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Tempo-spatial construction in human-law-society triangle from the perspective of cognitive semiotics

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Time and space, habitually seen as the human psychological background, are increasingly being studied as the cognitive foreground for the development and evolution of matters. Via applying the corpus-based method based on the self-complied corpora of the US, the UK, the EU and Chinese data protection laws, this study examines the basic logic framework of time and space, including human psychological representation, semiotic essence, and function, seeking to present a holistic landscape of tempo-spatial construction in humanity, law and society from the perspective of cognitive semiotics. It finds that the human psychological representations in the tempo-spatial construction process contain cyclical time, linear time, place space and field space; the tempo-spatial essence is to express semiotic meanings through social dialogue and power negotiation among legal subjects in social contexts; and the tempo-spatial functions are manifested in mapping cognitive thinking mode of humanity and constructing law and society. It can be argued that legal discourse is the result of the tempo-spatial dialogue between legal subjects that depends on the interaction between society and its members and the overall evolution of its meaning interpretation; the tempo-spatial construction in human-law-society triangle is thus a typical intersemiotic operation. This study demonstrates the utility of sign of time and sign of space as a cognitive perspective in discourse construction and maps the strong interdependence between humanity, law and society.

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Introduction

Habitually, time and space are regarded as the human psychological background for the development and evolution of matters. However, they have in fact become essential topics in various disciplines such as sociolinguistics, urban studies, human geography and cultural anthropology (Dong, 2020; Dong and Blommaert, 2009). As such, time and space should not only be regarded as the psychological backdrop but also the cognitive foreground in the evolution of matters in multiple domains, such as humanity, law and social science. The formation of law, formulated by human, has undergone reforms and evolutions as society progresses, signifying a strong interdependence between humanity, law and society. Actually, some studies have been conducted on the topic of time and space in humanity, law and society, such as the spatial philosophy interpretation of laws (Zhu, 2015), the temporal view and laws from a philosophical perspective (Xiong, 2011).

Numerous academics have suggested divergent models to demarcate time and space according to their various characteristics. Haney (1969) classifies time into cyclicalism and its counterpart, linearism. As defined by Bowden (2017), cyclicalism denotes that the nature of change is viewed as a simple circular process while linearism occurs where the nature of change is deemed to be a simple unidirectional process. Nöth (2020) distinguishes three types of time: points in time, time as age and time as continuity. Regarding space, Lagopoulos (2009) contends that “for subjectivism, space as the place is an internalised and concrete semiotic entity” (171), which is directly and intimately experienced by humanities in consciousness and thus invested with understanding, symbolic meaning, value and feeling. Harvey (1973, 2006) proposes that space needs to be conceptualised according to human practices, and that space is constructed and shaped by diverse human practices.

Distinct from the meanings widely applied in common language, time and space can be regarded as signs from a semiotic perspective (Saint-Martin, 1992; Lagopoulos, 2009; Nöth 2020), namely, sign of time and sign of space. According to Nöth (2020), sign of time and sign of space refer to signs that represent time and space as their objects and create mental representations of time and space as their interpretants. Traditionally, space and time in static semiotics have attracted people’s attention, with the linguistic landscape concentrating on static texts being the most representative.

On the whole, scholars tend to focus on how time and space are defined and represented; in other words, how signs mark spatial boundaries (Saint-Martin, 1992; Lagopoulos, 2009) and how time is developed in signs (Nöth, 2020); what features and relations of time and space in different fields are (Eikenes and Morrison, 2010; Matsuno, 2011); and how specific social meanings are constructed by time and space (Dasgupta et al. 2002; Collins and Slembrouck, 2007; Backhaus, 2007; Shohamy et al. 2010; Dressler, 2015; Dong, 2020; Sollid et al. 2023).

Inspired by the theoretical developments and practical achievements of predecessors, this study is not merely confined to the static tempo-spatial interpretation, but rather examines the dynamic tempo-spatial construction, especially the tempo-spatial

essence encoded in humanity, law and society. It will elaborate on how law, humanity and society are constructed from two perspectives: sign of time and sign of space, aiming to answer the following questions: (i) Different types of time and space lead to different claims for social order. Do these claims permeate into specific laws? What are the human psychological representations thereof? (ii) What is the inherent essence of time and space, encoded in human, law and society, in the process of tempo-spatial construction? (iii) How do sign of time and sign of space function in this cognitive construction? Corresponding to the research questions, this study will be conducted from the human psychological representation in the tempo-spatial construction process, the concealed tempo-spatial essence from the perspective of cognitive semiotics, and the tempo-spatial functions in humanity, law and society.

Materials and methods

Corpora building. Projecting an interdependent trend of law, humanity and society in legal discourse, some prior studies depart from the perspectives of legal terminology (e.g. Ni et al. 2010; Deakin, 2015), legal translation (e.g. Prieto-Ramos, 2014), legal rule (e.g. Niblett et al. 2010), legal language sign-systems (Wagner et al. 2020). In this study, legal discourse on “information confidentiality”, “privacy”, “data protection” or “cybersecurity” were collected from China, the EU, the US and the UK. For convenience, the “data protection” is uniformly used in this study to represent these topics. Thus, the self-compiled corpora were established in Table 1.

