

**More than Meets the Eye:  
Solving Puzzles of  
Grammar and Context in  
Japanese-to-English Translation**

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**Categories**

1. Terminology
    - Word structure
    - Abbreviated forms
  2. Grammar
    - Verb forms
    - Pivotal words
  3. Sentence structure
    - Branching
    - Cause and effect
  4. Writing style
    - Linkage vs. separation
    - Figurative vs. literal
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Example 1a

消費電力は 256 色 STN、TFD、TFT の順に大きくなり、更に白色 LED を利用したバックライトあるいはフロントライトの消費電力が**加算される**。

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Example 1a

"Power consumption has progressively increased with 256 color STN, TFD and then TFT LCD' s. Further, power-consuming backlights and frontlights, using white LED' s, **have been added**.

??? I may be reading this wrong... but the older type (still available today for designs) LCD' s use CCFL backlights. The latest LCD' s use white LED' s. White LED' s are actually lower power."

Power consumption has progressively increased with the introduction of 256 color STN, TFD and then TFT LCD' s. Further, the power consumed by backlights and frontlights, which employ white LED' s, **must also be included (when calculating power consumption)**.

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#### Example 1b

用途は電力送電、電車、電気自動車などのような大きな電圧をオン・オフするもので、必ずしも高周波をねらったものではない。

この場合、オフの**耐圧**は高く、オンの抵抗が低いことが電力損失を減らすために重要である。

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#### Example 1b

"In these cases, it is important to have good **high-voltage insulation** when in the off state. When in the on state, in order to have low electrical losses, it is important to have low resistance."

In these cases, it is important to have a high **withstand-voltage** in the off state. It is also important to have low resistance in the on state in order to reduce power loss(es).

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#### Example 1c

この単純明快な指導原理が産業を**牽引する**一方で、スケーリング則がどこで破たんするか、**また微細化そのものの限界はどこにあるか**なども当初から議論されていた。

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#### Example 1c

"This simple, clear guiding principle, on the one hand, has **given life** to the semiconductor industry. However, where does this scaling rule breakdown? 'Where is the limit to further miniaturization?' **has been a debate** from the beginning."

Although this clear and simple guiding principle has **served as the driving force** in the semiconductor industry, there **have been debates** from the very beginning about **issues such as**, 'At what point will the scaling rule break down?' **and** 'When will we reach the **intrinsic** limit to miniaturization?'

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#### Example 1d

政党の数が同じでも、ほとんどの政党が政権形成をめざして**求心的競争**を展開している場合と、政権からの距離を強調して**遠心的競争**を展開している場合では、政党政治システムの性格は大きくちがってくる。

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#### Example 1d

"I have seen the terms **求心的競争** and **遠心的競争**. Even after reading the English definitions I still don't understand what they mean."

centripetal competition; competition that brings parties closer together; competition that leads parties toward cooperation;

**constructive competition**

centrifugal competition; competition that pushes parties further apart; competition that leads parties away from cooperation;

**destructive competition**

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#### Example 2a

この世代のゲート絶縁膜は 2 nm 程度と非常に薄くなるため、ゲート絶縁膜を貫通する直接トンネル電流によるゲート漏れ電流の問題が無視できなくなってくる。

この問題を回避するためには**従来**用いられていたシリコン酸化膜 (SiO<sub>2</sub>) よりも誘電率 (ε) の大きな絶縁膜を用いることが検討されている。

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#### Example 2a

"**Up to now**, in an effort to avoid this problem, insulators with dielectric constants (ε) greater than that for silicon dioxide (SiO<sub>2</sub>) have been investigated."

In an effort to avoid this problem, researchers are investigating the use of insulators with dielectric constants (ε) that are larger than that of the silicon (di)oxide (SiO<sub>2</sub>) layer that has **traditionally** been used [that is **currently** used].

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#### Example 2b

コストの低減はあらゆるデバイスに課せられるテーマであり、携帯電話の商品コンセプトにも影響を与える。

TFT を STN よりも低価格にすることは非常に困難である。

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#### Example 2b

"Reducing prices **further** for TFT and STN displays is very difficult."

It will be extremely difficult to reduce the price of a TFT display **below that of** an STN display.

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#### Example 2c

ここでの解析では、信号振幅はゼロ、出力と次段入力の電圧は完全に一致、素子特性のばらつきや変動はない、としているので、実際の回路ではこれ以上の電圧が必要である。

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#### Example 2c

"For this analysis the signal amplitude was zero, the voltages of the output and next stage input were exactly equal, and the component properties did not fluctuate. Because we make these assumptions, a practical circuit requires **the voltage mentioned above.**"

In this analysis we assumed that the signal amplitude was zero, that the output voltage and the input voltage to the next stage were exactly equal, and that there was no variability or fluctuation (over time) in the device characteristics. Consequently, an actual circuit would require **a higher voltage.**

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#### Example 2d

スケーリング則によれば、半導体内部での電界強度を一定に保つ必要から、電源電圧も素子サイズに比例して低下させる。

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#### Example 2d

"If we consider the scaling principle, since it is necessary to keep a fixed electric field strength internal to a semiconductor, the power source voltage, **relative to the element size**, is also reduced."

If we consider the scaling principle, since it is necessary to maintain a fixed electric field strength internal to a semiconductor, the power source voltage is also reduced, **in proportion to the size of the device**.

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#### Example 3a

ここでの解析では、信号振幅はゼロ、出力と次段入力の電圧は完全に一致、素子特性のばらつきや変動はない、としているので、実際の回路ではこれ以上の電圧が必要である。

その値は  $10 kT$  で、室温では  $250 \text{ mV}$  程度であろう。

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#### Example 3a

"That voltage, **at**  $10 kT$  and room temperature, is on the order of  $250 \text{ mV}$ ."

