The Place of Space in Oceanic Linguistics

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This paper examines the status of space and place as notable features of contemporary linguistic research in Oceania. We focus on languages of the insular Pacific because of the relatively well-studied role of space in this region and because of their key role in the broader discipline's engagement with spatial linguistics. Through an extensive analytical review, we suggest that while space has become an enormously generative domain, a strong program has yet to emerge. We argue that the literature reflects a plurality of centering foci, what we have called coupled language-space domains, that guide the disciplinary conversation. Furthermore, we conclude that although authors rarely explicitly discuss and define space and place, patterns of implicit agreement around treatments of these key terms are observable. Finally, we note that a focus on the grammatical features of spatial language differentiates spatial analysis in linguistics from other disciplines. We suggest that research concerned with understanding how space and place manifest in spatial language should be critically centered in broader discourses investigating the nature of space, place, and the significance of either for the human condition.

Keywords: Space; Place; Placemaking; Oceania; Oceanic Linguistics

1. INTRODUCTION: PLACING SPACE IN OCEANIC LINGUISTICS.[1]

Not long ago, there hardly seemed to be a place for space in linguistics. As late as the mid-century, work that dealt with space was largely restricted to grammatical descriptions with attention to locative nouns, demonstratives, and thematic roles. Other aspects of the linguistic encoding of space—for instance the role of spatial language in cultural and social phenomena or in mediating responsive behavior in the world—were rarely dealt with in detail or even documented. However, research on how languages encode space has flourished

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Abbreviations throughout this paper follow the Leipzig Glossing Rules with the following exceptions: AO, aorist; CONS, construct suffix; DEIX, deixis; N.ADDR, near addressee; N.SPKR, near speaker; PART, particle; PV, patient voice; STAT, stative; and SUB, subordinator.

since groundbreaking work by Talmy and others in the 1970s and 1980s laid fresh foundations for future study by locating space and its linguistic encoding within an emergent cognitive vision of the human condition. This spatial turn included both new motivations for and new objects of linguistic study as a response to fundamental concerns about universality and variability in spatial language. We note that these developments coincided and converged with the emergence of a concern with place in research across disciplines. Since the 1990s, relevant works have increasingly included attention to the role of spatial language in the making, inhabitance, or experience of place.

With the benefit of hindsight, it appears that in the midst of a conceptually frothy moment, empirical study of spatial language allowed linguists a fresh domain of inquiry and a new point of contact with colleagues in other fields. Spatial language is a foundational aspect of spatial culture, which varies between groups and locations and plays a mediating role in human cognition, including the perception, conception, experience of, and responsive behavior to both natural and social environments. Spatial language includes the semantic, pragmatic, and metalinguistic dimensions of language as well as the formal linguistic devices used by speakers to navigate, categorize, or communicate about spatial dimensions by which we mean the characteristics of or relations with entities within the environment (including position, orientation, and motion). Spatial language can also be considered in terms of performance as well as linguistic competence. In the latter case, it can demonstrate strategic deployment along a formal to improvisational gradient. Notably, the use of spatial language is not restricted to talking about space; spatial linguistic devices may also be used temporally, anaphorically, and metaphorically to achieve a wide variety of communicative effects. Among these, spatial language may frequently reflect or be a means of producing or mediating personal, social, and cultural identity. Finally, we note that spatial language is subject to shift, endangerment, and loss.