Corpus-based method can reveal characteristics of language that were previously unsuspected (Biber et al. 1999) and make it possible for researchers to objectively observe regularities of given linguistic items in language use. The corpora were established by checking four criteria of corpus composition: “availability, typicality, language, and comparability” (Cheng and Cheng, 2012: 30). Specifically, (i) the legislative texts in each corpus were selected from its official website of laws and regulations, indicating that these legislative texts are formal, authoritative, and accessible. Moreover, establishing authoritative corpora makes this study scientific and convincing. (ii) The US, the UK, the EU and China have achieved important development in the field of data protection. Meanwhile, these data protection laws have milestone significance for these countries or region in the practice, and also have received extensive attention in the academia worldwide. Thus, the legislative texts selected to establish corpora are representative and typical for this study. (iii) The language in each corpus is consistent. The source language of legislative texts in the US, the UK, and the EU corpora is English. The translation of legislative texts in Chinese corpus is also expressed in English officially translated. (iv) From the perspective of theme and quantity of legislative texts, these corpora are comparable. Although the number of legislative texts in each corpus varies, the total amount does not differ significantly, which has no influence on the comparison.

Table 1 Basic information of corpora.

Type	Corpus	Topic	Quantity
Self-compiled Corpus	Ancient Chinese Legislation Corpus	Information Confidentiality	6
	Modern Chinese Legislation Corpus	Privacy, Information, Data Security	8
	The EU Legislation Corpus	Data Protection	10
	The US Legislation Corpus	Privacy, Data Protection, Cybersecurity	8
	The UK Legislation Corpus	Privacy, Data Protection, Cybersecurity	6

Analysis procedures. Three pathways were conducted to respectively respond to the research questions. Firstly, the human psychological representations encompass both temporal representation and spatial representation. Temporal representation was carried out from the reversible cyclical time and the continuous linear time, because they are two fundamental types of human temporal views, which are respectively compatible with ancient laws and modern laws (Xiong, 2011). Spatial representation was also carried out from two distinct aspects, place space and field space, based on the field theory proposed by Halliday (1978).

More specifically, (i) the corpus analysis tool (Wordsmith 8.0) was used to select the keywords related to “data protection” and their concordance lines, in order to find out the representative feature of cyclical time. (ii) The laws were listed in the forms of linear images, and then the corpus analysis tool (Wordsmith 8.0) was applied to select the core keywords (e.g. “personal data”) and their definitions, so as to observe the representative feature of linear time. (iii) The laws were depicted in the global maps to represent the panorama of place space using the image production tool in the Microsoft Word. (iv) The corpus analysis tool (Wordsmith 8.0) was employed to select the specific keywords (e.g. “right”) and their concordance lines, in order to examine the concealed field space.

Secondly, after examining the human psychological representations in the tempo-spatial construction process, the covert essence of sign of time and sign of space concealed in human, law and society was explored from the perspective of cognitive semiotics. This was a further interpretation based on the description in the first step. Thirdly, the tempo-spatial roles and functions were summarised in constructing humanity, law and society, which provided explanation for time and space as sign.

Results

“The comprehension of a discourse involves constructing a mental representation of a discourse” (Yang et al. 2017). In this section, human psychological representations in tempo-spatial construction in law, humanity and society are constructed from two dimensions (sign of time and sign of space), more specifically, four aspects (cyclical time, linear time, place space and field space).

Human psychological representations of temporal construction

Reversible cyclical time in ancient laws. It is widely accepted that ancient laws and terms, similar to modern laws and terms, have undergone a diachronic evolution. Nevertheless, when focusing on the internal evolution, it is discovered that there is a marked discrepancy between the two. Ancient laws were derived from religions and ruling systems that strictly controlled the order of human society, and therefore specific laws served rulers at specific stages. In other words, ancient laws were established in a series of specific periods of time, which were discontinuous. Take the laws on “information confidentiality” in ancient China as an example (see Table 2).

As shown in Table 2, the laws and terms related to information confidentiality first appeared in the Xia Dynasty, developed during the Qin and Han dynasties, reached its peak in the Tang Dynasty, and weakened during the Ming and Qing dynasties. This process seems to be a diachronic evolution. However, the related laws and terms were not developed throughout all ancient Chinese dynasties. Evidently, the names of laws and terms varied significantly in different dynasties. The relationships between ancient laws, as well as between terms, varied dramatically.

Meanings of terms were also disparate. In other words, an ancient Chinese law and its terms on information confidentiality, which were tied to a certain dynasty, failed to update and develop with the changes of dynasties. “Some legal terms undergo the cycle of birth, changes and death over a relatively short period of time” (Cheng et al. 2014: 175). When a dynasty perishes, its law disappears. Therefore, to some extent, laws and terms in ancient China fail to constitute the continuity in time.

