... obviously wouldn’t make sense in English. But the main point I want to make with this example is that I translated the expression 攪拌混合 by “stirred,” rather than “stirred and mixed.” As it happens, this term occurs very frequently in chemical patents, and I would not want to guarantee that it should *never* be translated by “stirred and mixed,” but it seems to me that adding “mixed” in this case would not add anything important. It might be argued, however, that “stirred and mixed” would be preferable because of the general principle that patent terms should have as broad a meaning as possible, as will be pointed out in the next section on “patenteses.”

Example 2

本発明は、高い熱伝導率を有し、絶縁特性に優れた高熱伝導性樹脂組成物に関する。

This invention concerns a very thermally conductive resin composition that has a high thermal conductivity and an excellent insulating ability.

It could be argued that a better translation of this sentence would be

This invention concerns a resin composition that has a high thermal conductivity and an excellent insulating ability.

However, I considered the modifier 高熱伝導性 important enough to include it before “resin composition,” and I did not think I should leave out the 高い熱伝導性率. Having made those decisions, I did not want write the awkward “highly thermally conductive resin composition that has a high thermal conductivity,” so I replaced “highly” by “very.”

Example 3

また、屈折率を制御できる透明性良好な光学接着剤が市販されているが、光ファイバや石英系導波路などの屈折率一致できる硬化収縮率5～10%、線膨張率5～10×10⁻⁵/℃と汎用エポキシ並で大きく、各種光学部品の光路部をミクロンの精度で接着結合するのは難しく、小さい光部品の組立の歩留りが極めて悪かった。

Optical adhesives with good transmission properties, which can keep the refractive index low, have been marketed; their curing shrinkage rates are 5–10%, a range that agrees with the shrinkage rates of optical fibers, quartz conduction waveguides, etc., but their linear expansion coefficients are large, 5–10 x 10⁻⁵/°C (in the range of those of ordinary epoxy adhesives), so that it is difficult to bond the optical path parts of various kinds of optical paths with precisions on the order of microns, and the yields of assemblies of small optical parts have been very bad.

One of the frequently encountered problems of Japanese-English translators is dealing with the fact that, in various situations, one language tends to use conjunctions more commonly than the other. Here, I thought the real meaning of the source text would be best conveyed by adding “so that” even though it is strictly speaking not in the source.

Example 4

大型液晶ディスプレイ用直下型バックライト方式用の光拡散板については、透明微粒子を分散させたアクリル樹脂やポリカーボネート樹脂が用いられているが、液晶ディスプレイの大型化が進むにつれて、寸法安定性や耐熱性に優れ、反りの少ないポリカーボネート樹脂製の光拡散板が用いられるようになってきている。

For direct backlight light diffusion plates for large liquid crystal displays, acrylic resins and polycarbonate resins with transparent fine particles dispersed in them are used; as the sizes of liquid crystal displays have increased, polycarbonate resin light diffusion plates have come to be used, since they have excellent dimensional stabilities and heat resistances, as well as low warpage.

As in the previous example, I added “since they have” to make the logical connection of the sentence clearer.

Example 5

60～97 vol%の液晶ポリマー、および
3～30 vol%の、融点が500℃以下の低融点合金または該低融点合金以外の導電性且つ熱伝導性であるフィラーのうち少なくとも1つ、または融点が500℃以下の低融点合金および該低融点合金以外の絶縁性且つ熱伝導性であるフィラーを含む熱伝導性液晶ポリマー組成物であって、この樹脂組成物を成型した後の成型品の体積抵抗が $10^{12} \Omega \cdot \text{cm}$ 以上であり、且つ、熱伝導率が $0.7 \text{ W/m} \cdot \text{K}$ 以上である熱伝導性液晶ポリマー組成物。

A thermally conductive liquid crystal polymer composition which contains 60–97 vol% liquid crystal polymer and 3–30 vol% of at least one filler selected from low-melting-point alloys with melting points of 500°C or lower and electrically and thermally conductive fillers other than said low-melting-point alloys, or from low-melting-point alloys with melting points of 500°C or lower and insulating and thermally conductive fillers other than said low-melting-point alloys; the volume resistances of the molded articles after this resin composition is molded are $10^{12} \Omega\text{-cm}$ or higher and their thermal conductivities are 0.7 W/m-K or higher.