Despite a great deal of work, as keywords (Williams 2014) both 'space' and 'place' remain relatively unbounded and perhaps underdefined in linguistic research. This has led to a striking conceptual pluralism as to how linguists perceive the significance of these terms, and how the study of spatial language is being interpolated into other disciplines. While we recognize that linguists have not primarily grappled with the metaphysical questions of 'what is space?' and 'what is place?', as we document in this article, there has been a significant bloom of linguistic work, more or less aligned with Immanuel Kant's distinction that space is generally devoid of human influence, while place is space upon which meaning has been projected (Kant 1900; Casey 1996). In this article, we discuss how space has been articulated and framed in the work on the languages of Oceania. Through our analysis, we identify the plurality of ways in which researchers have grappled with relationships between language and space, what we call coupled language-space domains (CLSDs). We introduce this term to document and make provisional sense of the diversity of domains in

which linguists have studied spatial language. In particular, we use the CLSDs to observe how the linguistic encoding of space has been focalized by researchers; how the resulting insights into the ways in which language and space are "coupled" are not always propagated between different areas of interest (what we call domains); how the linguistic encoding of spatiality is coupled across cognitive, social, cultural, and environmental dynamics which can be difficult to disentangle; and how linguistically encoded spatial relationships can evidence multiplicity, embedding, and other dynamics in use.

We identify twenty-two CLSDs within nine overarching categories: linguistic encoding, cognitive framework, environmental relation, social spatiality, metaphor, placemaking and ontology, multimodality, metalinguistic, and vitality. We define each CLSD, summarize the body of relevant prior work, and identify areas for future research in order to illuminate empirical and conceptual currents. We suggest that these CLSDs serve as a provisional typology of the state of Oceanic linguistics' grapplings with spatial language in documentary, descriptive, and conceptual work. They may aid in clarifying not only the leading edges of contemporary scholarship but also future opportunities. For example, we note that these CLSDs reveal a simultaneous lack of conversation about the nature of space and place while also representing a unified approach and discussion about their relationship to language. We also note that place has not been centered within linguistic research, and as a result linguists may have missed opportunities to show how placemaking is grammatically produced. This snapshot of the discipline starkly contrasts with discussions in other disciplines in both expected ways—linguists' primary focus is defining and understanding spatial language—and unexpected ways—the limited discussion of place and placemaking, which prevail as leading topics of spatial discussion in other disciplines. Yet, we also recognize somewhat of an irony that researchers tend to treat place as space that has been assigned meaning. As language itself is a product of human activities, much of the work on language and space is thus truly about place. As a result, we believe that clarifying the state of the conversation around space and place in regional linguistics and identifying those foci which currently lack a widespread discussion will facilitate the ongoing disciplinary and interdisciplinary discussion to better achieve unified goals both across and within disciplines pertaining to the study of spatiality in language. We note with some surprise, that much of this work has tended to be pursued within CLSDs instead of across them or at their points of connection. This further motivates our sense of the utility of identifying CLSDs as existing research domains within Oceanic (and general) linguistics.

Given the complexity of the place of space in language, we engage with the spatial linguistics of the languages of Oceania—an area conventionally defined as including Melanesia, Micronesia, and Polynesia but excluding Indonesia, the Philippines, and other islands near mainland Southeast Asia—as documented within the linguistic and near-field literature over the last four decades. However, we occasionally include examples from languages elsewhere in

the world that proved particularly useful for helping to clarify our discussion. Because of our own experience with the languages of this region and because of the well-studied role of space in Oceania relative to other regions, the literature around the linguistic encoding of space and spatial culture in the Pacific Islands is particularly suitable for this close attention (Levinson 1996b, 1998). Researchers interested in space have been drawn to languages in the region because of the pervasive and strikingly fronted position of space in the morphology, syntax, and pragmatics of everyday and heightened language-in-use (Mawyer and Feinberg 2014). And we note that Oceania's contexts have also been key in the interdisciplinary interpolation of space and place as culturally mediated and variable. To take one example, the concept of wayfinding introduced by Sir Raymond Firth in his classic *We the Tikopia* (1936) entered into broader scholarly discourse through a seminal early work in urban studies, Kevin Lynch's *Image of the City*, and now has purchase in fields as diverse as anthropology (Genz et al. 2009; Feinberg and Genz 2012), architecture and interior design (Passini 1992), computer and information science (Morville 2005), and linguistics (Glenn 2012), among many others.