Ancient laws, from a horizontal perspective, were specifically designed for specific objects with complexity and without unified logic; from a vertical perspective, they were especially created for a series of specific temporal stages, being jumping and discontinuous (Xiong, 2011). In the specific temporal stages, ancient laws of diverse civilised forms were essentially tools for rulers to maintain the existing ruling power, social order and systems. Baert (1992) proposes that the rules of social order in ancient laws exist outside of time and they are unchanged; they can be found at any time with the change of time, as if they were frozen. In other words, ancient rulers longed to shape static laws not controlled by time. This kind of static law is an assumption of cyclicalism on the natural state of human society (Xiong, 2011). As such, the human psychological representation of various reversible cycles is constructed by cyclical time in ancient laws.

Cyclical time is circuitous and repetitive, constituting a closed reversible circle that constantly returns to the back and pursues stability and symmetry. Thus, an ancient law in a dynasty forms a closed-loop circle with un-continuity constructed by reversible cyclical time. Hence, cyclical time is a reversibly cognitive process to maintain the static power and order of ancient laws.

Continuous linear time in modern laws. Compared with ancient laws that maintain the existing ruling order, the main function of modern laws is to reform and innovate the existing order. Modern laws in the same field usually have extremely close connections and are constantly updated on the basis of previous laws. Likewise, for a term, following the previous expression means, it is often a renewal of its connotation and denotation. On a whole, unlike the ancient laws that shape reversible circles at specific stages, modern laws and terms are continuously developed in linear forms. The obvious manifestations are the continuous promulgation of modern laws and the continuous update of legal terms. Once a modern law is promulgated, the names of the law and its legal terms are fixed in the form of an irreversible linear time, such as the evolution of the EU data protection laws (see Fig. 1), the evolution of Chinese laws on privacy, information, data security (see Fig. 2), and the evolutionary processes of their legal terms (see Table 3 and Table 4).

Legal text is one of the many forms that receive sustained attention (Cheng et al. 2012). The ideologically variable slants and historical experiences may contribute to accounting for the spatial and temporal variation of legal terms (Pei and Cheng 2020). Accordingly, the definitions of “personal data” in the EU modern laws have gone through several levels. Firstly, the scope of the legal subject is limited, changing from “an identifiable person” to “an identifiable natural person”. Secondly, various identifiers that can specifically identify a natural person are added, such as a name, an identification number, location and an online identifier, to reveal information like nationality, political view and religious belief, with obvious external features of sign labels. Thirdly, the content of the legal object is expanded, including genetic data and biometric data that is processed for specific purposes rather than identification, and health data that is generally prohibited from processing. As for the definitions related to “cybersecurity” terms in modern Chinese laws, the continuous enrichment of different legal terms represents the development of cybersecurity areas related to cryptography, privacy, information and data.

Table 2 Laws on information confidentiality in ancient china.

Dynasty	Law	Content	Status and Interpretation
Xia Dynasty	《周礼·士师》	“掌士之八成”、“邦沟”/“邦谍”	The earliest recorded regulation of confidentiality regarding anti-theft and anti-leakage measures.
Qin Dynasty	《行书律》	“行传书，受书，必书其起及到日月夙暮。”	The most basic document sending and receiving is more detailed than the current general registration.
Han Dynasty	《汉书》	“漏泄罪”：“淮阳王舅张博、魏君太守京房坐窥道诸侯王以邪意，漏泄省中语，博要斩，房弃市。”	Crime of leakage: Both individuals who leaked the information were tortured and executed.
Tang Dynasty	《唐律疏议》	“事应密”： (1)“中书舍人”“中书侍郎”：“其禁有四：一曰漏泄，二曰稽缓，三曰违失，四曰忘误。” (2)“大事应密”，“非大事应密” (3)“即转传大事者，杖八十；非大事者，勿论。”	The development peak of ancient confidentiality laws. Things should be kept confidential: (1) The identification and management requirements for classified personnel (2) The classification of confidentiality levels is based on the importance of information and the severity of the consequences of leakage. (3) The division of responsibilities: the person who leaked the information first bears the main responsibility and the disseminator bears the secondary responsibility, with different punishments.
Ming Dynasty	《大明律》	“诸盗制书者，徒二年；官文书，杖一百；重害文书，加一等；纸券，又加一等”	The security and confidentiality regulations for all stages of confidential documents, from production, transportation, preservation to final destruction, are very comprehensive. Failure to prevent espionage will result in criminal punishment.
Qing Dynasty	《秦律》	“诸缘边城戍，由外奸内入，内奸外出，而候望者不觉，徒一年半；主司，徒一年。” “诸密有征讨，而告贼消息者，斩；妻、子流二千里。其非征讨，而作间谍；若化外人来为间谍；或传书信与化内人，并受及知情容止者，并绞。” “停俸”	Those who are instigated or instigate others to steal state confidentiality are all capital offenses.
			In addition to criminal responsibility, economic penalties have also been established for those who leak the information. The standards and requirements for information storage and transmission are higher and stricter.

