REVISITING REFLECTION: AI-DRIVEN TRANSFORMATION OF TRANSLATION REFLECTION

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Abstract
This conceptual article extends Chesterman's 1997 stages of translation by three additional stages – problem solving, processing, and co-evolving – and redefines translation through reflective practice. In response to the growing complexity of AI-mediated translation workflows, it positions reflection as a key pedagogical and epistemological tool that supports translator agency and adaptive expertise. Drawing on interdisciplinary insights, the article highlights established and emerging reflective methods and calls for a comprehensive theory of translation reflection. It identifies theoretical, empirical, interdisciplinary, and pedagogical gaps in current scholarship, arguing that translation pedagogy is uniquely positioned to lead development of reflection theory. The article aims to contribute a conceptual framework that strengthens the role of reflection in translator education and practice in the age of AI.

Keywords: co-evolvement, metaphor, meme, post-editing, reflection, reflective practice

1. Introduction

This article explores reflection and reflection processes in translation pedagogy, with a view to the changes and challenges artificial intelligence (AI) introduces to reflection, particularly regarding translations created with or assisted by AI. As AI technologies increasingly mediate translation workflows, there is a pressing need to understand how reflective practices can support translator agency, critical awareness, and adaptive expertise. While reflection has been widely discussed in translation studies and higher education, little work has explicitly addressed how AI reshapes reflective practice in translator training. Yet this question is crucial, since reflective capacity directly impacts how future translators develop adaptability, critical judgment, and the ability to work effectively in hybrid human-AI environments. This article seeks to fill that gap by describing and

analysing the phenomenon of reflection in translation processes and training, and by examining its pedagogical and epistemological implications.

Building on Chesterman's 1997 memes of translation framework, this article extends Chesterman's stages into the 2020s and addresses current concerns of translation scholars. I use Chesterman's and my approach to establish a baseline for a literature review on reflection and self-regulation, drawing from higher education, writing research, and translation studies. The article clarifies the role of reflection in translation pedagogy, stresses the need for its theoretical underpinning, and explores reflection methods. Translation studies' advantage in using methods like translation commentary, portfolios, and other reflective techniques is highlighted. The article shows how these practices enhance process awareness, how they are likely to foster understanding of AI, discusses concerns about AI-driven teaching, and explores how reflection can be theorized and operationalized in translation pedagogy to equip translators for AI-mediated workflows.

Section 2 expands on Chesterman's evolution of translation approaches. Section 3 traces the history of self-reflection and self-regulation in higher education, writing research, and translation studies, and examines methodological approaches and teaching methods. Section 4 calls for addressing theoretical, empirical, interdisciplinary, and pedagogical research gaps in the subdiscipline of translator training.

2. Evolution of translation approaches

Chesterman's (1997) timeline of translation's evolution focuses on high-level theoretical abstraction rather than sub-disciplinary practices like reflective practice. I outline how reflective practice has developed alongside translation and extend the timeline with three recent stages and metaphors to highlight shifts.

2.1. Metaphors and memes

Chesterman describes translation development stages through metaphors, where the participle forms of verbs in "Translation is x-ing" reflect what translation scholars focused on at the time. This suggests a rational progression in translation thinking, from literalism to rhetorical freedom and sociocultural critique, though translation theory did not evolve chronologically. As Chesterman notes, translation memes reoccur, reference older ideas, and challenge dominant paradigms, disrupting rational progression. In his discussion, Chesterman highlights non-linear, political, and regressive movements in the field. Similarly, the additional metaphors I propose serve as symbolic representations of translation practices to simplify the complexity of translation evolution. They capture broad trends but, like Chesterman's, are mainly

focused on Western/European epistemologies and should not be seen as a universal intellectual development.

Chesterman's first metaphor implies stonemasonry, where an original is deconstructed and rebuilt elsewhere using the same bricks, which represent word meanings, not words themselves. The metaphor "translation is rebuilding" (21) reflects translation practices around 1,000 BC, drawing on the item "words" from Chesterman's meme pool and implying concepts like equivalence and translatability. Through the lens of reflective practice, rebuilding is more than a mechanical act; it is an active process of analysis and creative reassembly, potentially without meaning shifts across languages and cultures. Cicero's translations, based on *aemulatio* (emulative imitation) and his plea for a faithful rendering (Siever 2015: 11), exemplify this metaphor.