In the sections that follow, we review the state of the literature on language and space in Oceania. We describe how space has emerged as a highly energized research object within linguistics. Drawing on an extensive meta-analysis of the existing literature, we identify the CLSDs, their key features, and areas for future research within each. We pay particular attention to how space and place have been defined as domains of language by different researchers of varying backgrounds. We conclude with a discussion of what appear to be active research edges in how researchers engage with the CLSDs, and we reflect on the relevance of this work for other disciplines.

1.1. SPACE, PLACE, AND LANGUAGE. While space and place are relatively new areas of study for linguists, inquiring about their nature has been a foundational engine for work within the Western academy for centuries. Indeed, space has been an activated facet of scholarly inquiry in different domains at least since the enlightenment. Such shadow-casting giants as Isaac Newton and Immanuel Kant located space at the center of questions about the nature of physical reality and its accessibility to empirical evaluation and quantitative analysis as well as questions about the relationship between physical nature and the subjective qualities of human consciousness, experience, or responsive behavior in the world (Levinson 1996a). By the mid-twentieth century, Benjamin Lee Whorf's complicated legacy drew significant attention to language's connection to space and the potential cross-cultural variation of their relationship (Lucy 1997; Whorf 1997). However, as we begin to note above, space (re)emerged as one of the key conceptual intersections and points of articulation between disciplines in the 1980s. In this period, space became what Galison calls a theory machine (Galison 2003), something in the world that "stimulates a theoretical formulation."

That there was a spatial turn driven by the use of space as a theory machine is evident across social science disciplines which demonstrate comparable paradigm shifts (Kuhn 2012) in its wake. Anthropologists, for instance, tended over the twentieth century to take the position that the cultural mediation of human being in the world happens in relatively spatially bounded contexts. However, the turn toward the study of social mobilities, cultural flows, and globalization after the 1980s highlighted the complexity of culture's spatial dynamics and dimensions (Appadurai 1990). In this context, many anthropologists opened up inquiries into the culturing of space (Low and Lawrence-Zúñiga 2003) and empirical evidence of culture-in-practice as placemaking within the micro- or macro-social of a given cultural context (Ingold 1993; Shore 1998). Within anthropology, linguistic anthropologists released compelling ethnographic works illuminating that spatial language is influenced by the culture of the speakers while it conversely influences how speakers navigate their own culture (Hanks 1990; Basso 1996). In the same period, though breaking on other disciplinary shores, the spatial wave led education researchers (Gruenewald 2003), geographers (Harvey 1990; Golledge and Stimson 1997), historians (Cronon 1992, 1996), philosophers (Casey 1993), political scientists, and sociologists (Giddens 1985, 1994; Gieryn 2000) to reconsider the role of space and place as foundational concepts in and by which diverse other phenomena are inquirable within their fields of study. In another convergence, technological developments and the metaphors we apply to conceptualize them—such as 'cyberspace', 'website', and 'internet'—clearly challenge the traditional notions of space and place drawing further attention to their salience (Graham 1998). And, in the same period, psychologists and cognitive scientists attempting to understand what, after all, is human cognition, further developed the position that human spatial phenomena, including those transparently linguistically encoded, reveal evidence for the nature of cognition, its formal operations, potential for variability or plasticity, and limits.

How space and place have been engaged in the various human sciences thus offers a striking demonstration of how scientific objects come into shared focus, and how disciplines produce distinct results with respect to their disciplinary motivations, protocols and procedures, epistemes, and ontologies (Daston 2000). However, a scholarly endeavor with implications for anthropology, philosophy, geography, ecology, technology, and other fields, requires clear interdisciplinary communication. Therefore, we draw particular attention to one striking feature of this wave-tossed sea of spatial studies; the key terms 'space' and 'place' themselves are not defined consistently across or even within disciplines. It is possible that defining the spatial and placial in a way that would satisfy diverse disciplinary projects and discourses—and their epistemological, ontological, and methodological underpinnings and entailments—is not possible as the foundational motivations for engaging with space and place are not shared. Nevertheless, linguists appear to be well-positioned to contribute to dispositive and clarifying definitions. Several key features

of this scholarly positionality are evident: (i) Language and the linguistic encoding of spatiality has played a key role in the study of space; (ii) Most, if not all, disciplinary research paradigms engaging spatial dimensions of human phenomena make moves toward language; (iii) Few practitioners across disciplines have formal linguistic training; and (iv) Place is also specifically linguistically encoded.

