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Translation, ergonomics and cognition

Maureen Ehrensberger-Dow

8.1 Introduction

The relationship between translation, ergonomics and cognition might not be obvious upon first consideration, but a short explanation should suffice to illustrate how ergonomics is an interface discipline between the other two. The International Ergonomics Association (IEA) defines that discipline as being “concerned with the understanding of interactions among humans and other elements of a system”. Considering ergonomics as the interdisciplinary interface between translation and cognition is congruent with an understanding of translation both as an event embedded in a situation involving various actors and factors (see Chesterman, 2013; Risku, 2014; Toury, 2012) and as an individual cognitive activity (e.g. Hurtado & Alves, 2009). An ergonomics perspective of translation and cognition also resonates with Chesterman’s (2009) proposal to add a branch he called “translator studies” to Holmes’ (1972/2000) mapping of the then-emerging discipline of Translation Studies. In the following, a brief review of the history of ergonomics and human factors provides some context before its more recently recognized relevance to Translation Studies and cognition is discussed.

The first designation of “ergonomics” has been attributed to Jastrzebowski (1857/2006), who used the term to describe the “natural laws of work”. Ergonomics has been used more or less interchangeably with “human factors” (Salvendy, 2012; Stramler, 1993) and is closely linked to “human engineering”, all of which began to become established early in the 20th century. From an initial ambition to alter human behaviour in order for employees to operate new machines properly, the focus eventually changed to understanding human needs in order to adapt the technology they use to do their work. Although its early proponents were sometimes derided as doing little more than applying common sense, better ergonomics has been strongly associated with improved working conditions and safety for employees in many domains (e.g. GAO, 1997; Niu, 2010) as well as with added value for companies (e.g. Dul, 2003).

Much of the early research in the area of ergonomics and human factors was done in the areas of aviation and other military applications around the Second World War, but other industries also profited from (mostly occupational psychologists’) insights into how processes and safety could be improved. According to the semi-centennial review of the Ergonomics and Human Factors Society, the scope of the discipline is even broader: “to promote the discovery
and exchange of knowledge concerning human behaviour that is relevant to the design of
tools, devices, equipment, vehicles, vessels, inhabited spaces, procedures, processes, and systems
composed of these and other elements” (Stuster, 2006, p. 1). In the words of the IEA, “ergo-
nomics is a systems-oriented discipline which now extends across all aspects of human activity”
and that “promotes a holistic approach in which considerations of physical, cognitive, social,
organizational, environmental and other relevant factors are taken into account” (Stuster, 2006, p. 1).
The number of medical, governmental and insurance websites and guidelines devoted to ergonomics (e.g.
MedLinePlus, US OSHA, EU-OSHA, and Allianz3) attest to its importance, yet it has only
become a topic as such in Translation Studies relatively recently. Nevertheless, the relevance of
ergonomics to the study and practice of translation goes back at least to the beginning of the
machine translation (MT) age.

The beginning of the technologization of human translation might be dated to the report
produced by the Automatic Language Processing Advisory Committee (ALPAC, 1966), which
recommended more support for research and development into machine-aided translation (while
at the same time discouraging any further development of MT). The ALPAC report still referred
to punched cards and magnetic tape as input media for the computer, but keyboards connected
to visual display terminals soon supplanted those, and by the mid-1980s personal computers
were becoming increasingly common at translation workplaces. The ergonomics of visual display
units and other hardware associated with computer workstations was questioned early on and
has continued to be an issue for heavy users (e.g. ANSI/ HFES, 2007; Wahlström, 2005).

One of the first references to ergonomics in the context of (machine) translation work was
by Bevan (1982), who rather presciently pointed out that

The advent of cheap computer technology offers many exciting possibilities, but its full
potential can only be realised if the user’s psychological and ergonomic needs are fully
understood. It is the responsibility of potential computer users to insist that machines are
used to remove the drudgery from life and expand our horizons, rather than become our
masters. The machines must serve our needs, and not we theirs.

Bevan, 1982, p. 78

The rapid developments in machine-aided translation related to translation memory in the
1990s led to increased productivity and efficiency gains as well as to cost pressure and higher
expectations. Translators were expected to make optimal use of the new tools at their disposal
to produce equal quality in much less time. This inevitably meant longer, more intensive periods
spent at their computers keyboarding and staring at the screen, with all the concomitant risks
previously reserved for programmers and similar professions that involve screen-intensive tasks.
The ergonomic benefits of looking away from the screen briefly to focus, for example, on a dic-
tionary in one’s lap or shifting one’s position to retrieve a parallel text from a nearby bookshelf
disappeared in the convenience of such information being mere clicks away. The increased risks
for translators of computer vision syndrome and repetitive strain injury from excessive mouse
use can be dated to this change.