The second metaphor is "translation is copying" (Chesterman 1997: 23), with the associated meme "free versus literal" (22). It describes translation practices around the Renaissance, originating in Bible translation, and reflecting later approaches that emphasize literal fidelity to the source text, minimizing the translator's agency and limiting their ability to adapt to cultural and linguistic nuances of the target language. During the Renaissance, the dichotomy between literal and figurative translation persisted (Siever 1995: 21). From a reflective practice perspective, translators at the time likely questioned how well the copy conveyed the source text's meaning and intent in a new context.

The third metaphor is "translation is imitating" (Chesterman 1997: 24), originating in the 18th century with the associated meme "target language enrichment." In this stage, which recurs throughout translation's evolution, the process shifts from passive copying to active imitation, where the translator assumes a more creative role, focusing on enriching the target language, audience reception, and cultural adaptation (Siever 2015: 26). From a reflective practice perspective, imitating prompts translators to question their choices, to consider the target audience's needs and expectations, while embracing their responsibility to interpret and creatively transform the source material.

The fourth metaphor is "translating is creating" (Chesterman 1997: 27). The translator is seen as an artist shaping language, and translation brings positive change to the target culture. In this logos stage (27), assigned by Chesterman to German romanticism of the late 18th to early 19th century, translation is viewed as an organic transformation, where each version of a text reflects the development of both cultures. The "logos meme" emphasizes the preservation of difference, or "otherness" (29). This suggests a true translation should reveal the underlying "pure language" (27) and allow the original's essence to shine through. From a reflective practice perspective, translators are aware of their role in cultural transformation, ensuring their translation

reflects the evolving relationship between source and target cultures, preserving the original's "otherness" while balancing adaptation with core meaning.

The fifth metaphor is "translating is transcoding" (30), a shift towards a linguistic perspective on translation, termed the "linguistics meme" (31). Central concepts include equivalence, invariance (Siever 2015: 45), and the dominant decoding and recoding approach (Kade 1968: 7), seen in machine translation since the 1950s, based on strict equivalence. This evolution strand is marked by objectivity and explicitness. While Chesterman is correct that rule-based machine translation worked this way, it has since been surpassed by probabilistic modeling, pattern learning from large corpora, and neuro-translation. Linguistic approaches like Jakobson's distinction between intralingual, interlingual, and intersemiotic translation (Jakobson 1959: 233) also belong to this stage. Another strand, contrastive stylistics, focuses on form, meaning, and style differences, while contrastive analysis uses equivalence to compare across meaning, style, and context. Chesterman notes that linguistic contributions are shifting from equivalence to a sociolinguistic approach. Reflective practice in this context prompts translators to consider the limitations of rigid equivalence, recognizing that translation is more than a mechanical process. Translators experience the need move beyond linguistic accuracy, accounting for context, sociolinguistic factors, and the complexities of language and culture.

The sixth metaphor, "translating is communication" (33), with the corresponding "communication meme", seeks a balance between source and target text by broadening translation to include sociological processes and non-linguistic factors. Chesterman introduces "translation as social action" (36). It focuses on the communicative situation and a hermeneutic view that includes both process and product, as well as communicative efficacy. Between the 1970s and 1980s, equivalence is reshaped. An example is Koller's "double binding" of translations to the source text on one hand and the communicative needs of the receiver on the other (Koller 2011: 194). Equivalence loses its dominance, and the *skopos* of a translation gains importance. The action-theoretical paradigm (Siever, 2015: 83, my translation) focuses on text-oriented equivalence and skopos-oriented adequacy. The latter is defined as "the relationship between the source and target text when considering the purpose (skopos) pursued through the translation process" (Reiß and Vermeer 1984: 139, my translation). From a more general reflective perspective, the skopos approach encourages a dynamic, context-driven process that prioritizes the communicative impact over linguistic fidelity. Translation is seen as a professional activity, with function-oriented actions ("translatorisches Handeln," Holz-Mänttäri 1984: 5) executed in a "controlled" way (Wilss 1988: 33). This mention of "control" hints at reflection, while also re-focusing on the translator. It is therefore no surprise that the most prominent

translation reflection instrument of translation pedagogy to date – translation commentary – was introduced in 1984 (Holz-Mänttäri 1984; Neubert 1984).

