From "aged care" to "smart elderly care". A corpus-based jurilinguistics analysis in Chinese and English

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Abstract: The concept of "care" is complex and multifaceted, and it is evolving rapidly in our digitized societies. By comparing the contexts of occurrence of the term in English and Chinese, this research aims to shed light on its evolution and diverse interpretations across cultures and legal systems. The development of technology has led to a growing digital divide, which can be addressed through a human rights-based approach, a business-based approach, or a combination of both. In China, the term "smart elderly care" has emerged to address the growing demand for technology-driven care solutions, while in the English-speaking world, the term "aged care" has gained prominence. The European Union has invested in programs and strategies to

promote the use of digital technologies in elder care, introducing new concepts such as "older persons in long-term care" and "Older Persons' LTC". A linguistic analysis of English and Chinese legal corpora has revealed the diachronic evolution of the term "care" from psychological care to technical gestures and attitudes involving digital technologies. In Chinese, the term "care" is expressed differently depending on the context, words used, and participants involved in the speech acts. This research underscores the importance of understanding the complexity of the term "care" and its diverse interpretations across cultures and legal systems. By bridging the gap between these different perspectives, we can develop more effective and inclusive approaches to elder care in an increasingly digitalized world.

Keywords: care; elderly; digital technologies; Chinese and English; legal corpora.

Introduction: care today, a comparative approach

"Care" has become a popular concept that applies to various aspects of our societies today. The term "care" appears as a professional concept belonging to different fields at the same time (Noël-Hureaux 2015), while evolving at a rapid pace in our digitalized societies. As a specialized term, it belongs to the domains of economy, justice, health, international cooperation, etc. Awareness of the complexity of this legal term is needed in order to better ascertain its impact and role in specific fields of activity, such as the field of aged/elderly care. Researchers and professionals agree on the difficulty arising from the complexity of this specialized term, partly due to its polysemy, but also to the fast-paced evolution of our globalized world:

> "One problem is that care does not have a clear meaning or set of references – some work speaks of 'care', some of 'long-term care' and some of 'social care'. In addition, the concept has been applied to mean profoundly different things, stretched to cover highly-abstract philosophical matters to the minute details of everyday life." (Daly 2021: 109).

In a world more and more dominated by the so-called "digital revolution", the meaning of care has shifted from the person-to-person relationship to a contact mediated by technology which may be

challenging to an important part of the globe's population, the elderly, while impacting both the social and business environments. As Widmer-Iliescu (2022) puts it:

> "Two megatrends are converging exponentially and on a global scale: technological advancement and population ageing. This phenomenon presages considerable changes in the socioeconomic landscape and cross-sectoral business models."

This study adopts a comparative approach, analyzing occurrences of the term "care" in legal corpora in English and Chinese. By examining semantic and pragmatic features, we aim to elucidate how this legal concept is perceived, expressed and developed in diverse cultures, including China, English-speaking nations and international organizations, as well as its multiple stakes in legal translation (Gémar 2018). The dataset encompasses parallel legal corpora from China, Hong Kong, the UN and various EU corpora (EU Parliament Speeches, I-CARE-SMART).

The methodology relies on a comparative corpus-based analysis (Kennedy 1998) of the semantical fields of the term "care" regarding its uses and evolution as a legal, medical, economic, political (Tronto 1998) concept, as well as its Chinese equivalents, with a specific focus on the digital transformation of the elderly care.

We trace the diachronic evolution of the term "care" from its origins in psychological and spiritual realms, dealing with "apprehension, anxiety, grief" (cf. Merriam-Webster Dictionary), towards its expansion into the fields of medicine, law and economics, as well as towards more technical gestures and attitudes involving the new digital technologies. Particular notice is taken concerning the meanings of the term in Chinese where different semantic aspects of "care" are rendered through different contexts and by different words which makes the translation of this term particularly challenging (Brugère 2009). We identify new concepts and terms born in different linguistic and cultural contexts, such as "smart elderly care" in China and "aged care" in Australia, which then are exported to the wider aged/elderly care industry in the English-speaking world.

The etymology of the noun *care* leans towards the psychological rather than the physical. In Old English *caru, cearu* meant "sorrow, anxiety, grief," also "burdens of mind; serious mental attention," and in late Old English it also signified "concern, anxiety

caused by apprehension of evil or the weight of many burdens, as it originated "from Proto-Germanic *karō „lament; grief, care". The meaning "charge, oversight, attention or heed with a view to safety or protection" is attested from the 15th century onwards, while at the end of the 16th century it started to mean "object or matter of concern", "do", "be careful" (cf. Online Etymology Dictionary). The primary sense is that of inward grief, while the secondary signification relates to concern and need of special attention in order to avoid a negative consequence. The diversification of *care* started in the 19th century, initially connected to children and religion: "pastoral care", "dull care", "care of youth". Subsequently, legal and medical connotations emerged in the USA during the early 20th century. Towards the end of the 20th century and the beginning of the 21st, "care" expanded its scope to encompass the elderly, as well as legal and financial contexts: "maternity care", "health care", "U.S. Health Care Policy", "Managed Care", "Financing Health Care and Old Age Security", "Palliative Care".

During the first two decades of the 21st century (1 Jan. 2004–31 Dec. 2019) the fields of application for the term care diversify even further extending to army veterans, children, and family in a complex approach: "Person-centred Dementia Care", "Veterans affairs drivers for the development of integrated physical and mental health care", "Family Care and Social Capital: Transitions in Informal Care", "Pediatric Integrated Care", "social care", "Person-Centered Care". Moreover, the concept of care seems intricately linked to the traditional notion of "women's work," involving responses to others' needs and household maintenance (Daly 2021: 109). The associated terms fall within the semantic field of housekeeping, encompassing activities such as tending, dressing, washing, feeding, nurturing, and more. However, the evolution of this concept embraces a non-gendered perspective, particularly evident in discussions about "migrant carers" and those providing care outside conventional home structures.