That voltage **is**  $10 kT$ , **which** at room temperature becomes approximately  $250 \text{ mV}$ .

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Example 3b

平均寿命の延びに伴う高齢有権者の増大が、有権者構成を変える可能性がある。

また、彼らが**新しい価値観で武装した**次の世代と連帯できない可能性もある。

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Example 3b

"Plus, there is the possibility that **their (older voters)' new values** make it impossible for them to work with the next **armed generation.**"

Plus, there is the possibility that they (older voters) cannot forge an alliance with members of the next generation, who **hold new values.**

..., who **hold values that differ from those of their elders.**

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Example 3c

ゲート絶縁膜の薄膜化は駆動電流を大きくする**ため**やゲート長を短くする**上で**重要である。

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Example 3c

"**When** the gate length is shortened, reduction of the thickness of the gate insulator is important **in order to** increase the drive current."

Reducing the thickness of the gate insulator is important **in order to** increase the drive current and **also from the standpoint of** shortening the gate length.

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### Example 3d

一方、溶液の酸-

塩基平衡によって色素が構造変化を伴い、可逆的に色変化を示す現象はハロクロミズムとよばれ、古くから pH 指示薬などとして多用されてきた。

発色系に組み込まれたアミンやヒドロキシル基などの酸や塩基によるプロトン脱着や、カルボン酸やスルホン酸基の塩基による解離などによって発色系の電子状態が変化し色変化を伴うことになる。

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### Example 3d

"In the colorant, the molecule loses protons **by means of amines, acids of hydroxyl groups, and bases**, or dissociates **by means of carboxyl acid or base of sulfonic acids**. These changes prompt changes of the electronic states of the colorant molecule system to **accompany** the color change."

The electron state of the colorant (molecule) changes as a consequence of actions such as i) the removal--**by an acid or by a base**--of a proton **from a site such as an amine or a hydroxyl group** that is incorporated into the colorant or ii) the dissociation--**by a base**--of a **carboxylic acid or a sulfonyl group**. This change in the electron state **is accompanied by** a color change.

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### Example 3e

FET1 は高周波特性に影響するので短ゲート化が行われドレイン耐圧は低い。

そこで、FET1 と FET2 の接点には高い電圧が**かからないように** FET2 の特性を設定する。

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### Example 3e

"FET2' s characteristics are established **by** the point of contact between FET1 and FET2, **not by applying** high voltage."

Thus, we determine the characteristics of FET2 **in such a way that** the point of contact between FET1 and FET2 **will not be subjected to** a high voltage.

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Example 4a

装置面、プロセス面の工夫により解決していくべき問題である。

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Example 4a

"This is a problem that must be solved using **surface** process equipment and **techniques**."

This is a problem that must be solved through **innovations [creative solutions]** in both the equipment **realm** and the process **realm**.

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Example 4b

スケーリング則によれば、半導体内部での電界強度を一定に保つ必要から、電源電圧も素子サイズに比例して低下させる。

しかし、電源電圧が 10 kT を切れば増幅器ができなくなり、パワーアンプもデジタル回路も作成できない。

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Example 4b

"However, if the power source voltage **is limited to** 10 kT, amplification is not possible. Further, **power-up** and digital circuits are not possible."

However, if the power source voltage **falls below (a threshold of)** 10 kT, it becomes impossible to operate an amplifier. Thus, we cannot produce either a **power amp** or a digital circuit.

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Example 4c

TFT を STN よりも低価格にすることは非常に困難である。

よって、**性能的に優れたディスプレイ**を採用する携帯電話の商品コンセプトは**必然的にハイグレード端末にならざるを得ない**と考える。

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Example 4c

"Consequently, concepts for cellular telephone products **have inevitably moved** toward quality, including a high-performance, quality display."

Consequently, **it is expected** that the (product) concept for a cellular phone that incorporates a display with superior performance **must inevitably move** toward that of a high-grade **terminal**.

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Example 4d

不良対策の短期間化も極めて重要である。

回路やプロセスの設計段階から、回路シミュレーションやデバイスモデルに製造ばらつきを取り込み、製造時の性能予測を行い、回路、デバイスの早期改善を図ることや、**不良解析しやすい回路構成**とするなどの工夫もなされている。

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Example 4d

"The second clause seems to say that '**a circuit structure easily mis-analyzed**' is desired. Is this correct?"

Innovations that have been adopted include the following: manufacturing variability has been incorporated into circuit simulations and device models--beginning at the design stage for both the circuits and the manufacturing process, and estimates of (actual) product performance at the manufacturing stage have been obtained. Thus, we are working to attain improved circuit and device performance earlier in the product cycle. In addition, we have adopted **a circuit layout [design] that can be easily analyzed in the event of (product) failure**.

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Example 4e

多くの努力の結果、地域的な環境の状況はかなり改善された。少なくとも我が国においては、公害問題は解決したかのように思われた。

そこに冷や水を浴びせたのが、1990年代中頃からの内分泌攪乱化学物質(ED)、いわゆる環境ホルモン問題である。

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Example 4e

"From about the middle of the 1990s, **bathing in cold water could result in exposure to** endocrine disrupters (ED), a so-called environmental hormone problem."

**What dashed our hopes** beginning in the mid-1990s was the problem of endocrine disrupters (ED), otherwise known as 'environmental hormones.'

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**What makes a translator successful?**

Knowledge of source language

Grammar

Sentence structure

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Means of expression

Knowledge of content

Terminology

Flow of ideas

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Shared information

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**Conclusions**

1. Context is everything.
  2. Field-specific knowledge is indispensable.
  3. Translating what is not stated can be just as important as translating what is stated.
  4. The translator's mindset:
    - \* looking forward to develop expectations
    - \* looking backward to maintain internal consistency.
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