The seventh metaphor "translation is manipulation" (38) corresponds with the "target meme" (37), located in the 1980s. It refocuses on the target text. This meme emphasizes translations themselves and the cultural and temporal contexts in which translators work, without preconceptions of ideal versions. It advocates for a descriptive rather than a prescriptive approach to translation (Toury 1995). Work under this meme takes a pragmatic view, particularly of literary translation, examining it within a broad socio-cultural and ideological context. This approach aligns with how literary pragmatics explored literary phenomena in the 1980s and 1990s. From a reflective practice perspective, translators move away from idealized translations and instead consider socio-cultural and ideological factors.

The eighth metaphor, "translating is thinking" (40), with the corresponding "cognition meme", emphasizes that translation occurs mentally. In the 1980s and 1990s, mental decision-making, translator self-awareness, and its impact became central, influenced by cognitive linguistics and cognitive sciences. Chesterman notes a shift in interest, marking the beginning of protocol research (e.g., Krings 1986), empirical studies on decision-making, problem-solving in translation pedagogy, and research into the translator's mental state (Gutt 1991), along with interest in the differences between professionals and trainees in the 1990s. During this period, the functional approach to translation studies peaked, with the translator's self seen as integral to translation. Hönig asserts "the subjectivity of translation and the individuality of translators, which correlate with the subjectivity of understanding processes demonstrated by cognitive science research" (Hönig 1995: 100). From a reflective perspective, this shift encourages translators to examine their cognitive processes and consider how mental state and self-awareness influence decisions, fostering a more conscious and analytical approach to translation.

2.2. Extending the metaphor and memes

At the end of the 1990s, Chesterman outlines future goals for translation theory, including describing translators' roles, values, and norms. He suggests exploring translator actions on readers, cultures, and intercultural relations, proposing "translations are value judgments" as the metaphor for the next stage (48). This concept acknowledges the choice between translation alternatives based on subjective criteria, a key element of contemporary translation practice. For 2000-2025, I propose three additional metaphors.

2.2.1. Translation is problem solving¨

My first metaphor is "translation is problem solving", for the turn of the century up to around 2010. Influenced by cognitive science research and writing research in the 1980s and 1990s, problem-solving became central to translation studies. Tools like the first keylogging tool for translation process observation (Jakobsen and Schou 1999) enabled external observation of translation processes. Research into translation decisions, such as strategies (Schjoldager et al. 2010), also gained momentum, clarifying the interplay between person, role, microstrategy, and system.

This led to the development of "cognition-appropriate and action-coherent teaching methods" (Risku 1998: 17) and the research strand of translation pedagogy, which investigates translation competence closely linked to reflection. I associate this stage with the "translation process" meme, as translation adapts to the information age, social workspaces, and new competences (Risku 2004/2009). The meme is supported by the evolving strand of "translation process research" (Göpferich 2008: 3).

Reflective practices (section three) became central to translation pedagogy in the 2000s, encouraging students to examine decisions and make cognitive processes explicit. Such reflection fosters critical engagement, problem-solving, and a deeper grasp of translation theory and practice. Research shows that reflecting on challenges and mental strategies enhances translator self-awareness (Haro Soler 2021; Veiga-Díaz 2023). Attention has also shifted to how mental state, emotions, and motivations affect decisions, alongside the need for technological competence. For instance, Li, Gao and Liao (2023: 1233) highlight critical thinking, academic self-efficacy, and cultural intelligence as predictors of tech-savviness.

2.2.2. Translation is processing

My second metaphor, extending into the 2020s, is "translation is processing" with the corresponding "translation process" meme. It reflects an era where digitization, automation, process orientation, and translation process optimization dominates translation theory and practice.

Machine translation, machine-aided translation, and post-editing focus on macro- and micro-level translation processes (O'Brian et al. 2014). In translation pedagogy they highlight the importance of translation process awareness and process reflection, not least, because they are multifunctional translation and project management tools.

Post-editing involves the process of editing both MT (Machine Translation) matches and TM (Translation Memory) matches (Flanagan and Christensen

2014). Towards the end of the 2000er years, the distinction between MT and TM matches got blurred, particularly when MT-assisted TM environments were used. In 2014, Declercq noted the growing role of automation and cloud technology in translation education. Schaeffner and Carl (2013) proposed a model where shared features between source and target texts enable automated processing, shifting to dynamic cognitive frameworks. This approach also informs Alves and Goncalves' (2015) cognitive effort analysis, based on relevance theory. A key renewal factor is the advent of document-wide neural machine translation (Maruf, 2019).