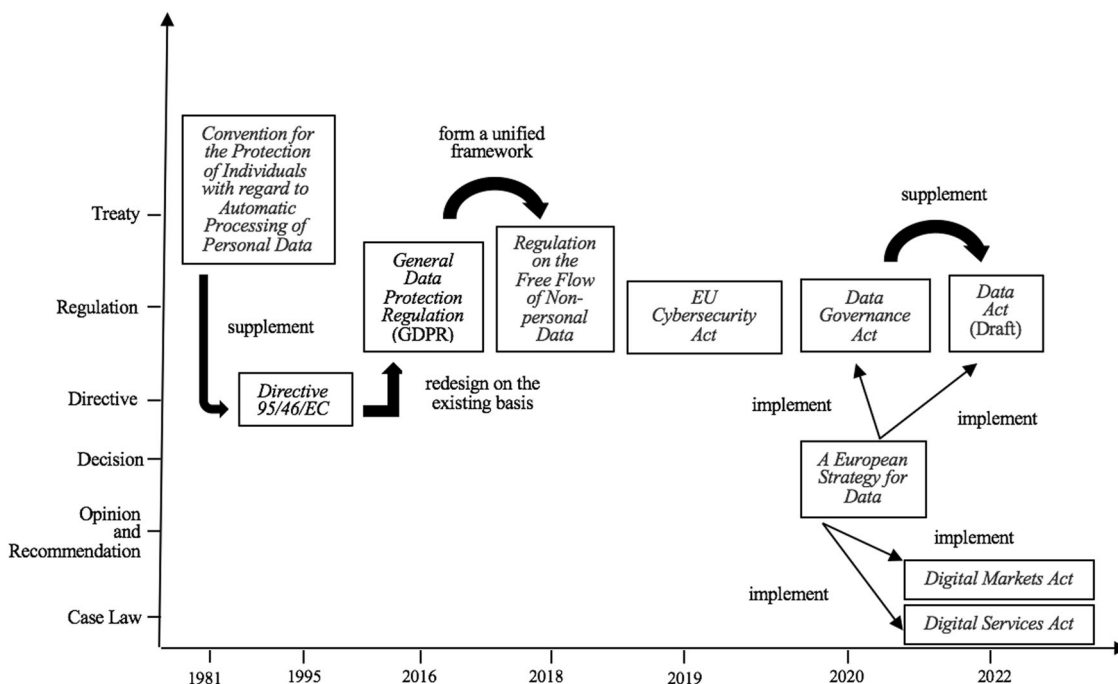


Fig. 1 Linear Time of the EU Data Protection Laws, in section “Continuous linear time in modern laws”.

Semiotic method is helpful to deeply understand the diachronic development (Leone, 2019). The evolutionary definitions of a legal term over time make its connotations and denotations more specific and detailed. The same legal term has multiple interpretations (Cheng et al. 2014), leading to diverse meanings in different periods of time. As such, the definitions and meanings of a legal term in

legislation, developing over different periods of time, represent the past, present and future in modern laws, just as what Nöth (2020) holds that it is necessary to cognitively acquaint with what it means to experience something in the past, present and future.

Legal language systems, as culturally constituted sign-systems, are continuously evolving in time and space (Wagner et al. 2020). In the

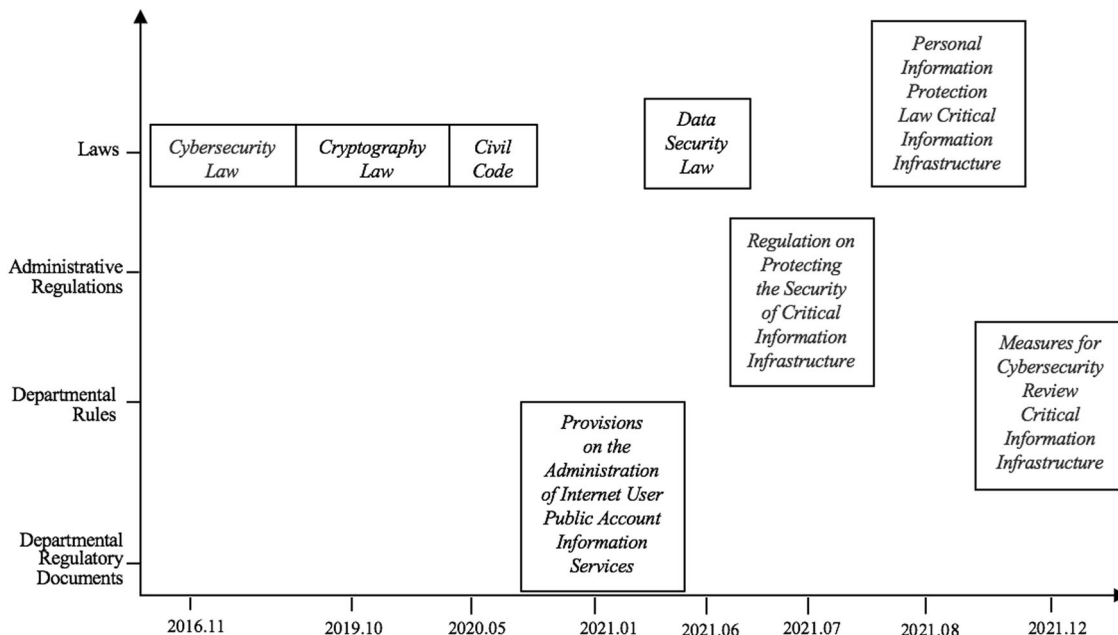


Fig. 2 Linear Time of Chinese Laws on Privacy, Information, Data Security, in section “Continuous linear time in modern laws”.

