

SIMULTANIOUS TRANSLTION AND ITS FEATURES

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Translation Studies (with Chinese and English)

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Abstract: This paper presents the thorough discussion of the simultaneous translation as a specific form of interlingual communication with references to cognitive, technical, professional, and ethical aspects. Based on empirical studies and theories of understanding the studies, the article follows the historical evolution of simultaneous translation since its initial discovery in the Nuremberg Trials up to its technological mediated versions. The discussion will examine the demanding nature of the cognitive requirements of interpreters such as multitasking requirements, working memory limitations and ear-voice span management.

Аннотация: В данной статье представлено подробное обсуждение синхронного перевода как особой формы межъязыковой коммуникации с учётом когнитивных, технических, профессиональных и этических аспектов. Основываясь на эмпирических исследованиях и теориях интерпретации исследований, статья прослеживает историческую эволюцию синхронного перевода с момента его открытия на Нюрнбергском процессе до его технологических версий. В статье будут рассмотрены высокие когнитивные требования к переводчикам, такие как необходимость многозадачности, ограничения рабочей памяти и управление диапазоном восприятия звука и речи.

Abstrakt

Abstrakt: Ushbu maqola kognitiv, texnik, kasbiy va axloqiy jihatlarga havolalar bilan tillararo muloqotning o'ziga xos shakli sifatida sinxron tarjimaning to'liq muhokamasini taqdim etadi. Empirik tadqiqotlar va tadqiqotlarni tushunish nazariyalariga asoslanib, maqola Nyurnberg sudlarida dastlabki kashfiyotidan tortib, texnologik vositalashtirilgan versiyalarigacha sinxron tarjimaning tarixiy evolyutsiyasini kuzatib boradi. Muhokama tarjimonlarning kognitiv talablarining talabchan tabiatini ko'rib chiqadi, masalan, ko'p vazifa talablari, ishchi xotira cheklvlari va qulq-ovozi oralig'ini boshqarish.

Key words: *simultaneous interpreting, conference interpreting, cognitive load, ear-voice span, professional ethics, interpreter training, remote interpreting, translation technology*

Kalit so'zlar: *simultane tarjimon, konferentsiya tarjimoni, kognitiv yuk, qulq-ovozi oralig'i, professional etika, tarjimon tayyorlash, masofaviy tarjima, tarjima texnologiyasi*

Ключевые слова: *синхронный переводчик, конференционный переводчик, когнитивная нагрузка, разрыв «ухо–голос», профессиональная этика, подготовка переводчиков, дистанционный перевод, переводческие технологии.*

Introduction

Simultaneous translation, which is better referred to as simultaneous interpreting in the research literature, is one of the most cognitively challenging types of linguistic mediation which are practised in the global communication today¹. Unlike consecutive interpreting, in which pauses occur between entry of the source language and exit of the target language, simultaneous interpreting demands those practicing the technique to listen, understand, translate and turn meaning between languages with a

¹ Franz Pöchhacker, Introducing Interpreting Studies (3rd edn, Routledge 2016) 15-18.

minimum of time resolution, usually between two and four seconds². This temporal compression is the basic determinant of the cognitive processes of the same and the institutional provisions required to maintain professional practice.

Simultaneous interpreting is not only more difficult than it appears to be. The practice, as Pöchhacker notes, provides a window onto the capabilities of the human mind in cognitive processing whilst also acting as fundamental infrastructure to multilingual diplomacy, international organisations, global business and transnational civil society in its operation³. Knowledge of its aspects: cognitive, technical, professional and ethical helps to realize more general questions concerning the language mediation, cross-cultural communication and the boundaries of the ability of a human being to process information.

The Consecutive Practice to a Simultaneous Practice.

Although the profession of the interpreter dates back much earlier than modern interpreting, the concept of simultaneous interpreting appeared only in the twentieth century. International Labour Organization The technique of simultaneous interpreting systems at an early date (as an experiment) was tried by the International Labour Organization in the 1920s, although the technique remained peripheral to the mainstream practice until the Second World War provided the occasion and inducement to innovate the technique⁴.

Simultaneous interpreting reached a breakthrough with the International Military Tribunal at Nuremberg (1945-1946). Archival studies by Gaiba show that the linguistic multiplicity of the trials, which necessitated the use of English, French, German and Russian as the languages of interpretation, created logistic impossibility in consecutive interpreting⁵. It was the American military authorities collaborating with

² Šárka Timarová, Barbara Dragsted and Inge Gorm Hansen, 'Time Lag in Translation and Interpreting: A Methodological Exploration' in Cecilia Alvstad, Adelina Hild and Elisabet Tiselius (eds), *Methods and Strategies of Process Research: Integrative Approaches in Translation Studies* (John Benjamins 2011) 121-146.