This is a claim of a patent application. I added “selected from” in order to make the meaning clearer.

I interpreted the first **または** in this passage to mean the same as the **および**, and translated both by “and.”

By the way, a similar passage later on, in the Specifications of the application, appears very puzzling at first sight, or would if we had not already encountered the first one:

本発明の樹脂組成物は、マトリックス樹脂としての液晶ポリマーと、融点500℃以下の低融点合金または熱伝導性フィラー、または、融点が500℃以下の低融点合金および該低融点合金以外の絶縁性且つ熱伝導性であるフィラーを、マトリックス樹脂が熔融状態となり、低融点合金または熱伝導性フィラーが固相部と液相部とが混在した半熔融状態となる温度で加熱して混練することにより作製することができる。

The resin composition of this invention can be produced by heating liquid crystal polymers, as the matrix resin, and fillers selected from low-melting-point alloys with melting points of 500°C or lower and [electrically and] thermally conductive fillers [other than said low-melting-point alloys], or from low-melting-point alloys with melting points of 500°C or lower and insulating and thermally conductive fillers other than said low-melting-point alloys, at temperatures at which the matrix resins become molten and the low-melting-point alloys or the thermally conductive fillers assume a semi-molten state in which solid-phase and liquid-phase parts are mixed together, and then kneading.

Here the sentence seems impossible to parse unless we assume that the words 該低融点合金以外の導電性且つ which were in the lines 2-3 of the claim were omitted by accident from this passage. Therefore, I included them in brackets.

Example 6

主鎖が少なくとも1種類以上の芳香環を含む繰り返し単位によって構成されていることを特徴とする請求項1に記載の有機半導体材料。

An organic semiconductor material in accordance with Claim 1, characterized in that the main chain is formed by repeat units that contain at least 1 kind of aromatic ring.

Clearly, “at least 1 kind or more” would be rather strange English. (The Japanese is also rather strange, in my opinion, but not at all an unusual “strangeness” for Japanese patents.)

Example 7

動力源としてエンジン並びに燃料電池により駆動されるモータとを夫々備え、且つこれらの動作を制御すべく設けたコントローラにより通常はエンジンのみが出力し、高負荷時にはエンジンに加えてモータが出力するように構成したことを特徴とする燃料電池-熱エンジンハイブリッド車。

A fuel cell-heat engine hybrid vehicle, characterized in that it is provided with both an engine and a motor driven by a fuel cell as its motive power sources, and it is constructed in such a way that only the engine ordinarily outputs [power], due to a controller which is installed in order to control their operations, but at times of high load, the motor outputs [power] in addition to the engine.

“Outputs [power]” is a possible way of dealing with the verb 出力する, which ordinarily means “to output.” Obviously the patent writer was thinking of the two kanji as separate, not a compound. Another possibility, and perhaps a preferable one, would be:

the output is derived only from the engine ... at times of high load, the output is derived from the motor in addition to the engine.

Example 8

次にアクセルペダル10に連系させたコントローラ11は、エンジン1並びに燃料電池6への供給燃料の調整により、エンジン1及びモータ2の運転を制御するもので、コントローラ11はエンジン1並びに燃料電池6への燃料を夫々調整するように設けたスロットルバルブ12及びソレノイドバルブ13と電氣的に連系し、且つコントローラ11に入力するアクセルペダル10の開度がゼロから一定値(例えば半開度)に達するまではこの開度に比例してスロットルバルブ12のみを制御し、一定値以上全開までの間ではスロットルバルブ12に加えてソレノイドバルブ13を制御するように構成してある。

Next, the controller 11, which is connected to the accelerator pedal 10, controls the operations of the engine 1 and the motor 2 by adjusting the feeding of the fuel to the engine 1 and the fuel cell 6. The controller 11 is constructed in such a way that it is electrically connected to the throttle valve 12 and the solenoid valve 13, in order to adjust the fuel supplies to the engine 1 and the fuel cell 6, and the degree of opening of the accelerator pedal 10, which is inputted to the controller 11, controls only the throttle valve 12, in proportion to degrees of opening from zero up to a specific value (for example, half-open), but when the degree of opening is higher than this specific value, up to fully open, it controls the solenoid valve 13 in addition to the throttle valve 12.