Neural Machine Translation (NMT) models produce fluent translations but often lack accuracy and cultural awareness. They handle idiomatic expressions, capture context, and generate fluent translations by training on parallel corpora and drawing from external knowledge bases (Palanichamy and Trojovský 2024: 2). Their transformer architecture allows for language parallelization, enhancing training and scalability (2024: 4). These models have significantly improved translation quality compared to earlier approaches like rule-based (RBMT) and statistical machine translation (SMT) (Palanichamy and Trojovský 2024: 3).

NMT produces more accurate, natural translations, but post-editing is still required. Unlike traditional revision, post-editing NMT does not require refining for accuracy and fluency. It requires reflection skills, such as evaluating alignment with the intended meaning, adjusting misinterpretations, improving fluency, and correcting inconsistencies. Translators must engage actively with machine output to ensure quality, requiring critical thinking, a deep understanding of both languages, and the ability to make deliberate decisions based on the required quality level.

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In the translation industry, light post-editing settles for lower quality levels (Pavlović & Antunović, 2021: 186), with text deemed "comprehensible and accurate but not stylistically adequate" (ISO 2017: 10). This contrasts with multicomponent post-editing competence models (Nitzke, Hansen-Schirra and Canfora 2019), which overlap with translation competences. Their pragmatic, minimalist view of post-editing abilities suits any AI-revision approach (Pavlović

and Antunović 2021, pp. 187-189): identifying errors, distinguishing necessary from unnecessary ones, and implementing edits without introducing new ones (2021: 185). The second ability reflects the real-world balance between quality and speed. I would add the ability to consider how edits impact the ongoing learning of the NMT system. In translation pedagogy, training in light and full post-editing is crucial for competence and confidence, helping trainees overcome skill gaps. Pavlović and Antunović's study shows that untrained post-editors often underedit, overedit, and, as one participant put it, "wrongedit" (2021: 199).

Regarding post-editing and reflection, translators should be trained to make their reasoning explicit, ensuring quality at every decision. Translation trainers are advised to be cautious with confidence and competence predictions (Bontempo and Napier 2011). Not being involved in every step of the process and their status as non-expert post-editors may affect trainee self-efficacy, which in turn impacts motivation, information processing, and strategy selection-particularly when self-perception and performance do not align (Veiga-Díaz 2023: 2).

I anticipate a resurgence of post-editing in translation studies, extending into text production pedagogy and writing research. As AI-driven tools become central, post-editing will be a critical component of future translators' education. I refer to this as post-editing engineering, analogous to prompt engineering, where post-editing and its associated competences will shape the professional profile of communicators. Post-editing engineering requires a cluster of competences that include prompt crafting, error categorisation, quality evaluation of AI output, and managing the interaction between human and system. Possible assessment items could involve analysing error types in AI-generated translations, measuring decision latency in revision tasks, or designing effective prompts for targeted outcomes. This underscores the need to refine AI-generated texts and adapt translator education accordingly.

2.2.3. Translation is co-evolving

My third metaphor is "translation is co-evolving" for the 2020s and beyond, as co-evolvement and co-production in translation and communication become the norm. "Co-evolvement" is therefore the associated meme. Technological advancements are reshaping the language industry, with NMT integrated into translation workflows.

The EMT Competence Framework (2022) outlines technology competence for translators, covering office software, CAT systems, QA tools, and workflow management, as well as the ability to adapt to new technologies and manage media files. It also emphasizes MT integration and the importance of data literacy. Given advances in AI and Neural Machine Translation (NMT), the framework may need revisiting to include AI literacy and reflective post-editing competence, ensuring

translators not only use these technologies but also understand their implications in the evolving translation landscape. AI literacy is defined as "a set of competencies that enables individuals to critically evaluate AI technologies; communicate and collaborate effectively with AI; and use AI as a tool online, at home, and in the workplace" (Long and Magerko, 2020: 2).

As Angelone (2022) notes, the shift redefines translators' roles and emphasizes the need for adaptive expertise to engage with AI. From an outcome-focused perspective, hybrid intelligence (Rafner et al. 2021) – the collective results and learning between humans and AI – dominates the translator's workplace. Twomey's (2023, 1-4) notion of "communion" with AI describes a collaborative relationship to co-create texts with "autonomous collaborators" and stresses the processual element of development. Abu-Rayyash (2023: 260) likewise advocates a balanced approach, using AI to enhance competencies while preserving the irreplaceable human essence of high-quality, ethical translation.

I therefore suggest the following definition of co-evolvement in text production and translation with AI:

> Co-evolvement is a dynamic, iterative process where humans and AI systems mutually influence each other during text production or translation, leading to outputs shaped by continuous feedback, collaborative decision-making, and adaptive refinement.