Table 3 Evolutionary process of personal data in the EU modern laws.

Year	Definition
1995	<i>Directive 95/46/EC</i> , Article 2 Definitions (a) “Personal data” shall mean any information relating to an identified or identifiable natural person (‘data subject’); an identifiable person is one who can be identified, directly or indirectly, in particular by reference to an identification number or to one or more factors specific to his physical, physiological, mental, economic, cultural or social identity.
2008	<i>Decision 2008/977/JHA</i> , Article 2 Definitions (a) “Personal data” means any information relating to an identified or identifiable natural person (‘data subject’); an identifiable person is one who can be identified, directly or indirectly, in particular by reference to an identification number or to one or more factors specific to his physical, physiological, mental, economic, cultural or social identity.
2016	<i>Regulation 2016/679 (GDPR)</i> , Article 4 Definitions (1) “Personal data” means any information relating to an identified or identifiable natural person (‘data subject’); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person.

Table 4 Evolutionary process related to cybersecurity terms in modern Chinese laws.

Year	Definition
2019	<i>Cryptography Law of the People’s Republic of China</i> , Article 2 “Cryptography” means technology, product and service that effect encryption protection or security certification of information and the like by adopting the method for specific conversion.
2020	<i>Civil Code of the People’s Republic of China</i> , Article 1032 “Privacy” is the tranquility of the private life of a natural person, and the private space, private activities, and private information that he is unwilling to be known to others.
2021	<i>Personal Information Protection Law of the People’s Republic of China</i> , Article 2 “Personal information” means all kinds of information related to identified or identifiable natural persons that are electronically or otherwise recorded, excluding information that has been anonymized.
2021	<i>Data Security Law of the People’s Republic of China</i> , Article 2 “Data” means any record of information in electronic or any other form.

evolutionary modern laws and legal terms, the human psychological representation of linear line is constructed by continuous linear time, which is composed of point in time and period of time. In other words, linear time is not only reflected in the points in time when laws come into force in the past, present and future, but also in the periods of time during which legal terms remain valid under the condition that the social context remains unchanged.

In view of linearism, linear time reflects the cognitive continuity of evolutionary modern laws. Peirce (1931–1966) proposes some other forms of continuity and perceptible change, such as feelings (which change with time in intensity), perceptions (which turn less vivid with time), thoughts or memories (which tend to fade with time). Otherwise, the cognitive continuity of linear time in modern laws remains

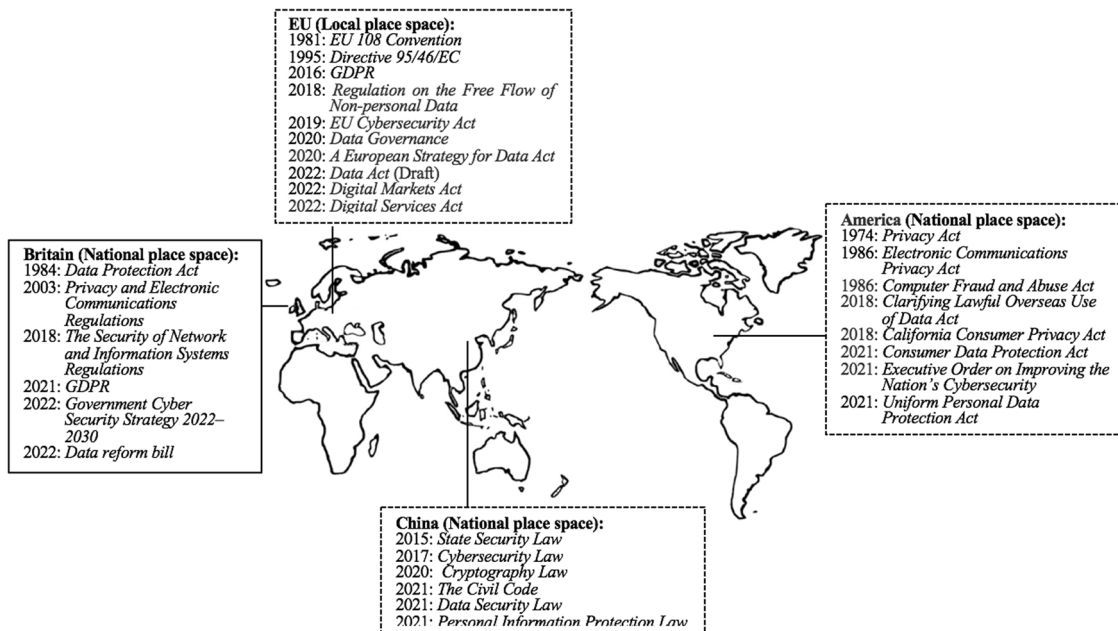


Fig. 3 Data Protection Laws from Local, National and Global Place Space, in section “Mobile place space as the dimension of legal existence”.

unchanged and unfaded, because of the existing legal effect that will not be weakened by the passing of time. A point in time is regarded as a result of a process or an interruption of continuity, and the evolutionary continuity will not be interrupted until a new law is promulgated.