These shifts in translation practice and in the language industry were not entirely unnoticed
by the discipline of Translation Studies, especially by researchers interested in the translation pro-
cess. An appreciation of translation as a situated activity (see Krüger, 2015; Risku, 2002, 2010)
and as an enactment of embodied, distributed, situated cognition (see Muñoz Martín, 2010;
Robbins & Aydede, 2008) has been growing over the last two decades. This view of cognition is
also consistent with an ergonomics perspective, which recognizes that people work with systems
that encompass actors in their professional environments and networks as well as factors such as
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tools, equipment and computer interfaces. Translators are expected to make the right decisions with the resources they have at their disposal in order to create high-quality texts that meet the needs of their clients and readers. However, they are subject to physical, temporal, economic, organizational and cultural constraints related to workflows, communication processes, project management, job security and status. Ergonomic issues in any of these areas can compromise the efficiency of the translation process and potentially impact on the quality of the target texts. This reality is recognized to a certain degree in models of translation competence that refer to contextual factors such as external information sources, working conditions, societal norms, psycho-physical disposition or psycho-physiological components (e.g. EMT, 2017; Göpferich, 2009; PACTE, 2003). Researchers with an ergonomics perspective attempt to understand the effect of these factors on translators who, despite high levels of competence or expertise, might not perform as well as expected or might have to exert extra effort to compensate for poor ergonomic conditions.

In widely available databases (e.g. Benjamins’ Translation Studies Bibliography or the University of Alicante’s Bitra. Bibliography of Translation and Interpreting), many of the academic publications that mention ergonomics concern sign language and other types of interpreting, which might be thought of as more physical than translation, but the interest in the latter is growing as well. The first academic conference devoted to the theme of translation and ergonomics was in Grenoble in 2010, hosted by Lavault-Olléon (2011a, 2011b). The next, held five years later, resulted in a second special issue on the topic in 2016 (Lavault-Olléon, 2016). The contributions at both conferences reflected the dramatic changes to translators’ work that had been taking place over the previous decade. Computer workplaces, digital resources, online communication and emerging technologies had all become essential features of professional translation by the time of the first conference (see also O’Brien, 2012; Pym, 2011), and process researchers were beginning to carry out investigations at or about the translation workplace by the time of the second (e.g. Ehrensberger-Dow, 2014; LeBlanc, 2013; Marshman, 2014; Risku, 2014).

Although often primarily associated with physical factors, the discipline of ergonomics also covers two other major domains, which have been termed cognitive and organizational. The European Association of Cognitive Ergonomics dates its first conference to 1982, with a hand-typed program entitled “Cognitive engineering. A conference on problem solving with computers” (ECCE, 1982). The two main strands concerned the psychology of computer users (who at that time were mostly programmers) and human–computer interaction. The 2018 conference advertised multiple themes, including those devoted to motivational and emotional aspects of interaction with tools and how to study and support cognitive tasks. These are highly relevant to translation, of course, since it is a bilingual cognitive task with an increasing reliance on computer-aided translation (CAT) tools and other technology. As O’Brien (2012, p. 103) put it, “today translation is a form of human–computer interaction”, and she suggested that “cognitive ergonomic studies of translation tools and the translation process itself” (O’Brien, 2012, p. 116) could contribute to improving the usability of translation technology so that translators can focus on the task at hand.

8.2 Core topics

Understanding ergonomics as being at the interface of translation and cognition involves appreciating not only what happens in the mind, as reflected by emerging target texts, but also how translators interact with, adapt to and shape their environments. An ergonomics perspective on translation can contribute to gaining insights into the sources of physical and cognitive overload related to processing language at a technologized workplace and the potential consequences for
translator health (Section 8.2.1). It can also help us understand the influence of various physical, cognitive, environmental, social, organizational and other ergonomic issues on the translation process and the quality of the products as well as the complexity of their interactions (Section 8.2.2). These insights should be incorporated into various levels of translator training in order to enable students and professionals to benefit from taking control over their workplaces and tools pro-actively instead of having to suffer from negative experiences (Section 8.2.3).