These evolutions follow the two tracks identified by Daly as having been taken by researchers of the field, which are „work on women, family and private life" and "research on the medical/health system and services for frail older and ill adults and children" (Daly 2021: 109). These tracks have given rise to four core conceptual categories relating to the role of care in ethics in the workplace, the legal and political system, service provision industry and its dynamic role in the context of globalization: "care as labor and value orientation; care as a component of welfare state policy; care in the context of the

organization and effectiveness of service provision; care as embedded in global processes." (Daly 2021: 109). Furthermore, the ethical aspect of care as practiced by women is construed along four axes of meaning: caring about; caring for; care-giving; care-receiving (Fisher, Tronto 1990). From this foundation, the concept develops into a legal and political reality under the bigger umbrella of the welfare state which connects notions like family and private life to state policies and politics, business and market, civil society and human rights. Care understood as part of the semantic field of services is surrounded by economic notions like delivery, meeting needs, care markets, marketization of care (Daly 2021: 111), in an extra-linguistic context triggered by the need of support for the ageing members of society.

The definitions of care are polymorphous, as Daly sums up the challenges of unifying approaches which present care either as a set of values or as an activity specific to humans and connected to the principle of responsibility coined by Hans Jonas, but also as a multi-layered provision of attention to people in general or as an everyday practice of tending to the needs of dependent persons:

> "For Held (1996) care is a cluster of values and practices; Tronto (1993: 103) views care as 'a species activity that includes everything that we do to maintain, continue and repair our „world" so that we can live in it as well as possible'. Obviously, care is boundaryless in this framing. In contrast, those researching the field of policy and provision are more inclined to ground their conceptualization in the practice of care: for Kremer (2007: 28) care is the provision of daily socio-psychological, emotional and physical attention to people; for Daly and Lewis (2000: 285) care encompasses 'the activities and relations involved in meeting the physical and emotional requirements of dependent adults and children, and the normative economic and social frameworks within which these are assigned and carried out'." (Daly 2021: 113).

Linguistically speaking, *like* is the most common synonym for *care,* followed by *worry,* according to TextFocus, a website that provides help to find variants for content and web page improvements. This sets the semantic description of the perception of this term within the realm of emotions. In contrast, *Tutelage, guardianship* and *upkeep* are the least frequent synonyms as listed by the same entity. The University of Texas Linguistic Research Center defines, in its Indo-European Lexicon dictionary, *care* as a subcategory of the semantic field "emotion" used to list Proto-Indo-European lexical entries drawn from Julius Pokorny's *Indogermanisches etymologisches Wörterbuch*

(2 vols, 1959–1969). The word *care* appears in several translations of Proto-Indo-European etyma[1] as a synonym of cure, complain, honor, concern oneself with, mourn, remember, think of, pay attention, be ill, sorrow, thus participating to experiencing and voicing a scale of emotions going from paying attention to someone to honoring a person and worrying about them and up to feeling sorrow or remembering somebody as part of mourning.

1.   The evolution of care terminology

The Google N-gram Viewer English (2019) (Graph 1) corpus reveals that the phrase "old age care" was relatively absent until 1875, with sparse occurrences until 1934. Between 1934–2004, legal connotations emerge, along with a comparative approach[2] and global perspectives:
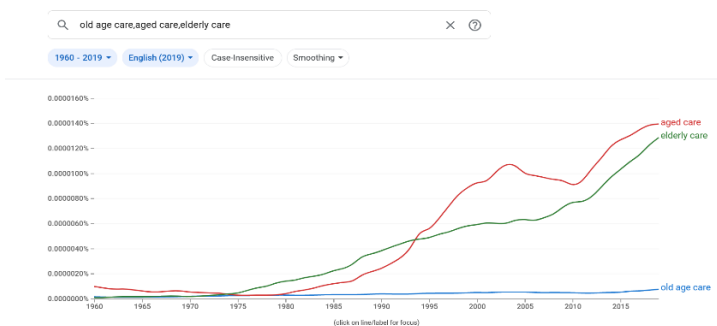
Graph 1: Old age care, aged care and elderly care in Google N-Gram Viewer[3]

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[1] "kois- 'to cure, worry, care for'; mēudh- 'to complain, care about, be intent'; sep- 'to honor, care for, concern oneself with'; (s)mer- 'to mourn, remember, think of, care for'; sterg- 'to care for, pay careful attention to'; su̯ergh- 'to be ill; to sorrow, care for'" (cf. The University of Texas at Austin, Linguistics Research Center, Indo-European Lexicon (IELEX)).

[2] "Old Age Care in Sweden: Yesterday, Today... Tomorrow?" (Sundström 1987), "Choices in Financing Health Care and Old Age Security" (Prescott 1998), "old age security" (Hasse 1935), "Elder Care Policies in China: The Social Value Foundation is in the Family" (Liu 1999: 6), "The Young, the Old, and the State: Social Care Systems in Five Industrial Nations" (Anttonen et al. 2003: 159), "public old age care" (Walker 2004: 228).

[3]   The   Google   N-gram   Viewer   English. https://books.google.com/ngrams/graph?content=old+age+care%2Caged+care%2Celd

From 2005 to 2010, the corpus reflects increased attention to the old age of pets, cross-regional comparisons, and a shift towards healthcare policy, transitioning from "health care" to "care for health"[4].

From 2011 to 2017, the corpus shows an interest in the old age of pet animals, as well as in psychiatry, innovative phrases like "advanced old age", and a focus on the professionalization of the health professional in the field of gerontology. The terminology begins to include additional criteria, such as "rural old-age care", broadening the scope of the noun Furthermore, there's a noticeable trend towards examining care in specific countries and transborder contexts, reflecting global aging concerns (e.g., "transnational aging" and "old age care").