³ Pöchhacker (n 1) 1-3.

⁴ *ibid* 27-31.

⁵ Francesca Gaiba, *The Origins of Simultaneous Interpretation: The Nuremberg Trial* (University of Ottawa Press 1998) 11-23.

the International Business Machines Corporation (IBM) that created the technical infrastructure that enabled simultaneous interpretation to become a possibility. Based on his experience with experimental interpretation systems, Colonel Léon Dostert arranged the recruitment and training of the first generation of simultaneous interpreters.⁶.

The Nuremberg system had soundproofed booths, headphones to the delegates and interpreters, and microphones that were linked with a central switching system. The interpretation was monitored and the monitors could attract the attention of interpreters when quality started compromising because of a high pace or weariness⁷. These main aspects, including booths, sound devices and staff rotation are essential aspects of the practice of simultaneous interpreting 80 years later.

Professionalisation and Standardisation.

The effectiveness of the simultaneous interpreting at Nuremberg led to its use by new international organisations. Simultaneous interpretation became standard practice by the United Nations, UNESCO, the Council of Europe and eventually the European institutions⁸. This caused a need to train interpreters and led to the development of specialised training courses, the first being the University of Geneva in 1941, the École d'interprètes (which added simultaneous interpreting training in 1947)⁹.

Professional standards and ethical codes and working conditions were established through the contribution of the International Association of Conference interpreters (AIIC) which was created in Paris in 1953¹⁰. The principles of confidentiality, accuracy, impartiality and professional conduct in AIIC Code of Professional Ethics are still in force to regulate the profession and professional code of

⁶ ibid 45-89.

⁷ ibid 98-112.

⁸ Pöchhacker (n 1) 31-35.

⁹ ibid 33.

¹⁰ AIIC, 'Who We Are' (International Association of Conference Interpreters) <https://aiic.org/site/about-us/who-we-are> accessed 20 November 2025.

ethics in the industry today¹¹. The organisation signed collective agreements with key global organisations that determined remuneration rates, booth standards, hours of work and team make-up¹².

Cognitive Dimensions

Effort Models by Gile are the most powerful theoretical formulations of interpreting the cognitive mechanisms behind simultaneous interpreting¹³. It is a conceptualisation of interpreting in such a way that three main efforts (the Listening and Analysis Effort (understanding the input of the source language), the Production Effort (forming and expressing the output of the target language), and the Memory Effort (storing the information during the processing lag)) occur almost simultaneously. These three efforts coupled with a Coordination Effort that coordinates their interaction appeal to the fact that there is limited cognitive processing capacity¹⁴.

The model assumes that interpreters operate near the limits of their cognitive capacity available- what Gile calls the tightrope hypothesis¹⁵. In cases where the demands of the processing task surpass the capacity, interpreters have to use coping measures such as compression (less informativeness), generalisation (more abstraction), simplification or omission. The model further forecasts the fact that simultaneous interpreting performance will be susceptible to cognitive load increment related to dense information, fast delivery, intricate syntax, specialized language or notorious audio situations.

The predictions of the model were widely empirically validated in empirical research. The results of the studies devoted to investigation of interpreter performance under different conditions of the difficulty of the source text, the speed of speech and the concentration of terminology show the systematic effects on the accuracy,

¹¹ AIIC, 'Code of Professional Ethics' (International Association of Conference Interpreters, 16 August 2023) https://aiic.org/site/about-us/basic_texts accessed 20 November 2025.

¹² *ibid.*

¹³ Daniel Gile, Basic Concepts and Models for Interpreter and Translator Training (Rev edn, John Benjamins 2009) 157-190.

¹⁴ *ibid* 159-166.

¹⁵ *ibid* 177-179.

completeness and fluency¹⁶. But, personal variations in working memory capacity, personal knowledge and experience interpretation play a significant modulating role in these effects¹⁷.

Ear-Voice Span and Temporal Processing.

The ear-voice span (EVS), also known as décalage, is the temporal difference between the perception of a unit in the source language and the articulation of a unit in the target language¹⁸. Initial experimental studies have determined that EVS generally takes between two to four seconds with a large amount of deviation depending on linguistic considerations, individual interpreter approaches and textual features¹⁹.

The complexity of EVS patterns has been demonstrated in recent corpus-based studies that utilize automated methods of measurement. The analysis of the Polish Interpreting Corpus by Janikowski, Chmiel and co. on the basis of the interpreting Corpus proves that EVS varies in a systematic manner depending on the interpreting direction, the type of speech delivery, the speech rate of interpreting, interpreter experience, the type of word and sentence position²⁰. There is also a shorter and more stable EVS in professional interpreters compared to trainees, especially in the demanding conditions like faster speech rate²¹.