8.2.1 Translator health, ergonomics and cognition

Translation is a complex cognitive activity that requires translators not only to understand a source text and mentally formulate or choose between target-text solutions but also to search for information, key in text, accept matches from translation memory and revise existing text. At a computer workplace, all this requires interacting with devices that involve the whole body and not just people’s eyes and brains. Since translation is also primarily a sedentary activity done indoors, translators are subject to physical factors such as the design of desks, chairs and office equipment (see Salvendy, 2012, and Starrett & Cordoza, 2016, for general overviews). In addition, the position of the computer screen relative to the keyboard as well as the type and location of the mouse can affect posture and result in stiffness in the neck or back, fatigue and leg pain due to extended periods sitting in one position (see also Huysmans et al., 2015). Repetitive strain injury is also a risk, because entering text, clicking and scrolling can cause an overload on muscles of the upper extremities and back as well as the muscles and tendons of the hand, wrist and lower arm (see Lavault-Olléon, 2011a). Such musculoskeletal disorders are a major cause of absence from work in many countries and have been associated with awkward postures and repetitive activity (see da Costa & Vieira, 2010; Niu, 2010). A survey of UK translation sector professionals revealed that more than 25% of respondents reported health ailments related to the use of the computer (UK Translator Survey, 2016/2017).

In an interdisciplinary study (Meidert et al., 2016), professional translators’ workplaces were assessed by occupational therapy and Translation Studies researchers. Although the dedicated workplaces in companies and institutions evinced a high ergonomic standard overall, most of the furniture and equipment had not been adjusted correctly for the individual translators using them. The ergonomics of most of the freelancers’ workplaces was found to be sub-optimal with respect to furniture and equipment, and they reported the most severe health complaints of the three groups. Overall, the most commonly reported health problems related to eyes, neck, head and shoulder girdle, all of which have been linked with intense screen work. These workplace findings are consistent with those of an exploratory survey study with freelancers and commercial translators (Ehrensberger-Dow & O’Brien, 2015) and confirmed in a much larger international survey of over 1,800 professional translators (Ehrensberger-Dow et al., 2016). Many of the identified issues would actually be quite easy to remedy, with information on ergonomic posture and workplace setup freely available on the Internet from reliable sources.10

One of the largest employers of translators in the world, the EU Commission’s Directorate-General for Translation, officially recognized the importance of ergonomics in 2011 by designating correspondents to offer advice and consulting about working conditions and well-being (Peters-Geiben, 2016). Considering that EU agencies have identified several risk factors for health that describe many translators’ working conditions, this makes very good sense. For example, a recent publication from the European Agency for Safety and Health at Work (Elsler et al., 2017) highlights the risk associated with extended periods of sitting and poor posture, reporting that muscular-skeletal disorders are second only to cancer as the cause of work-related mortality and morbidity in the EU.
Translator health, and hence the cognitive capacity to produce high-quality work, can also be affected by environmental factors related to the ergonomics of the workplace. These include physical conditions such as temperature, lighting, office layout and ambient noise. Vischer (2007, p. 179) explains with an “environmental comfort model” that it is important for the physical and functional conditions of the workplace to be a good fit with the type of work that is being done. If a translator is cold or has to hold her head at an odd angle to avoid glare on her screen, for example, then her concentration is likely to suffer. A workplace case study of a professional translator (Ehrensberger-Dow & Hunziker Heeb, 2016) suggested that hunger and/or low-grade discomfort from extended sitting can also affect the frequency of errors in the translation process. That particular translator was allowed to work from home one day a week, an opportunity that many translators who work in open-plan offices might also appreciate. In an international survey of professional translators, most commercial staff translators reported that they shared their office with at least two other people, and almost 20% of them were in large offices with ten or more other people (Ehrensberger-Dow et al., 2016).

The potential for distractions and ambient noise as well as negative consequences for concentration, stress and health seems especially high for translators working in such shared workspaces (see Smith-Jackson & Klein, 2009; Vischer, 2008). Other conditions typical of professional translation work (i.e. “working at speed and to tight deadlines, not having enough time to do the job; frequent disruptive interruptions”) are indicators of high work intensity, which in the updated report of the 6th European Working Conditions survey is associated with increased risk of serious ill-health (Eurofound, 2017, p. 51). Considering that the added value of human translation (i.e. over MT solutions) relates to uniquely human traits such as creativity, discourse awareness and understanding of the target audience, it seems obvious that the well-being of the translator should be a priority for employers and clients. An ergonomics perspective does justice to understanding human cognition as embodied and embedded and to the translation process as an example of an enacted, situated cognitive activity, as explained in the following.