The Google N-Gram Viewer English (2019) corpus shows that the phrase "aged care" was apparently coined in Australia, marking its presence in the late 1800s. Australia and China are two of the few, and the first, countries with specific legislation in the field. The initial peak in 1963 signifies a surge of interest, with a more significant uptick commencing in 1980. Another substantial peak occurs in 2004, followed by a resurgence from 2010 to 2019.

The 1800-1990 corpus contains Australian and American books, US Congressional hearings, and reports on national strategy in Australia. The 1991-2011 corpus incorporates internal policies, legal documents from Australia, New Zealand, and the USA, as well as a reform in Australia (1994). In 2018, a World Bank Group report titled *Options for Aged Care in China* signifies global engagement with aged care issues.

1.1. Australia

Australia's linguistic landscape around "aged care" diversifies in the early 2000s. Phrases like „long-term caring" appear, emphasizing the continuity of care. In 2011, one can read about "Long-term Caring:

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erly+care&year_start=1960&year_end=2019&corpus=en&smoothing=3&case_insensitive=false. Accessed December 11, 2023

[4] "bull terrier old age care" (Winslet 2006), "old age care" (Aboderin 2006: 20), "The Road to Welfare Pluralism: Old Age Care in Sweden, Germany and Britain" (Schartau 2008), "Care for health: Public Health Status and Forecast reports 2006" (Hollander et al. 2007), "The New Politics of Old Age Policy" (Hudson 2010: 271).

Residential, Home and Community Aged Care", highlighting different care settings. In 2013 the multicultural side of care is mentioned in the "Multicultural Aged Care Guide. A Resource to Assist Aged Care Providers and Health Professionals Provide Culturally Appropriate Care to Older People from Culturally and Linguistically Diverse Backgrounds"; a year later a new phrase appears, "aged care workers", in the field of health care training: *The Australian Carer: A Training Manual for Aged Care Workers*, by Helen Croft.

The term "aged care" is situated within a specific legal framework in Australia: the Aged Care Act 1997. This legislation outlines rules for funding, regulation, provider approval, care quality, and the rights of care recipients. Other Australian laws address aspects such as accommodation, safety, quality of life, consumer choice and financial security, reflecting the comprehensive legal landscape surrounding aged care. The "Aged Care: The Complete Australian Guide" appears in 2015 in the field of legal counselling, human resources management and medical advice for health professionals.

An analysis of the *Aged Care (Transitional Provisions) Act 1997* based on bi-grams built with "care" to the left shows the frequency of occurrence of phrases in the text as follows: *care recipient(s)* 531; *care service(s)* 278; *care subsidy* 140; *care fees* 11; *care agreement(s)* 12; an analysis of the same law based on bi-grams built with "care" to the right shows the frequency of occurrence of phrases in the text as follows: *the care* 403; *residential care* 377; *aged care* 215*; home care* 93; *flexible care* 89; *particular care* 6; *personal care* 4. Other aged care laws in Australia concern the fields of accommodation, safety, quality of life, consumer choice: *Aged Care (Accommodation Payment Security) Act 2006, Aged Care (Accommodation Payment Security) Levy Act 2006, Aged Care (Living Longer Living Better) Act 2013, Aged Care Amendment (Red Tape Reduction in Places Management) Act 2016, Aged Care Legislation Amendment (Increasing Consumer Choice) Act 2016, Aged Care Quality and Safety Commission Act 2018* (cf. Department of Health and Aged Care, Australian Government).

In a 107-page report titled *Aged Care Quality and Safety* there is a single mention of "smart" and "technologies" in the chapter titled "Recommendations". The report advocates for the implementation of pre-certified assistive technologies and smart technology to address care and functional needs, enhance safety management, and improve the quality of life for older individuals.

A bi-gram analysis of this report gave the following frequency results:

- bi-gram "care" to the right: *aged care* 653; *health care* 45; *home care* 39; *personal care* 32; *residential car*e 24; *direct care* 12; *palliative care* 8; *life care* 7; *primary care; dementia care* 5*; nursing care* 5; *therapeutic care* 4
- bi-gram "care" to the left: *care quality* 80; *care service(s)* 78; *care system* 41; *care workforce; care providers* 26; *care sector* 20; *care research* 17; *care workers* 15; *care commission* 12; *care finders* 12; *care management* 12; *care facilities* 10; *care program* 10; *care needs* 9; *care package* 9; *care data* 8; *care act* 7; *care assessment* 7.

The phrase "aged care" seems to be a more inclusive term. There is a focus on the quality of care. "Care" has turned into a service which employs workforce. The term is used descriptively in order to refer to agents, context, modalities, providers, receivers, rules, evaluation, examples, etc.

As a legal term, "aged care" has a precise, pragmatic Australian definition. A Google search for "aged care definition" gave around 1 510 000 000 results in 0,59 seconds. The first occurrence was on the Australian government website:

> "What is aged care? Aged care is the support provided to older people in their own home or in an aged care (nursing) home. It can include help with everyday living, health care, accommodation and equipment such as walking frames or ramps. Government-funded aged care services are available to eligible people." [5]

The second occurrence was of an Australian NGO website saying: "Aged Care is the personal and/or nursing care that older individuals living in Australia may receive in order to support them to stay as healthy and as possible…"(agedcare101, 2024), while the third occurrence appeared on another Australian NGO website[6].

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[5] Australian Government, Department of Health and Aged Care. https://www.health.gov.au/health-topics/aged-care/about-aged-care/what-is-aged-care. Accessed December 10, 2023.
[6] *Aged Care Guide.* https://www.agedcareguide.com.au/terms/residential-aged-care. Accessed July 14, 2024.