Human psychological representations of spatial construction
Mobile place space as the dimension of legal existence. The spatial construction is primarily carried out through the physical places where the law depends on or exists. A physical place constitutes legal space. Santos (2002) divides legal space into three types at the macro level: locality, nationality and globality, based on the background of legal globalisation. In fact, this macro classification of legal space is grounded in place space as the dimension of legal existence. The place space is characterised by geographical diversity. Proof of this are data protection laws from local, national and global place space (see Fig. 3).

Laws that depend on or exist in local, national and global places form the open and mobile place space, thereby leading to unbalanced powers of place space when diverse laws conflict and merge with each other. It is because laws stipulate a central place and peripheral places with different legal effects; the higher the hierarchy, the more powerful the place space. For instance, the EU is regarded as the centre with powerful strength while its members are peripheries according to the EU data protection laws (Sullivan, 2019). The law in central place space may oppress, affect and transform the law in peripheral place space. Hence, place space has a power hierarchy: the power of the central place space is stronger than that of the peripheral place space.

Dynamic field space as the legal content. Space is not only conceptualised as objects and boundaries, but also an obvious language and interactive practice in a community (Scollon and Scollon, 2003). Actually, the former means place space represented by objects and boundaries, and the latter implies a kind of “field” space of language and interactive practice based on the field theory proposed by Halliday (1978). According to the field theory, a field “tends to determine the range of meaning as content, language in the observer function (ideational)” (Halliday,

Table 5 Right of data subject in the EU GDPR.

Law	Right	Article
General Data	Right to be informed	13; 14
Protection Regulation (GDPR)	Right of access	15
	Right to rectification	16
	Right to erasure (“right to be forgotten”)	17
	Right to restriction of processing	18
	Right to data portability	20
	Right to object	21
	Right not to be subject to automated individual decision-making, including profiling	22
	Article 13 “information to be provided where personal data are collected from the data subject” and Article 14 “information to be provided where personal data have not been obtained from the data subject” are generally considered as “right to be informed”	

1978: 17). Thus, this kind of “field space” used in this study, refers to the space obtained from interactive practices mapped by legal discourse meaning based on the field theory. As a pair of language and interactive practice, “right” and “obligation”, is regarded as an example (see Table 5).

The various rights of data subject are stipulated, and meanwhile, the obligations of data controllers are reflected through their rights in GDPR. For instance, the “right to be informed” stipulates that data subject shall have the right to gain information provided by the data controller about

the existence of automated decision-making, including profiling.....meaningful information about the logic involved, as well as the significance and the envisaged consequences of such processing for the data subject.

The¹ “right to erasure” stipulates that the data subject shall have the right to obtain from data controller

the erasure of personal data concerning him or her without undue delay and the controller shall have the obligation to erase personal data without undue delay.

Although² some legal subjects seek ways to protect their own rights, the laws endow them with obligations and limit their behaviours. Both the protection of rights and the performance of obligations are the interactive practices of legal subject mapped by legal discourse. It is necessary to identify the valuable subject or object and locate them in space (Dunn Caveltly, 2014). In other words, field space provides activity scopes or behavioural domains for legal subjects to engage in interactive practices on the rights and obligations stipulated in legal norms. As proposed by Dong (2020), space is governed by a set of tacit norms; “space not only is socially constructed but also can be socially constitutive of people’s behaviors” (153).

As demonstrated by Balaban (2023), space and time play important roles in shaping language imagination. The transformation from virtual space in legal discourse to real space in practice represents cognitive dynamicity and flexibility of field space, just as what Scollon and Scollon (2003) point out that signs have to be placed in the “real world” for meaning making. In Harvey’s (1973, 2006) sense, space is constructed by human practices. The protection of rights and the performance of obligations for legal subjects constitutes the diverse field space. And meanwhile, the diverse field space with constant dynamicity and flexibility provides legal subjects with different rights and obligations, as Collins and Slembrouck (2007) emphasise that “spaces are seen as the locus where the intersection between several fields is articulated” (339).

Discussion

Tempo-spatial essence in humanity, law and society. Cyclical time in ancient laws tends to recognise the existence of supernatural forces and absolute control over the world, leading society to a state of order (Xiong, 2011). For individuals, time is not personal, but a higher and dominant force (Gurevich, 1976). “Time is power... whoever controls the system, sign and interpretation of time will control social life” (Wu, 2006: 99). Thus, ancient laws are psychologically shaped into static systems of eternal will, absolute order and power control by cyclical time; and cyclical time realises power eternity through ancient civilisation laws.