8.2.2 Translation process, ergonomics and cognition

The translation process has been described at the micro-level as a cognitive activity (see Hurtado & Alves, 2009 for a good review of models) and as partially overlapping cycles of orientating to the task and/or problem, drafting and revising (e.g. Jakobsen, 2002). It has also been described at the macro-level of a workflow involving multiple actors and interactions (e.g. Gouadec, 2007/2010; Risku, 2014). This is very much in line with how the IEA defines cognitive ergonomics: “concerned with mental processes, such as perception, memory, reasoning, and motor response, as they affect interactions among humans and other elements of a system”.

In many domains, cognitive ergonomics is primarily associated with features of human–computer interaction such as the design, organization and operation of user interfaces (see O’Brien, this volume), but it also includes mental load, decision making and stress that is related to work.

The international standard ISO 17100 (2015) for translation services makes it clear that proficiency using language technology and information sources is an integral part of the professional translation process. If such technology and information sources are in alignment with cognitive processes, then it is assumed that they will be easier to use and lead to more efficient performance, fewer errors and less stress than if they are not (e.g. Beale & Peter, 2008). For example, CAT tools are intended to make translators’ work more efficient by providing external stores of previously translated segments, by relieving translators of repetitive tasks, and by ensuring consistent terminology. Pym (2011) pointed out that using tools essentially externalizes and extends human memory. This can free up cognitive resources during the drafting phase and let translators concentrate on
higher-order problem solving and decision making. If functionalities and features of language
technology are not intuitive, however, they can add a cognitive load to the already taxing bilingual
task of translating new content or evaluating and editing TM matches.

Despite the reputed usefulness of language technology, there is still a lot of resistance to
it among professional translators. O’Brien (2012) referred to the potential friction between
translators and technology and drew on the notion of “cognitive friction” as defined by Cooper
(2004, p. 19) in his discussion of the increasing technologization of society. Intuitive user
interfaces and functionalities can allow translators to focus on the bilingual task at hand instead
of being slowed down or distracted by technical problems. If the ergonomics of translation tools
are less than ideal, though, translators could be expected to experience cognitive friction, which
could in turn affect their flow of thinking and consequently the efficiency of the process. The
findings reported by Bundgaard et al. (2016) are consistent with this: the translator they observed
at her workplace seemed to be assisted by the MT-assisted translation memory she was using
but at the same time demonstrated resistance to it. The analyses done by Teixeira and O’Brien
(2017) in their workplace study revealed a considerable amount of attention switching between
tasks and tools, leading them to suggest that this could interrupt cognitive flow and contribute
to cognitive load.

In an international survey focused on the ergonomics of translation (Ehrensberger-Dow et al.,
2016), about three-quarters of the respondents indeed reported that they used CAT tools, and
virtually all the users said that they found them helpful at least some of the time. Rather worrying
from an ergonomics perspective, however, was the finding that most of those respondents kept
the default settings instead of customizing them to suit their needs. This suggests that they
might be adjusting their cognitive processes to fit the machine instead of the converse. Similar
conclusions have been drawn in other research with respect to post-editing MT (Mesa-Lao,
2014; Moorkens & O’Brien, 2013), integration of MT in CAT tools (Teixeira, 2014) and the
usability of tools in general (Hansen-Schirra, 2012; Taravella & Villeneuve, 2013).

In their survey, Moorkens & O’Brien (2016) found that only about half of the respondents
reported that they liked using TM technology. Many complained about performance issues and
the default layout of the tool. In a follow-up study to the international ergonomics survey
mentioned earlier, O’Brien et al. (2017) analysed the items about CAT tools in more detail. Over
half of the users reported being irritated by their tools, and almost all of them took the time
to explain why. The most common irritating feature that was mentioned was the complexity
of the user interface, followed by segmentation, formatting issues, visual presentation and bugs.
Irritation is not known to be conducive to decision making, let alone creativity or efficiency.
Mitigating such irritations by making it easier for the translators concerned to choose their own
tool and/or individualize their settings can improve cognitive ergonomics as well as contribute
to the efficiency of their workflows.