1.2. „Obamacare" in the USA: politics and elderly care

The term "Obamacare" emerged as a politically charged compound noun in American English. From a negative hapax (2007) to a positive term (2012), Obamacare was endorsed by the US President, turning a politico-linguistic weapon against its makers: Obama cares![7]. *Medicare* is a blended term formed with the clipped adjective *medical* and the noun *care*: "The Affordable Care Act strengthens and protects Medicare for seniors who have earned and paid for the guaranteed coverage it provides."

Emotions appear in the semantics field of *care*, as it happens explicitly in the title of the article *What Seniors Have to Fear from Obamacare* (Goodman 2014), but also implicitly by using the plural form of the possessive adjective in the first person in the title of a proposed reform, "Care for Our Seniors Act. Personalization within the law" (Care for Our Seniors Act: Overview), or the emphatic acronym WISH as a short name for a law*: Well-Being Insurance for Seniors to be at Home (WISH) Act* (Certification for Long-Term Care, September 21st, 2021).

The U.S. Department of Veterans Affairs has redefined "care" by linking it to a historical obligation. Citing President Lincoln's promise to veterans, their widows, and orphans, the department frames its mission as honoring and serving those who have served their country (U.S. Department of Veterans' Affairs 2023).

Also, the emotional aspect of care is focused on by the name of the department, an acronym which reads *I CARE* ("VA Core Values are: Integrity, Commitment, Advocacy, Respect, and Excellence — better known as "I CARE."), while the affective side of the political approach is clearly stated: "Established Ethics Directive: Trust, Ease, Effectiveness and Emotion"[8].

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[7]   American   Health   Care   Association. https://obamawhitehouse.archives.gov/sites/default/files/docs/the_aca_helps_seniors.pdf. Accessed December 10th, 2023.

[8] US Department of Veterans Affairs. https://www.va.gov/icare/. Accessed October 9, 2022.

1.3. I-CARE-SMART in the European Union

In the European Union, the European project I-CARE-SMART (Interreg Central Europe) exhibits a pun in the title of a European program built as a clipping from an already blended item, *Interreg* (inter+regional): I(nterreg)-CARE-SMART. This project aims to improve the quality of life for seniors and people with disabilities through science and business, leveraging the "silver economy" in Central Europe. The project signifies a shift in the terminology of care in the European Union towards incorporating the idea of "smart" technology into the concept of care. It recognizes that technology is increasingly intertwined with elderly care, driven by developments in artificial intelligence (AI) and the Internet of Things (IoT). The language of the project emphasizes the transformative potential of smart technology in enhancing elderly care and promoting quality of life.

1.4. Aged care and smart technology

The hybridization of aged care and smart technology has started at the beginning of the 21st century. With the development of AI and the advent of the Internet of Things at the beginning of our century, technology is taking an increasing place in elderly care. The adjective "smart" has appeared in academic papers on elderly care. The first article we found was published in 2006 (Jih, Hsu and Tsai). "Smart" is used as a modifier for nouns such as "environment" or "home". Over time, its place changes to become the modifier of "care" in the 2010s.

This syntagmatic evolution, which seems to proceed from the principle of economy, has nevertheless a non-negligible consequence on representation. As we can read in the summary of a paper in the *Journal of Physics*, the smart elderly care is set up as the new model in opposition to the traditional model. And we can see later that the content of "care" is also changing:

> "China is just experiencing a period of population aging accelerating. With the approaching of an aging society, elderly care becomes increasingly challenging; however, a variety of disadvantages has been exposed gradually, including unsatisfactory health care, unstable daily

care, insufficient emotional comfort, no timely emergency aids, and so forth. The traditional elderly care model has already impeded, to a large extent, the sustainable development of elderly care. As the rapid development and wide application of big data, smart elderly care comes into being, which shows various advantages while comparing with traditional elderly care services. The Chinese government has the responsibility to implement the smart elderly service in its initial stage of development." (Zhou 2019: 1).

2. "Care" in Chinese

Thus, the concept of "care" is inherently dynamic and multifaceted. Its various aspects, ranging from recipient and application fields to times, places and methods, continually evolve and diversity. In its translation into Chinese, two focal points are emphasized: the definition of care (its composition and identification of caregivers) and its diversification, considering the recipient (youth, patient, veteran, elderly), duration (day, long-term, palliative), location (home, nursing homes), the domain (medical, health), and degree (slight, reasonable, ordinary, great).

In China, the concept of "care" carries profound cultural significance intricately linked with the traditional value of filial piety. Caring for the elderly, traditionally viewed as a family responsibility, has undergone reassessment due to societal shifts accompanying rapid economic development in recent decades. This section explores these shifts, particularly within the context of old age care.

2.1. "Care": structure of Chinese terms and equivalents

To comprehend the linguistic nuances associated with "care" in China, it is imperative to understand how Chinese terms for „care" are constructed. Modern Chinese often utilizes dissyllabic words composed of morphemes, each with its own meaning (Ge 2018). For example, 护理 *huli,* one of the possible translations for "care", consists of two morphemes 护 *hu* (protect, defend) and 理 *li* (arrange).

Translating "care" into Chinese presents challenges due to its multifaceted nature. Different fields and subject-patient relationships are explicitly represented in Chinese by specific terms, generally non-interchangeable. For instance, in the medical field, emphasizing health, the equivalent term is 保健 *baojian* (maintaining health), often associated with 医疗 *yiliao* (medical treatment). The term "long-term care" engenders translation debates, resulting in variations such as 照护 *zhaohu*, 护理 *huli*, or even 照料 *zhaoliao*, contingent to factors like duration, location, and the professional involvement. A comparative analysis of these terms will be conducted later. The expression "aged care", referring to a population category and all aspects of life, finds its Chinese equivalent in 养老 *yanglao*. However, a noteworthy nuance exists: the subject of 养老 *yanglao* can also be the elderly themselves.