EVS management is an essential interpretive skill. The lack of lag might not provide sufficient time to comprehend and reformulate, whereas the overload of working memory and the risk of information loss can be posed by excessive lag. Interpreters have to constantly realize their EVS to meet the cognitive needs of the source text, which are pursued by the following strategies: anticipation (guessing the

¹⁶ Zhangminzi Shao and Mingjiong Chai, 'The Effect of Cognitive Load on Simultaneous Interpreting Performance: An Empirical Study at the Local Level' (2021) 29(5) Perspectives: Studies in Translation Theory and Practice 650-665.

¹⁷ Šárka Timarová and others, 'Simultaneous Interpreting and Working Memory Executive Control' (2014) 16(2) Interpreting 139-168.

¹⁸ Timarová, Dragsted and Hansen (n 2) 121-124.

¹⁹ ibid 125-130.

²⁰ Przemysław Janikowski and Agnieszka Chmiel, 'Ear-Voice-Span in Simultaneous Interpreting: Text-Specific Factors, Interpreter-Specific Factors and Individual Variation' (2025) 27(1) Interpreting 28-51.

²¹ Zhe Wen and others, 'Multimodal Processing in Simultaneous Interpreting with Text: Evidence from Ear-Eye-Voice Span and Performance' (2024) 19(7) PLOS ONE e0326527.

next content on the basis of the context) and segmentation (dividing the input into meaningful units)²².

Cognitive load and Working memory.

The working memory- the cognitive system that holds the temporary storage and manipulation of information- is an important bottleneck in simultaneous interpreting²³. A study investigating the association between the working memory capacity and decoding performance indicates that whilst the working memory is associated with the decoding ability, high practice can lead interpreters to acquire a counter-mechanism and more effective thinking patterns²⁴.

Paradigms based on dual-task and psychophysiological tests show that simultaneous interpreting is a heavy cognitive load. Studies that record a higher level of cortisol and cardiovascular stress among working interpreters support the stressful characteristic of the workload. Cognitive load does not only differ according to the difficulty of the text only but also according to other factors such as: familiarity with the subject matter, the quality of the audio input and the linguistic distance between the source and target languages.

Recent experimental studies have started to investigate the role of the so-called imported load the demands of cognition that are transferred to the next performance parts and their implications on performance interpretation. According to the research conducted by Shao and Chai, even though the imported load also has a contribution, the current cognitive load that results due to the accumulated information during the EVS has the greatest impact on the quality of performance²⁵. These results confirm the tightrope theory of Gile and the significance of making strategic choices regarding information retention and rendering.

²² Janikowski and Chmiel (n 20) 42-46.

²³ Gile (n 13) 166-173.

²⁴ Timarová and others (n 17) 150-162.

²⁵ Shao and Chai (n 16) 658-662.

Conclusion

This discussion has explored simultaneous translation at the cognitive, technical, professional and ethical levels of the practice and the analysis has shown that it is a practice of great complexity, which entails human capabilities of a high level. Cognitive requirements of simultaneous interpreting, dealing with a number of concurrent processes with severe time constraints and low processing capacity, puts the practitioners in the forefront of human capability in information processing. The technical infrastructure, professional development and ethics have adapted to accommodate this challenging practice, forming a professionalised profession with established standards as well as a global presence.

Modern issues such as technological transformation, market division and work conditions strain the profession in its ability to sustain the quality standards in the process of adjusting to changing conditions. Remote interpreting technologies present new opportunities and bring new challenges. Artificial intelligence machines are becoming more sophisticated, and they are yet to reach the level of context complexity and flexibility that makes human interpretation of the context adept.

The discussion indicates that there are a number of areas, which need additional empirical studies. A study of occupational health consequences of interpreter population over a long term period would guide the advancement of sustainable professional practice. Pedagogical approaches may be reinforced with comparative research of training methods and their impacts on learning skills. Research about quality assessment models that consider the views of multiple stakeholders would improve the clarity of what effective interpreting between different contexts would be.

The field of simultaneous translation is in a unique position since it is a cognitively intriguing human ability as well as an indispensable infrastructure of international communication. With the continuation of linguistic diversity and globalisation, the profession has got opportunities as well as challenges in ensuring that it remains relevant and maintains its standards. Knowledge on the aspects of simultaneous interpreting, including cognitive underpinnings of it, human practices

and the technological changes leading to this practice give a clue of what human beings can do and what infrastructure multilingual communication needs in the globalized world.

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