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AI TRANSLATION AND CULTURAL NUANCE : HOW HUMAN TRANSLATORS CAN ENHANCE MACHINE-GENERATED TRANSLATION

The study focuses on the peculiarities of using artificial intelligence in the field of translation and on the role of human translators in ensuring the adequate rendering of cultural nuances, idioms and stylistic features. Recent European-language research confirms that, although MT has improved substantially, it still struggles with culture-bound elements in French, German, Spanish, Dutch, Polish, Italian, Turkish and Ukrainian texts, especially in literary and creative genres [7; 15; 5; 18; 16; 1].

A review of scholarly papers has demonstrated that the issue of conveying cultural characteristics in translation extends beyond technical or linguistic considerations to encompass cognitive, psychological, and ethical aspects. Experiments with professional translators working from English into Catalan, Dutch, Italian, Turkish and other European languages show that MT output constrains creativity, pushes translators toward literal choices and reduces stylistic individuality, even when neural systems are trained on literary data [6; 15; 16; 1; 4]. At the same time, studies in translator education and foreign-language teaching indicate that post-editing culture-bound texts can heighten students' language awareness and critical reflection on cultural nuance [5; 8; 3].

Artificial intelligence (AI) has radically changed the field of translation, making it faster, more accessible and more scalable. Controlled experiments with English→French and English→German show that post-editing MT can be faster and even higher in quality than human translation from scratch for general texts [2; 3], and large-scale post-editing studies across six languages (including Dutch, Italian, Turkish and Ukrainian) confirm consistent productivity gains, though with strong variation between languages [14]. However, for literary and culture-bound texts, quality gaps remain: expert literary translators prefer human translations over MT paragraphs from European novels in 84% of cases, citing discourse-level errors, stylistic flattening and over-literal choices [15; 16; 1].

Even the most advanced MT systems (e.g., Google Translate, DeepL, GPT-based models) demonstrate high accuracy in standard texts, but often fail to cope with idioms, allusions, humour, proverbs, and other culture-specific elements [7; 15; 5; 10]. Studies on English–Polish proverb translation show that even state-of-the-art AI tools correctly render only about half to two-thirds of proverbs, with frequent literal calques and semantic shifts that require human correction [10]. Analyses of English literary classics translated into Dutch reveal extensive error rates, reduced lexical richness, weakened cohesion and a tendency to mirror source syntax, all of which undermine the target-culture naturalness of the text [16]. Similarly, comparisons of English→Turkish literary MT with renowned human translators show that human versions remain more creative and better aligned with genre-specific stylistic conventions [12; 18].

One of the most effective models is cooperation between humans and machines. Human translators perform post-editing of machine translations, correcting errors, adapting the text to cultural norms, adding explanations for complex concepts, and preserving style and emotional

tone [6; 11; 2; 15; 5]. In literary settings, post-editing has been shown to improve efficiency but can also limit creativity: translators working from English into Catalan and Dutch rate "translation from scratch" as the most creative, followed by post-editing, with raw MT output last [6; 1]. Post-editing tools based on large language models (e.g., fine-tuned GPT-3 or GPT-4) can automatically edit MT for European languages and are often preferred over baseline MT by human evaluators, yet they still require expert oversight due to possible hallucinations and subtle cultural misinterpretations [9; 15].

Human translators act as cultural mediators, capable not only of translating words, but also of conveying the values, traditions, humour and emotions embedded in the text. Comparative stylometric studies of French–English and other literary translations show that, despite convergence, machine and human translators remain clearly separable: MT tends to overuse basic, neutral language, while human translators preserve more varied, idiosyncratic stylistic patterns [11; 4; 19]. By adapting texts for Dutch, Polish, Spanish, Turkish or Italian audiences, human translators decide when to retain culture-specific references, when to substitute local equivalents, and when to add explicitation to maintain interpretability and aesthetic effect [12; 5; 10; 16; 1].

Modern studies highlight the effectiveness of hybrid models, where AI provides speed and terminological consistency, while humans contribute depth, creativity, and cultural sensitivity. Customised literary MT systems fine-tuned on the works of a single English–Turkish translator can partially reproduce that translator's stylistic profile, improving both BLEU scores and stylistic similarity, but still rely on human judgement for final quality and cultural adequacy [12; 18]. Multi-agent frameworks that simulate a translation company (translator, localisation specialist, editors, proofreader) demonstrate that coordinated, role-based collaboration can yield literary translations into English that are preferred over single-agent MT and sometimes even over existing human references, particularly for long texts requiring discourse-level coherence and cultural localisation [17].

The prospects for further development in this area lie in several key directions. First, it is necessary to enhance the cultural intelligence of AI through the integration of modules that model discourse context, stylistic variation and culture-specific patterns, including proverbs and idioms documented for European languages [7; 15; 10; 16]. Second, translator education should systematically include MT literacy, post-editing of culture-bound texts and critical analysis of MT errors; pilot courses with Polish legends and European short stories show that such training improves students' speed, accuracy and awareness of cultural issues [5; 8; 13]. Third, there is growing interest in human-centred tools: translators demand interfaces that learn from their corrections, highlight overly literal segments, flag idioms and culturally sensitive content, and support rather than dictate solutions [1; 3].

Machine translation is becoming increasingly sophisticated, but the human factor remains key to ensuring cultural adequacy, stylistic integrity and ethical responsibility. Large-scale European-language studies show that post-editing is generally worthwhile for productivity and adequacy, yet high-stakes and literary texts still require substantial human control, both to safeguard creativity and to avoid invisible biases or cultural simplifications introduced by AI [7; 2; 15; 16; 1; 3]. The optimal approach is collaboration between AI and human translators, supported by improved tools and training, which enables the highest quality translation, particularly in complex, culturally rich texts.

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