Similarly, terms for youth vary according to the content of "care". For young children, it is 看护 *kanhu* (look after and protect). Parents entrust their children to a daycare center (日托 *rituo*). For teenagers and young adults, it shifts more towards solicitude in normal time and helping 救助 *jiuzhu* in distress.

Some compound terms differ in intensity, as well as the relationship between the subject and the patient. For instance, 关心 *guanxin*, 关怀 *guanhuai*, and 关爱 *guan'ai*. All three share the morpheme 关 *guan* (to be concerned). 关心 *guanxin* is likely closer to the general sense of "care" as being concerned or preoccupied, applicable to matters as well as people. Both 怀 *huai* and 爱 *ai* refer to love and tenderness, but 关怀 *guanhuai* implies a more hierarchical relationship: from the authority or its representatives to the weak or those needing protection (represented by the image of "taking in the arms"). This hierarchical distance is mitigated with 爱 *ai*: 关爱 *guan'ai* can go from parents to children and vice versa, presenting a less negative image when applied to a group of people being helped.

看 *kan* has the meaning of supervise, but when it is combined with 管 *guan* (control) or 护 *hu* (protect), it is not at all the same register. 看管 *kanguan* is supervise with the purpose of preventing displacement. Thus, it is applied to personal belongings and to people deprived of their liberty, because in both cases, it is to "keep" them. While 看护 *kanhu* emphasizes the protection and care of dependent people: babies, elderly or sick.

As for the term 养老 *yanglao*, it is probably the most culturally embedded in China. It encompasses two aspects namely: supporting the life of an elderly, where the morpheme 养 *yang* represents the notion of

奉养 *fengyang*: the financial or physical support provided ty adult children to parents; living quietly in old age, where the morpheme 养 *yang* represents the notion of 休养 *xiuyang*: resting and preserving.

It is also the official term used in the Law on the Protection of the Rights and Interests of the Elderly (amended in 2018, hereafter referred to as the "Protection Law"). Its collocates can be the places where the elderly spend their old life.

2.2. Terms and phrases related to the care of the elderly

After this brief presentation of possible words for "care", we explore expressions specifically related to the care of elderly individuals, relying on three primary corpora: the United Nations Parallel Corpus (UNPC), a corpus of laws (hereafter referred to as Law_ZH, containing 22 texts and 5,289 tokens), and Chinese regulations (hereafter referred to as Regulation_ZH, containing 863 texts and 350,275 tokens) explicitly mentioning elderly individuals. The last two are compiled by ourselves.

The UNPC (800 million tokens from 159318 texts) is a compilation of official records and other parliamentary documents of the United Nations between 1990 and 2014. The Chinese documents are manually translated. It provides an initial perspective on the translation of the terms "aged care" and "elderly care" from English to Chinese. Within the English corpus, 118 occurrences of „elderly care" and 48 of "aged care" were identified, resulting in a plethora of Chinese translations: 25 versions for "elderly care" and 10 for "aged care". This remarkable diversity in translation reveals the complexity of the concept of "care".

The modifiers "elderly" and "aged" were translated as 老年人 *laonian ren*, 老人 *laoren*, or 老年 *laonian*. The choice of Chinese terms appears somewhat arbitrary, with 老年人 *laonian ren* referring to the elderly as a group, in contrast to other age groups. It is employed in the Law on the Protection of the Rights and Interests of the Elderly. 老人 *laoren* is a sociological term emphasizing individuals, while 老年 *laonian* designates the later stage of life.

The most frequently used Chinese expressions to translate "care" are 护理 *huli*, 照料 *zhaoliao*, and 照顾 *zhaogu*. The table below (Table 1) lists their frequencies.

Table 1. Translations of "care" in UNPC.

Terms	Aged care	Elderly care	Total
护理 *huli*	13	33	46
照料 *zhaoliao*	3	14	17
照顾 *zhaogu*	3	8	11

2.3. Terms used in Chinese legal texts

Before delving into the detailed lexicological analysis of these three terms, it is essential to observe the terms used in Chinese legal texts. The analysis of the two *ad hoc* corpora is conducted using the LancsBox 6 tool (Brezina, Weill-Tessier and McEnery 2020). The "Words" function helps identify key terms related to care in both legal corpora: 照顾 *zhaogu*, 照料 *zhaoliao,* 护理 *huli*, and 照护 *zhaohu*. As observed, the first three terms are common with the UNPC. Term frequencies and significant collocates in both legal corpora are summarized in the table below (Table 2).

Table 2. Frequencies and main collocates for 照顾 *zhaogu*, 照料 *zhaoliao,* 护理 *huli*, and 照护 *zhaohu*

Term	Frequency in Regulation_ZH	Frequency in Law_ZH	Frequency in UNPC	Collocates in Regulation_ZH	Collocates in Law_ZH
照顾 *zhaogu*	97	4	11	失能 *shineng* (disability), 家庭 *jiating* (family), 护理 *huli*, 生活	优待 *youdai* (preferential treatment), 优先 *youxian* (priority)

				shenghuo (life)	
照料 *zhaoliao*	701	10	17	护理 *huli*, 生活 *shenghuo* (life), 服务 *fuwu* (service), 日间 *rijian* (daytime), 慰籍 *weiji* (comfort), 精神 *jingshen* (spiritual)	生活 *shenghuo* (life), 日间 *rijian* (daytime)
护理 *huli*	1166	11	46	服务 *fuwu* (service), 康复 *kangfu* (recovery), 照料 *zhaoliao*, 长期 *changqi* (long term), 医疗 *yiliao* (medical care), 机构 *jigou* (institute), 生活 *shenghuo* (life), 等级 *dengji* (level)	长期 *changqi* (long term), 保障 *baozhang* (guarantee)
照护 *zhaohu*	211	0	0	服务 *fuwu* (service), 家庭 *jiating* (family),	

				长期 *changqi* (long term), 失能 *shineng* (disability) ,床位 *chuangwei* (bed), 居家 *jujia* (at home), 评估 *pinggu* (assessment) ,等级 *dengji* (level)	

It is important to note that the use of the term 照顾 *zhaogu* in the Law_ZH corpus extends beyond caregiving in the traditional sense towards encompassing a broader sense of "consideration" or "taking into account". In this context, the elderly and those responsible for them are prioritized for certain services. Collocates in the Regulation_ZH corpus indicates a semantic field related to daily life (生活 *shenghuo*), family (家庭 *jiating*) and loss of autonomy (失能 *shineng*).