The cognitive ergonomics of the translation process encompasses more than user interfaces
and functionalities of CAT tools, however. Working conditions, time management and stress can
all be associated with disturbances to the translation process (see Hansen, 2006). As explained
in the previous section (8.2.1), ergonomic issues can be related to the physical conditions of
the office, comfort of the furniture and usability of the equipment, but translators are also part
of a complex network. Social factors in the translation process related to cognitive ergonomics
include the ease with which collaboration and exchanges among translators can occur. In addi-
tion, possibilities for personal interactions between them and other agents in the chain of
target-text production, such as project managers and revisers, can positively affect their sense of
involvement and increase their job satisfaction. This is quite different from unwanted distractions
from others, whether within or outside their networks, which can detrimentally affect concentration and cognitive processing (see Baethge & Rigotti, 2010).

Other social factors related to ergonomics concern job security, status and self-determination. Recent advances in neural machine translation (NMT) have created such a hype that many laypeople believe that high-quality, fully automatic translation is just around the corner, which is contributing to uncertainty among professionals. The ultimate usefulness of NMT in all domains and the future of human translation remain to be determined, but current CAT technology already allows the integration of MT with translation memory. The quality of the MT suggestions depends on the system, which is usually beyond the individual translator’s control. This lack of control may be why some participants in a focus group study carried out at the European Commission’s Directorate-General for Translation avoided using MT, expressing fear of its influence on translation performance as well as general discomfort with the technology (Cadwell et al., 2016). New expectations regarding productivity concomitant with developments in CAT and MT are best aligned with translators’ competence and work patterns, and ideally accompanied by consultation and training in order to encourage involvement and empowerment.

The comparatively greater autonomy of freelance translators to determine the tools they use may account for why they seem less likely to find them irritating, a complaint more frequently expressed by their commercial and institutional counterparts (see O’Brien et al., 2017, or Ehrensberger-Dow & Massey, 2017). If the latter were given more of a voice in the choice of software and timing of CAT updates, they might be more inclined to take ownership of new technology and exploit it in their work. Even so, being under self-imposed or organizational pressure to spend extended periods engaged in very similar types of technologized translation work can be cognitively taxing. Taking regular mini-breaks might be a simple solution, but many people are unaware of the value of such techniques to improving cognitive performance. Despite a generally accepted recognition of the role of feedback in learning and in the development of expertise (e.g. Hoffman et al., 2014), models of the translation process rarely include the possibility of feedback on ergonomic issues. As outlined in the next section, heightening translators’ awareness of the importance of ergonomics to cognitive processing in translation tasks would be a significant first step.

8.2.3 Translator training and ergonomics

One of the primary motivations for investigations into the ergonomics of translation has been to gain insights into physical, cognitive, social, environmental and organizational aspects in order to improve working conditions. The basic principle of good ergonomics is that workplaces and workflows should be translator centred and not technology centred. Simply by answering questions about their furniture, equipment, tools and working practices, translators can become more aware of the ergonomic conditions they are working under and the potential issues associated with these. In the Meidert et al. (2016) study mentioned in Section 8.2.1, health issues were more noticeable among younger professionals and freelancers, suggesting that older commercial and institutional translators had learned about the importance of good ergonomics on the job or from prior negative experience. To avoid such painful learning curves, information about good ergonomic practice can be included in university translation courses, discussed in professional development seminars for translators, and disseminated through professional associations (e.g. O’Brien & Ehrensberger-Dow, 2017).

Lavault-Olléon & Carré (2012) propose that metacognition, particularly with respect to cognitive ergonomics, should be fostered during translator training in order to prepare students for the current realities of, and possible changes to, professional translation. Including ergonomics
in translator training can also contribute to empowering students and professionals to identify and change dysfunctional practices they might encounter in the workplace (see Robertson & O’Neill, 2003). If translators receive information about physical ergonomics early in their education and careers, they can procure suitable equipment and furniture and thereby minimize the risk of musculoskeletal complaints developing in their upper extremities, back, shoulders, arms and hands from extended periods of sitting in front of a computer. Good ergonomic practices for the use of CAT tools can also be conveyed during translator training programmes, for example in the context of considering their usability (see Brunette & O’Brien, 2011; Krüger, 2016). By including more explanation of the ergonomic benefits of individualizing settings, translators might be encouraged to take increased ownership of language technology.