Different from ancient laws shaped into static systems by cyclical time, modern laws are dynamically constructed by linear time in order to meet the requirements of social contexts in different periods of time. As Cheng and Sin (2008) propose that as a sign, a legal term or a legal text can be subject to multiple interpretations, the different interpretations of the constantly evolving connotations and denotations of one legal term in modern laws show that time gradually becomes a right or a power pursued and dominated by individuals rather than rulers. In this vein, linear time gradually meets the needs of social groups to convey social dialogue through the reform and innovation of modern laws.

Whether the ancient laws or modern laws, they are promulgated in different place spaces, in order to meet the social, political and economic requirements of different places. People within space carve out new social practices in their appropriate space (Peck and Banda, 2014). People in place space have developed different legal practices according to their own social contexts, which is the result of power hierarchy by place space, as noted by Lefebvre (1974):

the space thus produced also serves as a tool of thought and of action [...] in addition to being a means of production, it is also a means of control, and hence of domination, of power (26).

At the same time, the interactive practices about right, power and obligation in place space shape field space, and the relations

between right, power and obligation stipulated by norms can be seen as relations between different field space. On this basis, a law can be considered as a social norm to adjust field space relations (Zhu, 2015). The field space relations are adjusted from one scale of the legal norms to another. A move across scales is a power move (Blommaert et al. 2005; Dong and Blommaert, 2009), so that the adjustment on field space through legal discourse is an embodiment of social power control.

In general, time and space have cognitive commonalities in the construction of legal rules and social orders. The relationship between time and space is interdependent and inseparable, as Bakhtin (1981) contends that “they may be interwoven with, replace or oppose one another, contradict one another or find themselves in ever more complex interrelationships” (252). Some scholars (Morson and Emerson, 1990; Sandywell, 1998) hold that a series of intersecting space and time coexist in a dialogic relationship with one another rather than the idea of an absolute universal time or history. From a holistic point of view, whether in cyclical time of ancient laws or in linear time of modern laws, whether in real place space as the legal existence dimension or in virtual field space as the legal content, the power relationship between legal subjects maintains unchanged at a stage. Thus, time and space, as systems of sign, namely, sign of time and sign of space, express semiotic meanings through social dialogue and power negotiation among legal subjects in social contexts, which is the semiotic essence in humanity, law and society.

Tempo-spatial conflict in humanity, law and society. When time and space are symbolised as signs, the conflicts of power, rights and obligations in sign of time and sign of space are represented as semiotic conflicts. The solutions to these semiotic conflicts are legal rules regarding power, rights, and obligations. In other words, tempo-spatial conflict is de facto the competition of power, rights and obligations, that is, the competition of legal rules. Modern legal rules should protect not only place space that laws depend on, such as the army and the court, but also field space constructed by legal rules.

With the rapid development of the network, the scale of space has expanded from physical space to virtual space, and the legal definition constructed by space is related to the security of both place space and field space of a country. The space created by the network, namely, cyberspace, is sovereign. According to Shi and Xu (2021), cyberspace sovereignty refers to “the right and ability (capability or competence) of a country to independently conduct overall planning, formulate rules, enforce laws, and handle affairs for the practice of all aspects, levels, and elements in the cyberspace world, so as to protect cybersecurity and defend cyber threats” (280). Therefore, cyberspace is both a place space and a field space. If a country infringes on the data of other countries through cyberspace, it not only infringes on the place space and field space of sovereign countries but also violates the cyberspace sovereignty rule and the obligation rule for maintaining international cyberspace security. Actually, the cyberspace sovereignty conflict is a reflection of the competition for legal rules of international cyberspace.

Therefore, with the development of the Internet era, the tempo-spatial conflict is no longer just a violation of material fields between social groups, such as physical warfare, but a competition for legal rules in tempo-spatial cyber. A legal rule, as a result of tempo-spatial symbolisation, is the key to victory in tempo-spatial conflict (Zhu, 2015). The process from tangible space to virtual space and from material competition to legal rule competition reflects the cognitive progress of human beings, legislation and society.

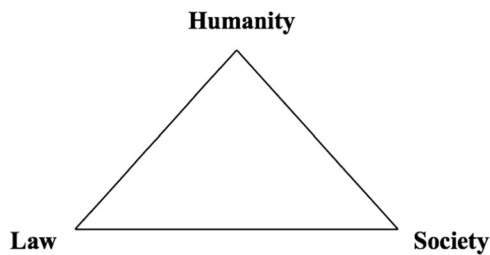


Fig. 4 Diagram of Human-law-society Triangle, in section “Constructing law and society”.

Tempo-spatial functions and potentials in humanity, law and society

Mapping cognitive thinking mode of humanity. “The sign is a sign because of the semiotic potential inherent in it” (Nöth, 2020: 303). Time and space, as systems of sign, derive different cognitive thinking modes that will permeate into specific legislation and social actions. As Kavtaradze (2022) has demonstrated, time and space play vital roles in rituals, daily life, discourse; and the idea of spacetime shapes community.

The progressive cognitive thinking mode from cyclical time to linear time reflects the value of temporal justice towards rule of law in legal discourse. In ancient laws, the overall control of social time leads people to submit to the dominant social ideology system (Gurevich, 1976). This cognitive thinking mode is confined in cyclical order with backwardness and rigidity. In contrast, the linear time of modern laws breaks the cyclical thinking mode, forming a cognitive thinking mode of openness, freedom and progress.