照料 *zhaoliao* is a synonym of 照顾 *zhaogu* but is limited to the care of daily life. This is confirmed by collocates such as 生活 *shenghuo* (life), 服务 *fuwu* (service) and 日间 *rijian* (daytime). Among the 10 occurrences in the Law_ZH corpus, 7 pertain to children and/or individuals with a legal obligation to provide for the needs of the elderly[9]. Article 14 of the Protection Law stipulates that the responsible

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[9] The term 赡养人 *shanyang ren* does not seem to have an equivalent in English. In the United States, there is no federal law requiring children to support their elderly parents. However, thirty states have laws that impose this obligation. For example, in Pennsylvania, children are required to support their elderly parents if the parents cannot afford to do so themselves; filial responsibility laws in Connecticut apply to parents who are younger than 65 years old (Brock 2024); the California Family Code provides: "A parent, or the county on behalf of the parent, may bring an action against the child to enforce the duty of support under this part" (*California Legislative Information*, Section 4403). In the United Kingdom, the government is responsible for caring for the elderly. In Australia legal experts suggested improving legislation in the field of filial

person must assume the obligation of financial assistance, life care and spiritual comfort for the elderly. These triptychs of assistance are widely reiterated in local regulations, explaining the collocates 精神 *jingshen* (spiritual) and 慰籍 *weiji* (comfort) in the Regulation_ZH corpus.

The table also reveals that 照顾 *zhaogu* / 照料 *zhaoliao* and 护理 *huli* are mutual collocates. While the first two concern life care, 护理 *huli* is distinctly more associated with medical care. This is confirmed by, among other things, the distribution of 11 occurrences in the Law_ZH corpus: 3 in the Law on the Promotion of Basic Medical Care and Health (基本医疗卫生与健康促进法), including 1 in the general sense of "care" and 2 in the sense of "long-term care" for specific groups such as minors, women, the elderly and people with disabilities, and 8 in the Protection Law with co-occurrences such as 医疗 *yiliao* (medical care), 疾病 *jibing* (disease) and 保健 *baojian* (health).

The term 照护 *zhaohu* is absent in the Law_ZH and UNPC corpora, but appears 211 times in the Regulation_ZH corpus, primarily due to its technicality. In its collocation graph obtained through the GraphColl function of LancsBox (Figure 1), we observe that it is modified by terms such as 专业 *zhuanye* (professional), 评估 *pinggu* (assessment), 技能 *jineng* (skill), 标准 *biaozhun* (standard), 培训 *peixun* (training), etc., and is simultaneously modified by terms like 认知障碍 *renzhi zhang'ai* (cognitive impairment), 失智 *shizhi* (dementia), 失能 *shineng* (disability), 医疗 *yiliao* (medical care), etc.

The dissemination of the term 照护 *zhaohu* is also notably delayed compared to others. A query in the CNKI database[10] reveals that the first publications in this field related to elderly care emerged in the mid-1990s, with the number of publications surpassing 100 only from 2015 onwards. This delayed emergence might partially account for its absence in the UNPC corpus.

responsibility in 2013 after China had passed laws requiring people to visit their elderly parents, while cultural differences remain important: "Social scientist Lauren Rosewarne at Melbourne University says there are different attitudes towards aged care in European and Asian cultures. "We don't have a culture in Australia where it's the norm where children or grandchildren take on the burden of caring for older people. It's quite normal to outsource that care," said Ms Rosewarne." (Yu 2013).
[10] China National Knowledge Infrastructure (CNKI) is a digital publishing platform that aggregates academic journals, major newspapers, yearbooks, reference works, doctoral dissertations and master's theses.

Moreover, the 2010s, marked by the entry of the baby boomers into their sixties, could be considered the onset of collective awareness regarding the aging population in China. This is exemplified by the alarm sounded in an article from the *People's Daily* (March 2013), stating that "China has become old before becoming rich". Aging is no longer an individual situation but has evolved into a social phenomenon, with specific health care taking center stage. Regulations are precisely crafted to govern services for the elderly, explaining the significant frequencies of more medical and technical terms such as 护理 *huli* and 照护 *zhaohu* in the Regulation_ZH corpus.
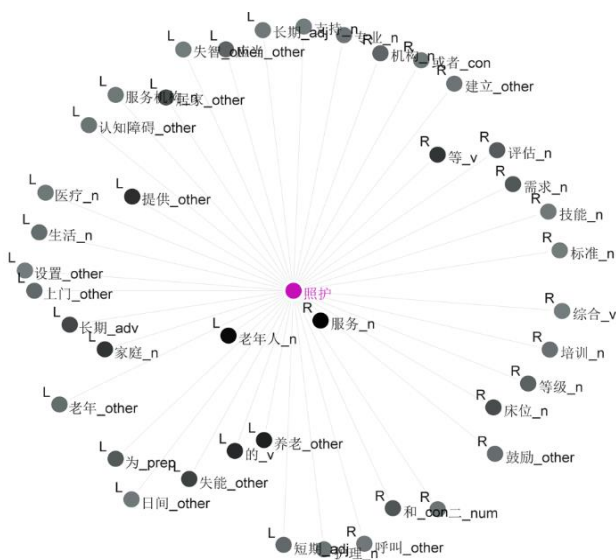

Figure 1. GraphColl of 照护 *zhaohu* in Regulation_ZH corpus.