Although ergonomics is usually understood to refer to working conditions, scholars have also applied ergonomic principles to the completion of any type of task, including those by learners in various educational settings. One of the first to take an ergonomic approach to education was Kao (1976), who included manual skills and scheduling as well as teaching materials, facilities, equipment and environment in his considerations. A more recent approach accounts more convincingly for the interaction of various ergonomic factors as learning progresses (see Benedyk et al., 2009) and could be used as a model in translator training. An ergonomic approach to translator training which also includes training in ergonomics could allow institutions and professional organizations to contribute to optimizing the deployment of human and technical resources at the workplace and ultimately ensuring the quality of translation and the future of the profession.

8.3 Recent developments and future directions

One of the most important lessons to be learned from putting the translator in focus and taking an ergonomics perspective is the potential for various aspects of the workplace to interact and impact on the human activity of translation. If cognitive resources are absorbed by trying to ignore distractions to finish a pressing job on time, for instance, this might impinge on creativity. This might result in lower quality, which in the worst case could lead to the loss of a client. The cognitive and economic benefits and costs of good and poor ergonomics, respectively, for human translation are under-researched topics that are especially deserving of attention as the pressures from technologies such as NMT increase. Although some ergonomic recommendations seem to be generally applicable, others may depend on factors such as geography (e.g. office temperature), culture (e.g. type of interactions) or employment status (e.g. freelance or staff). The following sections outline considerations and directions for research into cognitive load, the economics of translation workplace ergonomics, and comparisons of ergonomic conditions.

8.3.1 Cognitive load and ergonomics

Cognitive load, a construct originally from instructional psychology, is based on the assumption that humans have limited capacity to process information and that learners’ working memory can be overloaded by different types of input (see Schnotz & Kürschner, 2007; Sweller, 2005). Translation is a multi-activity task, which can easily cause cognitive overload even when conditions are good. It requires translators to process input in one language and formulate output in the target language while thinking, retrieving and evaluating information from internal and external resources under tight temporal constraints. Translation never takes place in a vacuum, either: it is a situated activity that is influenced by societal expectations, information sources, technological aids, economic demands, organizational requirements and physical constraints (e.g.
Risku, 2010). Professional translators are subject to heavy demands on concentration, working memory and bilingual lexical retrieval processes, since they must also constantly keep in mind their client’s requirements and target audience’s needs. Just as models have been proposed to explain the effort or cognitive load involved in simultaneous interpreting (e.g. Gile, 1995/2009; Seeber, 2013), the theoretical construct of mental load has been used to explain how various factors such as time pressure, information content or input quality can affect translation performance (see Muñoz Martín, 2012, 2014).

The concept of cognitive load has been used in translation process research (e.g. Behrens, 2016; O’Brien, 2006), and has proven particularly useful in understanding that the load involved in accomplishing the intrinsic nature of the task itself (i.e. translation) is supplemented by extraneous load from dealing with task-external aspects (e.g. annoying features of CAT tools). The research reviewed in the preceding sections suggests that frustration, irritation and cognitive friction can all contribute to cognitive load. Emotional states and coping mechanisms also require the allocation of a certain amount of cognitive resources, which comes at the expense of other activities relying on the same resources, such as problem solving (Trémolière et al., 2016). There is still much potential for determining how increased cognitive load—from poor ergonomics, among other factors—can affect cognitive processing and ultimately, translation performance.

8.3.2 Workplace ergonomics and economic considerations

Calls for better ergonomic conditions can initially be met with scepticism by language service providers, translation project managers, and even translators working on their own account, since many people associate ergonomics with costly desks, adjustable chairs and strangely shaped keyboards. Such a limited focus on the cost of improving physical ergonomics ignores the economic benefits of increasing productivity by minimizing discomfort and sick leave related to musculoskeletal disorders. It is widely recognized that demanding cognitive work that requires intense concentration is best done in comfortable conditions (i.e. not too hot, cold or draughty). Office policies that give translators more control over basic aspects of their working environment, such as temperature, airflow and lighting, can foster a focus on the task and hence the quality of decision making as well as well-being and ultimately, job satisfaction.

Another ergonomic issue related to concentration that emerged in the research reported in Section 8.2.2 was the frequency of disturbances to the translation process by unrelated e-mails, chats and phone calls. If translators are often disturbed while working on a translation, they might have trouble entering or maintaining a state of flow (see Nakamura & Csikszentmihalyi, 2002). Productivity and quality can consequently suffer, since the translators have to search for the place they were before the interruption, and possibly re-read the source and/or target text in order to reconstruct in their minds the meaning that they are trying to convey.