The prefix "co" signifies the collaborative agency of humans and AI working together, where translation is shaped by "evolvement." Evolvement refers to gradual, responsive change over time, occurring through iterative refinement processes, where the translator co-crafts prompts and adjusts AI output, blending both AI and human perspectives in final edits and re-prompts. On a less positive note, the increased capabilities of AI systems may lead to deskilling, the loss of professional skills due to technological or work practice changes (Rafner et al. 2021: 26), or skill erosion from over-reliance on automation. Crowston and Bolici's (2025) review suggests that while AI often causes deskilling, it can also demand higher skill levels or greater responsibilities. This ambivalence is particularly visible in translation workflows: automation can reduce the need for linguistic problem-solving and weaken the development of core translation strategies, but at the same time it creates demand for new competencies, such as prompt engineering, quality assessment of machine output, and managing the translator's interaction with AI systems. In human-AI environments, technology may reduce translation competencies, but it can also drive upskilling by shifting focus to higher-order tasks or requiring new skills, often leading to reskilling, where expertise is complemented by managing technology. These processes are not neutral: whether AI leads to skill erosion or enrichment depends on how

training frames the translator's role – as a passive corrector of AI output, or as an active decision-maker and reflective practitioner. In this context, reflection becomes essential, since it enables translators to transform potentially deskilling practices into learning opportunities that strengthen professional agency rather than erode it. Through reflective practices, such as analysing prompts, system outputs, and the translation-post-editing interplay, trainees can use technology to upskill and professionalize. Embedding guided reflection into translator education ensures that teachers and students alike engage with the risks of deskilling and work to strategically transform them into opportunities for upskilling and reskilling. Another issue with co-evolvement is the fluidity of roles between human translators and AI, which can impact quality and perceived agency. Agency, discussed by Reza et al. (2025: 5) in human-computer interaction, relates to control and autonomy in both HCI and translation studies (Jiménez-Crespo 2025). Jiménez-Crespo defines agency as "the subjective experience of feeling that a person is the initiator of a behavior and actively in control" (2025: 3), while autonomy involves independent decision-making. Although process and agency are shared, the translator retains responsibility for the final product. "Issues of control and autonomy in the age of AI are primarily a human-centered problem that requires human solutions" (2025: 17).

From a reflective perspective, translation with AI requires translators to be aware of their evolving, co-creative relationship with technology. Balancing AI's capabilities with human qualities to ensure ethical, high-quality translations is crucial. Translators must reflect on the blurred boundaries between their work and AI's, considering how interactions shape both process and product, and adjust AI output or their own input as needed.

3. Reflective practices in translation, writing, and higher education

Chesterman approached translation theory from a non-pedagogical perspective, which is why I have presented translators' reflective practices in general terms, with few exceptions. Despite its growing relevance in translator education, the structural positioning of reflection within translation studies remains unclear. In my view, translation studies is the discipline, with translator training as a subdiscipline encompassing various pedagogical approaches, and reflective learning as a key area still requiring conceptualization. By contrast, reflective learning has become a subdiscipline in higher education and is gaining attention in writing research.

All three fields share a pedagogical foundation: they use reflective practices to foster learning and development. Translation studies has yet to develop an explicit theoretical framework for reflective practice; I argue this is both necessary and

feasible. With its pedagogical knowledge and methodological sophistication, the field is well-positioned for theory-building, especially as stakeholders increasingly recognize reflection as key to addressing AI-driven transformation. This article explores how reflection, reflective practice, and self-reflection are understood in these fields. Beginning with theoretical foundations from higher education, I trace how reflection became established in translation studies and examine the influence of writing research on its development, whether preceding, paralleling, or shaping the field.

Reflection formally entered scientific research in 1933 with Dewey's educational model of reflective thought and action, which includes five steps. It begins with "Disturbance and uncertainty," when a habit fails. This problem-based learning approach reappears in Hayes and Flower's (1980) problem-solving process in writing research and the idea of habits forming heuristics in text production (Dengscherz 2022). In the second step, the problem is defined and facts gathered. The best-known application in translation studies is Gile's (2004) Integrated Problem and Decision Reporting. In the third step, Dewey introduces "Situationality" through "studying the conditions of the situation and formation of working hypotheses," a concept that became central in linguistic analysis (de Beaugrande & Dressler, 1981). In the fourth step, hypotheses are tested through reasoning and action. Dewey's model opens here, allowing reflection to lead either to a solution or a new idea. Unlike iterative models (e.g., Gibbs 1988), the reflective cycle is not closed.