One response to the aging population is "Smart elderly care" (智慧养老 *zhihui yanglao*). In the CKNI database, the earliest mentions of this expression date back to 2010, where two local press articles introduced a smart senior residence experiment in Nanjing. In 2015, during the annual session of the National People's Congress, Mr. Li Keqiang, the then Premier, officially included the "Internet +" strategy in the government's activity report to boost the development of the digital sector by integrating it with the industry. Since then, the

number of publications on "smart elderly care" has consistently increased, reaching 755 in 2022. The domain with the most publications is China Politics and International Politics.

In the Law_ZH corpus, given the older texts, no mention of 智慧养老 *zhihui yanglao* was observed. However, the Regulation_ZH corpus contains 80 occurrences. With two exceptions, all occurrences are found in regulations governing services for the elderly or the protection of the rights and interests of the elderly. The most frequent co-occurrences are 服务 *fuwu* (service) and 平台 *pingtai* (platform), indicating the construction of infrastructures integrating new digital technologies. Unable to find a precise definition of 智慧养老 *zhihui yanglao* in regulatory texts, we turn to the *White Paper on Smart Elderly Care* from Tsinghua University (Zhu et. al. 2019). The authors trace the development of "smart elderly care" in China to 2012, the year when the National Bureau of Elderly Affaires introduced the concept of 智能化养老 *zhineng hua yanglao* (Intelligent Elderly Care) and encouraged initiatives in this field. The terminology changed in 2017 with the publication of the Action Plan for the Development of the Smart Elderly Health Care Industry (2017–2020): 智能 *zhineng* was replaced by 智慧 *zhihui*. In our corpora, the word 智能 *zhineng* appears 55 times in the Regulation_ZH corpus, with the most frequent co-occurrences being 技术 *jishu* (technology, 18), 服务 *fuwu* (service, 18), 养老 *yanglao* (elderly care, 16), 产品 *chanpin* (product, 12), while 智慧 *zhihui* appears 116 times and is associated with 养老 *yanglao* (elderly care, 122), 服务 *fuwu* (service, 96), 平台 *pingtai* (platform, 52). Thus, 智能 *zhineng* is more regularly linked to technology, whereas 智慧 *zhihui* adds a more human touch. This is not surprising given that the morpheme 能 *neng* conveys a sense of "competence", while 慧 *hui* implies "intelligence".

This evolution suggests a changing conception of care for the elderly. Services for the elderly aim to provide assistance and support, allowing them to enjoy life like anyone else. The *White paper* (Zhu et. al. 2019: 24), drawing on Maslow's hierarchy of needs, outlines the essential contents of services for the elderly (Figure 2). Daily care (生活照料 *shenghuo zhaoliao*) is at the base of the pyramid, while emotional and psychological needs (人文关环 *renwen guanhai*) are at the top. The term 智慧养老 (*zhihui yanglao*) reflects the intention to consider all the needs of the elderly, as 养老 (*yanglao*) has a holistic vision of caring for the final stage of life. Thus, the elderly are no longer seen solely from a medical perspective.
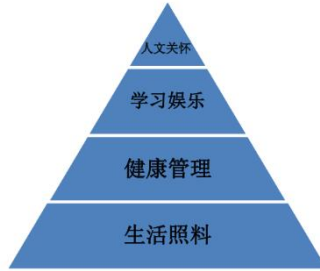
Figure 2. Pyramid of elderly care according to *White paper*.

2.4 „Care" in Hong Kong and Macau official texts

Before concluding, we would like to make a brief digression on expressions related to elderly care in Hong Kong and Macau. In these two former colonies, Mandarin Chinese has evolved differently than in mainland China, notably marked by the influence of Cantonese and Classical Chinese. For example, the elderly are more often referred to as 长者 *zhangzhe* in Hong Kong, where 者 *zhe* is a nominalisation suffix from classical Chinese.

Both cities are currently grappling with aging populations. In 2023, Hong Kong's population aged 65 and over surpassed 21% (O'Neill 2024), while Macau's dependency ratio reached 23.1% (Macao News 2023), indicating one dependent elderly person for every four working adults. Given the growing elderly population, both municipalities have implemented comprehensive elderly care services.

A comparative analysis of elderly care terminology on the official websites of both municipalities reveals intriguing differences. In Macau, three primary terms – 照护 *zhaohu*, 照顾 *zhaogu*, and 护理 *huli* – are employed to describe elderly care. 照顾 *zhaogu* denotes general daily care, encompassing activities such as feeding, bathing, and changing diapers. In contrast, 护理 *huli* carries a more technical and medical connotation, often associated with wound care, ostomy care, and diabetes management. 照护 *zhaohu*, sharing morphemes with the other two, encompasses both aspects, providing additional details regarding the care setting (home or institution) and duration.

Hong Kong's terminology aligns closely with Macau. While the English version of the Hong Kong website uses the generic term "care," the Chinese version differentiates between 照护 *zhaogu* (general care) and 护理 *huli* (medical care). This distinction mirrors the usage in Macau. Additionally, the coexistence of local terms like 安老院舍 *anlao yuanshe* (elderly residences) and mainland terms like 养老 *yanglao* (retirement) highlights the complex linguistic landscape shaped by historical and cultural exchanges.

Conclusion

We have conducted a preliminary examination of the evolution of the concept of "care", along with its Chinese equivalents. Initially associated with the psychological realm, its usage has diversified over time, and its technicality has heightened. As a legal term, defining "care" proves challenging, as evident in the *Black's Law Dictionary*. Legal terms and definitions illustrate the difficulty in delineating degrees of care, relying on a nuanced three-step scale (slight, ordinary and great care), contrasting with the various degrees of the concept of negligence[11].