The formation of spatial justice, traced back to ancient Greek, appears in the city-state; actually, people have essential space in this city-state originating from political leadership and space organisation (Edward, 2010). Place space carries legislations, which is an external perspective to observe the laws; and field space interprets the contents of legal rules, which is an internal perspective to interpret the laws. Space can project specific norms, social orders, values, and emotional attributes (Blommaert, 2005). The combinative thinking modes of place space and field space are conducive to constructing the value of spatial justice in laws and a rational society ruled by law.

Constructing law and society. Sign of space shaped by legal discourse remains a balance in a continuous sign of time. When the right, power, obligation or interest of legal subjects are in conflict, the legal discourse is reconstructed to carry out social dialogue, power negotiation and interest weighing (Cheng and Cheng, 2012), resulting in a suspension of continuity, that is, the promulgation of a new law. Thus, the evolution of laws is completed in social contexts during this tempo-spatial construction process.

Space becomes recontextualised and hence reinvented and “owned” by new actors (Peck and Banda, 2014). The legal actors or legal subjects carry out actions and practices in this space. And meanwhile, society is constructed by people’s actions (Collins and Slembrouck, 2007). To some extent, society has been constructed by sign of space in action and practice activities. As Wu et al. (2022) propose, social cognition is located both in the social structure at the macro level and in the specific interactions or events at the micro level. “(Social) space is a (social) product” (Lefebvre, 1974: 26), but meanwhile, space shapes society. Therefore, sign of time and sign of space can be considered as a pair of legal carriers to govern society and reconstruct social order locally, nationally or internationally.

At the same time, laws shape social significance through sign of space and sign of time, because “legal texts are never absolute and

have to adapt to social developments” (Wagner, 2009: 31). “Law reflects society’s mentality, tolerance, knowledge, social perceptions” (Wagner et al. 2020: 239). And in turn, it is necessary to promote the progress of laws suited to the changing social contexts.

In a nutshell, sign of time and sign of space in discourse construction maps the close connection and strong interdependence between humanity, law and society (See Fig. 4). Legal discourse is the result of the tempo-spatial dialogue between legal subjects that depends on the interaction of social groups and the overall evolution of its meaning interpretation.

Conclusion and implication

“Interpretations of legal discourse invariably depend on the context of socio-pragmatic realities to which a particular instance of legal discourse applies” (Bhatia and Bhatia, 2011: 481). This study has presented a holistic landscape of tempo-spatial construction in the discourse of data protection laws on a large scale by examining the basic logical framework of time and space, including the human psychological representation, the concealed tempo-spatial essence from the perspective of cognitive semiotics, the tempo-spatial functions and potentials.

Ancient laws are constructed by the reversible cyclical time with static power and order; modern laws are constructed by the linear time, which is composed of points in time and periods of time, remaining unchanged and unfaded. The spatial construction is realised through the place space as the dimension of legal existence that is open and mobile with power hierarchy, and through the field space as the legal content, that is, language and interactive practice, with constantly dynamic and flexible interaction. Time and space, as systems of sign, are interdependent and inseparable in this construction process.

The tempo-spatial essence in humanity, law and society is to express semiotic meanings through social dialogue and power negotiation among legal subjects in social contexts from the perspective of cognitive semiotics. (i) Ancient laws are psychologically shaped into static systems of eternal will, absolute order and power control by cyclical time; and cyclical time realises power eternity through ancient laws. (ii) Linear time gradually meets the needs of social groups to convey social dialogue through the reform and innovation of modern laws. (iii) Human in place space carrying out different legal practices according to their own social contexts is a result of power hierarchy by place space. (iv) The adjustment on field space through legal discourse is an embodiment of social power control. The tempo-spatial conflict is a competition for the legal rule as a sign. The tempo-spatial functions and potentials are manifested in mapping cognitive thinking mode of humanity and constructing law and society.

“Legal interpretation is a social practice and meaning-making in legal settings is an enterprise of social dialogue and power negotiation” (Cheng and Cheng, 2012: 427). The sign of time and sign of space in discourse construction maps the close connection and strong interdependence between humanity, law and society. Legal discourse is the result of the tempo-spatial dialogue between legal subjects that depends on the interaction of social groups and the overall evolution of its meaning interpretation. The tempo-spatial construction in human-law-society triangle is thus a typical intersemiotic operation.

Data availability

All data generated or analysed during this study are included in this article.

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Notes

- 1 Retrieved from Article 13 (2) (f) and Article 14 (2) (g) in GDPR.
- 2 Retrieved from Article 17 in GDPR.

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Author contributions

MX designed the research and wrote the initial draft of this article. LC made many constructive comments on the earlier versions. GM provided many suggestions on the revised manuscript. All authors contributed to the article.

Competing interests

The authors declare no competing interests.

Ethical approval

Ethical approval was not required as the study did not involve human participants.

Informed consent

This article does not contain any studies with human participants performed by any of the authors.

Additional information

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