Dewey's rational-technicist model, like Schön's (1987), has been criticized for separating knowledge from experience and for overemphasis on formal knowledge or theory rather than the messy, context-dependent experiential knowledge that comes from real-life experience. Hébert (2015) claimed that practical knowledge, the know-how acquired through experience, does not fit neatly into analytic or synthetic schemas. It guides actions and helps select the best means to achieve a goal. In translation pedagogy, yet at a later point in time, this is addressed by incorporating reflection tasks into project-based learning (Kiraly 2012).

Conversely, Boud, Keogh, and Walker's (1985) model focuses on turning experience into learning, and similarly, Kolb's (1984) experiential reflection model describes learning as a continuous cycle, starting with a concrete experience, followed by reflection on the experience and feelings, leading to insights or abstract concepts. This new understanding is then applied through active experimentation, promoting deep, practical learning. In later research by Kolb and Kolb, "Reflecting" prominently becomes a learning style (Kolb and Kolb 2013: 14).

Gibbs' reflective cycle (1988) outlines event description, feelings, evaluation, analysis, sense-making, conclusion, and an action plan. Its approachability has made it popular in teaching, self-help, and counselling, and its emotional appeal may explain social media interest. However, informal use risks oversimplifying reflection and fostering superficial application. Teachers can apply it flexibly and critically, ideally alongside other models, to support deeper learning. In translation studies, Nord's 1988/1991 model includes pre-translational reflection, and her skopos-oriented approach (Nord 1997) positions reflection at the heart of every translation decision.

While widely used in language teaching and teacher education as a powerful device to promote student's learning since the early 1980s, reflective journal writing as a didactic instrument is first introduced to translation teaching by Defeng (1998).

Writing research in the 1980s described the final stages of writing development as reflective (Bereiter, 1980), while Hayes and Flower (1980) framed writing as problem solving, aligning with strategic reflection. Feilke and Augst (1989) noted that metacognition is inherent in text production and underpins writing competence. Becker-Mrotzek and Schindler (2007) reemphasized the role of metacognitive knowledge monitoring, self-regulation, and reflection in supporting strategy development.

In the early 1990s, Schön's "reflective practitioner" comprises "reflection-in-action," thinking on your feet, and "reflection-on-action," thinking through experiences, via practices like discussion or journaling. On the idea that practitioners naturally reflect, McLaughlin notes, "nobody would want to champion the unreflective practitioner" (Schön 1999: 9, quoted in Hébert 2015: 361). Critics also note Schön's oversight: reflection can occur before action.

Following Pietrzak (2019), who distinguishes reflection as prospective, concurrent, or retrospective in a triad, I view notes, diaries, and translation journals as fluid tools for practice, research, and training.

Moon's concept of reflection in higher education (1999) and her 2006 map of the reflective process highlight reflective writing as a tool to enhance learning. Her concept is for learning journals which serve as personal records of thoughts, feelings, and experiences related to learning. Moon emphasizes structured reflection to help learners explore experiences, identify patterns, and generate insights that guide future actions and strategies. Her map of the reflection process details the event or issue, integrates additional ideas, and incorporates the external environment, later echoed in writing and translation process modelling. The map introduces iterative reflection, offering both a "way out" in the form of a result and a "way around" back to the start if further consideration is needed. Its influence lies in situational applicability, flexibility, and adaptability beyond

education. Later, Shih (2011) found that reflective journals guided by Moon's framework enhanced translation students' understanding of translation theories.

From 2000 onwards, diaries became a valuable method for exploring translation competence, translators' personal experiences (Fox 2000), and their self-reflection skills. Translation commentary entered the pedagogical cycle: the translation problem space model (Shei 2004: 314) guides reflection, expressed through commentary writing, which in turn reinforces understanding of the model. Translator self-reflection, reflective practice, and diary studies also heightened awareness of translation processes and decision-making for both translators and researchers. Gile's (2004) Integrated Problem Decision Reports exemplify this approach.

Heine (2019) further outlines Gile's IPDR note-taking technique and its didactic function: integrating self-reflection and individual or group decisions into the production process and mentoring, combining process reconstruction with adaptive thinking. Problems mark challenges or obstacles, prompting discussion and linking difficulties to possible strategies. Decisions are momentary choices about content, approach, or process. Reports are concise notes – narrative, descriptive, explanatory, or keyword-based – that provide immediate support and serve as memory aids.