Legal expressions like "standard of care"[12], "duty of care"[13] underscore an individual responsibility towards others. Meanwhile, the

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[11] "As a legal term, this word means diligence, prudence, discretion, attentiveness, watchfulness, vigilance. It is the opposite of negligence or carelessness. There are three degrees of care in the law, corresponding (Inversely) to the three degrees of negligence, viz.: slight care, ordinary care, and great care. The exact boundaries between the several degrees of care, and their correlative degrees of carelessness, or negligence, are not always clearly defined or easily pointed out. We think, however, that by "ordinary care" is meant that degree of care which may reasonably be expected from a person in the party's situation." ('CARE Definition & Meaning' – *Black's Law Dictionary*, 2011).

[12] "the watchfulness, attention, caution and prudence that a reasonable person in the circumstances would exercise. If a person's actions do not meet this standard of care, then his/her acts fail to meet the duty of care which all people (supposedly) have toward others. Failure to meet the standard is negligence, and any damages resulting therefrom may be claimed in a lawsuit by the injured party. The problem is that the "standard" is often a subjective issue upon which reasonable people can differ." (Hill, Hill 2002: 389).

[13] "a requirement that a person act toward others and the public with the watchfulness, attention, caution and prudence that a reasonable person in the circumstances would

three primary domains of care identified by Eva Feder Kittay (1997) – namely, "helpless infancy and early childhood, frail old age, and incapacitating illness and disability" – require regulation and protection within a democratic society. Here, the State holds an obligation to its citizens and care becomes, *volens nolens*, a politicized concept (Garrau, Le Goff 2010).

In English the meaning of "care" becomes more precise when used in specialized fields, particularly those related to the elderly. "Care" as a legal term may be interpreted subjectively. Within the jargon of the European Union, "care" becomes opaque even in contexts related to the elderly. *Euronews*, the European Union's main media outlet, showcases a number of news articles from different member states on its website under the heading "Smart Care" emphasizing sustainable healthcare as a response to an aging population and rising healthcare costs. The multicultural aspect of care undergoes neutralization through the digitalization of societies and services which address common issues across countries: "a 'micro-simulation model' that helps policymakers weigh up the most cost effective approach to obesity" (Euronews 2016b), "improved digital communications slash waiting times for treatment" (Wilks 2016), "a new smart phone application to record and share details about his illness with his doctor" (Euronews 2016a).

Nevertheless, the digital shift in the care field raises legal, security, privacy questions. For instance, Huawei has been offering SmartCare Solutions since 2016 (Huawei press center 2016), leading to increased self-care channels utilization[14]. The popularization of smart care has extended to old age care in China, prompting a series of laws and regulations in what is termed "the aging industry" (Huang et al. 2022). The future of this industry is seen today as predominantly anchored in technology:

> "Smart senior care refers to the use of information and scientific technology, including health records, medical interventions, and home care to improve the quality of life for older adults. Specifically, through

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use. If a person's actions do not meet this standard of care, then the acts are considered negligent, and any damages resulting may be claimed in a lawsuit for negligence." (Hill, Hill 2002: 150).

[14] "Huawei, a leading global information and communications technology (ICT) solutions provider, announced the eTom certification, by the TM Forum, for HUAWEI SmartCare VIP Care, Service Quality Monitoring and Service Quality Reporting processes." (*Light Reading* 2013).

a variety of sensors and network systems remotely monitoring older adults' daily life, their activities will be recorded and transmitted to healthcare institutions or third-party service companies. Then clinicians can provide online or onsite healthcare interventions including home care assistance. The application of smart senior care has the potential to significantly improve the independence, safety, and quality of life of community-dwelling older adults." (Huang et al. 2022: 2).

Furthermore, the newly coined phrase "smart senior care", a legal and health-related term, has already penetrated other fields of activity referred to by the Chinese scientific discourse, such as architecture and urban planning in Macau:

"While increasing various forms of economic support, the Macao SAR government has also taken measures to improve services for older adults, encourage their employment, and construct homes for older adults. Since 2017, the Macao SAR government has been committed to a policy of strengthening urban planning and smart city construction; the 2021 Policy proposed smart senior care for the first time" (Lou, Liu 2023: 2).

New legal terms keep being created as the need to name new notions originally created in fields other than the law increases; for example, "smart institution" (care and attention homes, nursing homes managed by the government, private actors or medical institutions), "smart home" (independent homes with smart services), "smart community" (part of smart cities), "smart city for the elderly" are types of smart elderly care taken into account by Chinese researchers in the field of computers, environment and urban systems (Zhang 2021: 3).

As societies grapple with the challenges posed by aging populations, the concept of care expands to encompass emotional, medical and technological dimensions. Digital humanities offer valuable insights into these linguistic shifts, providing a glimpse into the intersection of language, culture and technology in elderly care. Understanding these linguistic transformations is crucial for policy- and lawmakers, healthcare professionals and researchers working in the field of elderly care. It highlights the need for comprehensive, integrated approaches to care that embrace both traditional compassion and cutting-edge technology.

Conflict of Interest Statement

We, the authors, declare that we have no conflicts of interest to disclose related to this manuscript. If any conflicts arise in the future, we will promptly inform the journal.

AI Use Statement

We confirm that artificial intelligence (AI) tools were not used in any aspects of our research.

Statement of Contributions

The contributions of each author to this manuscript are as follows: both authors contributed equally to the conceptualization, methodology, and writing of the manuscript. Weiwei Guo was responsible for the collection and analysis of the Chinese data, while Corina Veleanu was responsible for the collection and analysis of the English data.

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