In this case, I was probably too “direct” with the expression “degree of opening.” Perhaps a better version would be something like

and the extent to which the accelerator pedal 10 is opened, which is inputted to the controller 11, controls only the throttle valve 12, in proportion to openings from zero up to a specific value (for example, half-open), but when the extent of opening is greater than this specific value, up to fully open, it controls the solenoid valve 13 in addition to the throttle valve 12.

B. "Patentese"

The following examples illustrate the point that a patent is not just a description of a process, device, etc., but a legal document which is designed to obtain certain advantages for a company.

Example 9

...##は映像信号の1フィールド分(1画面分)を左右に2分割する**
画像分割/縮小回路** (DEV) ...

This example was provided by Matthew Schlecht in a posting to the Honyaku e-mail list (January 28, 2005). The draft translation he proposed was:

...## is an ****image splitting/compression circuit**** (DEV) that divides the single field (single-frame) video signal in half into left- and right-hand frames...

James Sparks replied:

Keep in mind that patents don't always use standard terminology, so the lack of glosses or googits doesn't necessarily mean anything. Benrishi commonly string words together in new ways, as you know, often on purpose to broaden the scope. ...

I think DEV is used fairly often in Japanese as an abbreviation for device, and that might make sense here, if they are considering this circuit as a device. Japanese writers seem to like to use all caps for such abbreviations, which is frustrating because it makes them look like acronyms.

This legal strategy of broadening the scope of a patent to enable the company holding the patent right to have rights to as many products as possible explains a great many strange terms found in patents. Sparks' comment about "DEV" should also be kept in mind.

Example 10

Another example from the Honyaku list (this one on December 7-8, 2004). Sparks was the question-asker this time, noting that he had met with this puzzler:

...は、感圧接着剤から構成するのが好ましく、いわゆる粘着剤であってもよいし、粘接着剤であってもよい

Here, there seems to be a distinction between 粘着剤 and 粘接着剤, both of which are apparently different types of 感圧接着剤, which seems to be an equivalent for the English term "pressure-sensitive adhesive." The trouble is that

粘着剂 is usually the Japanese term used for “pressure-sensitive adhesive,” and 粘接着剂 would normally be understood as “pressure-sensitive (or ‘quick-tack’) and ordinary adhesives,” as Kirill Sereda noted. But Sparks noted that it would be ridiculous to say that a pressure-sensitive adhesive could be either a quick-tack adhesive or a quick-tack and ordinary adhesive.”

Eventually Fred Metreaud reported that his dictionary of adhesive terms gave “hardenable pressure sensitive adhesive” for 粘接着剂, and deduced that 粘着剂, in this particular context, must mean “non-hardenable pressure sensitive adhesives.” Brian Chandler, in one of his inimitable posts that the reader should look up on the Honyaku archive (at <http://cgi.monjunct.ne.jp/PT/honyaku/bin/hksrch.dll?Q=nensetchakuzai&D=168696&I=13>), commented:

But (as I pointed out the other day) a patent is not a normal expository document. You are not trying to *explain* an underlying specific meaning; you are trying to acquire a legal monopoly on the exercise of an "invention", but this monopoly is granted on a set of claims, which are ultimately words. It is therefore the words that are primary, and this means that logical coherence is required on a word level rather than and idea level.

Therefore, the oddness of a term for “pressure-sensitive adhesive” being used to refer to one particular type of “pressure-sensitive adhesive” (using another term) can be explained as a case of coining a general term to help ensure that the patent application would cover as broad a range as possible.