Underlying these components is the idea that problems are common to all translators, difficulties are individual, and notes highlight awareness. Strengthening learners' awareness of their actions enhances learning. Introvision fosters such awareness (Iwers-Steljes, 2014), naturally followed by the ability to articulate observations – useful pedagogical method. IPDR helps learners discern whether difficulties stem from formulation choices, factual or linguistic accuracy, or specific stages of the translation process. In this context, notes – whether paper, digital, or oral – serve as memory triggers.

In the study by Shih (2011) mentioned above, the missing link between translation theory and practice – often experienced by students as a gap – is addressed through the use of reflective learning journals. In Angelone's (2022) comparative perspective, IPDRs offer valuable opportunities for developing problem-solving skills in translator training but may not fully capture real-world complexity and situatedness of professional translation. They fail to reflect the dynamic nature of translation tasks and, being interruptive might cause lack of motivational and cognitive engagement – compared to e.g. screen recordings.

At the end of the 2010-er years, Pietrzak (2018) points out that reflection can enhance learning by fostering self-awareness and self-regulation, which are linked to higher-quality translation in trainees (Pietrzak 2018). In 2019b, Pietrzak moves from reflection, the broader process of critically thinking about an experience, task, or concept to the more introspective, personal consideration of one's own thoughts, feelings, decisions, and learning process: self-reflection. She introduces

scaffolding by the teacher in a threefold facilitation approach: student self-reflection on translations, translation processes, and learning itself. The teacher is given the role of a coach who creates a collaborative classroom where roles are negotiated and reflective thinking and metacognitive skills are developed. Also, in 2019a, Pietrzak provides an overview of reflection tools in translation studies and lists eleven tools and methods, including research methods for classroom purposes (e.g., think-aloud protocols, interviews), process tools (documented changes tracking), and tools for in-class activities (student correspondence). The largest group consists of diaries (also often called learning journals). Pietrzak also lists portfolios, and commentaries, which may or may not be part of translation assessment. She distinguishes between collaborative (peer or group) and introspective (self-reflection) modes of reflective practice (Pietrzak 2019b). Pietrzak (2021b) examines metacognition in translator training and clarifies its role in fostering self-regulation and lifelong professional development. Her exploratory study shows that higher metacognitive awareness in translation graduates correlates with greater professional growth, career progression, and perceived success, which I deem an asset in times of AI-imposed translator uncertainty.

Combining the translator's self – in the form of self-efficacy and reflective learning – with competence development, Way (2019) argues that additional attention must be drawn to trainee motivation. She integrates principles from self-regulated learning and introduces motivational interviewing from experimental social psychology (Miller and Rollnick 1991) in translator education. In motivational interviewing (MI), empathy, motivation, and objective assessment feedback are used to counteract low levels of self-efficacy or low self-esteem. The teaching principle is collaboration, through evocation (listening to the student and eliciting responses) and encouraging autonomy (Miller and Rollnick 1995 325-34, Way 2019: 3). Her pilot study demonstrates that personalized feedback and MI-techniques significantly boosted students' motivation, self-efficacy, and academic performance.

Heine (2020) adapts eight introspection tools by Boekaerts and Korno (2005) for the language learning and text production classroom. Two of these are particularly relevant today: "situational manipulations" and "recording student motivation strategies." While case-based translation as a simulation of reality has a tradition in translation pedagogy, virtual simulation (Rodríguez-Castro 2018) has been used, but is not widespread, yet. AI-applications lend themselves to simulation teaching, as they can offer realistic simulations and controlled manipulation (e.g. on variables of a translation brief, like context, tone, or audience, ambiguity and complexity can be screwed up and down), instant feedback, scalable training, and high adaptability. Teachers could also simulate stressful environments, nagging customers or situational changes for students to experience real-world pressure. Another scenario could be that students are

"exposed to a manipulated situation (or a partial situation) in which they must reflectively determine the starting point, expected outcome, etc., by independently changing variables in a computer-simulated environment and dealing with the altered conditions" (Heine 2020: 384, my translation). Recording student motivation strategies by tracking translators' moment-to-moment motivation and self-assessments would provide valuable insights for translation pedagogy. Participants recording their feelings – such as trust in or doubts about their abilities – at regular intervals during the orientation, execution, and verification phases of a translation task allow for quantitative analysis of motivational dynamics and to reveal how affective states influence performance and offering actionable guidance for supporting student translators' competence and confidence (Heine: 384, my translation). AI can for example help track translators' motivation in real time. Through a mobile app or web platform, participants can be prompted at regular intervals to report their feelings and confidence via text, voice, or emojis, with voice-to-text transcription reducing cognitive load. AI can analyse responses for sentiment and emotional states, detecting shifts in motivation across task phases and indicate moments of struggle or success, thereby providing actionable insights to support trainee translators' competence and self-regulation.