Translators’ working conditions also extend to organizational aspects such as team climate, diversity, innovativeness, respect, trust, collaboration and management support, all of which can contribute to productivity. Various scholars have expressed their concern that if an organization fails to address issues associated with such aspects, translators can feel disempowered and alienated, potentially reducing their commitment, agency and sense of responsibility for their decisions. For example, a lack of involvement in decision making at the workflow or organizational level may explain why so many translators have been resistant to taking new technology on board (see Cadwell et al., 2018). Lack of autonomy and self-determination can be detrimental to job satisfaction and company loyalty, which can result in costly staff turnover. Because of the potential for personal and societal costs, more research into the economic impact of translation workplace ergonomics is warranted.
8.3.3 Comparisons of ergonomic conditions

Ergonomic issues that emerged in the context of a translation workplace study carried out in Switzerland (see Ehrensberger-Dow & Massey, 2014) led to an exploratory study comparing professionals in Switzerland and Ireland (reported in Ehrensberger-Dow & O’Brien, 2015). The differences identified between the Swiss and Irish groups might have had less to do with the country than with the employment status of the respective groups (i.e. staff translators and freelancers, respectively). The international survey of professional translators launched at the FIT Congress in Berlin in 2014 took this into account, adding the category of institutional to staff and freelancer as well as leaving a space for any other self-declared employment status. By the time the online survey was closed four months later, translators from almost 50 countries had completed it, with about 100 or more responses from eight of those countries. The analyses of the total sample by employment status revealed, for example, that freelancers had the poorest physical ergonomic conditions but a greater degree of self-determination than the other groups, and that aspects of the workflow related to organizational ergonomics were better for the institutional translators than for the other two groups (Ehrensberger-Dow et al., 2016).

In a detailed comparison of the survey results from Finland and Switzerland, the translators from the two countries showed different ergonomic profiles, perhaps partly but perhaps not only, because there were far more freelancers in the Finnish group (Ehrensberger-Dow & Jääskeläinen, 2019). Certain differences might relate to culture, such as the lower likelihood of Finnish translators using the phone to discuss their work and the higher use of e-mail than for the Swiss translators. The members of the Finnish group were also more likely to customize their CAT tools and much less likely to be irritated by them. Follow-up research would be needed to validate these and similar findings before generalizations about good ergonomic practice for the various forms of professional translation in different countries can be drawn, especially in light of rapid developments in technology and differences in working conditions.

Some caution is called for when interpreting results of any kind of survey research into ergonomics. The items in the online survey reported here were constructed based on the recommendations for good ergonomic practice for computer-related office work derived from the literature (e.g. Salvendy, 2012) and from guidelines published by insurance companies (SUVA, 2010) and governmental agencies (CCOHS, 2011), primarily from Western countries and not specifically for translation work. In addition to the usual problem of self-selection, awareness building about ergonomic issues might have taken place while the translators completed the survey. Another difficulty in generalizing from quantitative survey results is the challenge of reliably accessing information about soft issues related to organizational aspects of translation such as team climate, diversity, innovativeness, respect, trust, collaboration and management support. Other methodological approaches might be more suitable for investigating the organizational ergonomics of professional translation (e.g. Cadwell et al., 2016; Dam, 2013; Ehrensberger-Dow & Massey, 2017; Risku et al., 2017, this volume).

In any case, an ergonomics perspective can contribute to a greater understanding of the situated activity that translators engage in and the resources they draw on to deal with their complex bilingual work. Framing such research in terms of ergonomics might make it more accessible and generalizable to other domains and disciplines interested in human cognition.

Notes

1 www.iea.cc/whats/index.html
2 www.hfes.org/
Translation, ergonomics and cognition

Further reading


Physical and organizational issues, which are only touched on in this chapter, are dealt with in more depth in the 2017 volume.


The first collection of articles specifically focused on the importance of various aspects of ergonomics for translation and interpreting practice and research.


This is the first special issue devoted to ergonomics and the implications of an ergonomics perspective for T&I education.

See also the chapters on Translation, human–computer interaction and cognition (by Sharon O’Brien) and Translation and situated, embodied, distributed, embedded and extended cognition (by Hanna Risku and Regina Rogl) in the present Handbook.

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Ehrensberger-Dow


SUVA (2010). *Bildschirmarbeit: Wichtige Informationen für Ihr Wohlbefinden.* Lucerne: SUVA.