As has become apparent, reflective methods are plenty in translation and serve different functions, for example as pedagogical tools and research methods alike. For the qualitative method-pool of translation studies of this day, Borg, Heine and Risku (2025) have categorized diaries into researcher and participant types. Researcher diaries include field notes taken during observation and diaries written afterward to explain the situation and capture the researcher's perspective. Participant diaries are divided into non-instigated process notes (spontaneous, raw notes made naturally during the task) and instigated process notes (written for research or training purposes, more polished), with participant reports being written upon request, typically more polished and non-spontaneous (Borg et al., 108-132). The former are for instance IPDR, the latter typically translation commentaries.

Reflection is not only central to translation pedagogy and research but also a vital competence for the future practitioners. In an era dominated by AI and large language models, the capacity to critically reflect on processes (prompt engineering and post-editing engineering) and output is essential. Translation teachers are required to integrate AI prompting and completion results to support and enhance creative ideation and refinement. Reflective awareness equips learners to evaluate machine-assisted translations, adapt to emerging technologies, and to exercise professional judgment in complex, evolving work environments, to ensure that they are prepared for the demands of the contemporary and future translation market.

4. A call to address research gaps

Looking from the viewpoint of the subdiscipline of translation studies that is translator training, this article introduced three new stages to Chesterman's timeline of translation metaphors – problem solving, processing, and co-evolving, and provided a production and translation-oriented definition for the latter. Translation is redefined through the lens of reflective practice, and the translator's evolving role amid cognitive, technological, and collaborative transformations. Reflective practice emerges as a key didactic and epistemological tool, as it enables translators to critically engage with decisions, technologies, and their own agency. The article highlights how reflection fosters adaptive expertise, supports translator self-awareness, and mitigates risks, like deskilling in AI-integrated workflows. Tracing reflection's pedagogical evolution, it highlights reflection models of the past and their adaptations to current translation pedagogy. The role of reflective tools, journals, diaries, commentaries, and introspection techniques, in fostering translator self-awareness, motivation, and competence is discussed. Examples illustrate how prompt engineering, post-editing engineering, AI-driven simulation and real-time motivation tracking can enhance reflective learning. By integrating insights from adjacent disciplines and proposing adaptive, technology-supported T&I-methods, reflective practice is positioned as essential for bridging theory-practice gaps and preparing translators for complex, AI-mediated environments.

This is a call on translation pedagogy scholars to bridge theoretical, empirical, interdisciplinary, and pedagogical gaps to arrive at a theoretical conceptualization of reflection – in similar vein as Pietrzak has called for "metacognitive translation studies" (Pietrzak 2021a: 819) that has so far received scant coverage. While reflection is widely practiced in translation training and supported by smaller qualitative studies, the subdiscipline lacks a comprehensive translation reflection theory to fill this rarely addressed theoretical gap. This includes clear-cut descriptions, definitions and methodological approaches, reflection models, taxonomies, and the development of an independent theory of translation reflection. An empirical gap exists in pedagogical translation studies, as the subdiscipline lacks systematic quantitative insights, for instance into long-term effects of reflective tasks on students, particularly through longitudinal studies. Addressing this gap, empirical research to formulate, construct, and test said theory should be a future strategic objective.

Yet, given both its prevalence and its educational and qualitative research base, translation pedagogy is also already well-positioned to serve as a catalyst for developing a robust translation reflection theory that could inform other disciplines. At the same time, integration of insights and adaptation of established

frameworks from adjacent disciplines could boost both the theoretical and practical occupation with reflection.

Co-evolvement, human-computer interaction, and post-editing engineering are highlighted here as critical components of future translator education in relation to the need for accompanying reflective practices, as they exemplify areas where the shift from traditional translation to refining AI-generated texts is most visible. In these contexts, to foster reflective practices is essential to prepare professionals for evolving demands, which makes the theoretical definition and situating of reflection particularly crucial.

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