Linguists' potential role in advancing the general study of space and place frames a number of questions including (i) How has spatial language entered into the disciplinary practices and discourses of contemporary linguistics? and (ii) How is this discipline supporting the research of its companion disciplines around space and issues of place? We answer this first question in the following section. The second question, however, indexes an ongoing discussion which we respond to in the findings and discussion of this paper.

1.2. EMERGENT SPACES AND THE STUDY OF SPATIAL LANGUAGE IN LINGUISTICS. Space is a fundamental part of human perception, conception, experience, and responsive behavior in the world. As a result, it could scarcely be a surprise that often robust and capacious linguistic toolkits are provided within any given language for key functional roles such as framing orientation (Talmy 1983; Levinson 2001), giving directions (Bennardo 2014), organizing discourse within events of speech (Hanks 1990) or the speech event itself (Duranti 1992a), grounding metaphor (Lakoff and Johnson 1980), and landscape and place-naming conventions (Burenhult and Levinson 2008; Cablitz 2008; Levinson 2008). Moreover, each language's unique encoding of space ultimately shapes numerous other aspects of language-in-use such as discourse (Berez 2015), the organization of temporal concepts (Núñez and Sweetser 2006), the manner in which people talk about social relations (Ozanne-Rivierre 1997; Wassmann and Dasen 1998; Næss 2011), wayfinding and navigation (Feinberg 1988, 2008), and the conceptualization of magnitude (Winter, Marghetis, and Matlock 2015). Among others, these have become fruitful frontiers for research endeavors.

It was not always so. For early language researchers, space and place were rarely perceived as a necessary part of the documentation of a language's grammar. When engaged at all, spatial language appears to have served as an analytical tool to allow scholars to better understand a language's adpositional phrases, cases, clause structure, lexicon, and so on. This contrasts with an approach that would take linguistic forms and functions as tools for illuminating space itself or its couplings to human dimensions. While, in many older grammars, adpositions and demonstratives are well-represented due to their aforementioned central nature in understanding grammatical structure (Seidenadel 1909; Benton 1971), they rarely, if ever, seem to have generated further study. Some older grammars contain more-extensive documentation of spatial particles, but they often reflect the author's own linguistic biases or the imposition of a Eurocentric spatial system (e.g., unreflective use of cardinal

directions with north, south, east, west as putative universals) in acts of glossing or translation. The writings of Sapir and Whorf, the birth parents of the theory of linguistic relativity (Lucy 1997; Whorf 1997), were notable early-mid twentieth century exceptions. Sapir acknowledges that the categorization of events or objects is not absolute and that within their grammar, languages may encode different elements of the contextual world or differently encode the same elements (Sapir 1924). Perhaps, his initial connections between language, space, and culture, and how landscape may inform language (Sapir 1949:89–103) could have informed a research agenda. However, these ideas did not widely take hold until the spatial turn after the 1980s. Similarly, while Whorf's better-known reflections on time stimulated a response echoing over the decades, his vision of space as an 'intellectual tool' subject to cross-linguistic variation in its manifestation also anticipated more recent conversations (Whorf 1997:214).

Among theorists, a focus on knitting together spatial theories with linguistic ones emerged in the later part of the twentieth century. From the 1960s to the 1980s, linguists developed an interest in space in English and other European languages. They laid a terminological and conceptual groundwork for subsequent spatial researchers and often related spatial notions to then-current semantic and syntactic theory (Gruber 1965; Fillmore 1975). A significant topic of focus was that of spatial relations of/between sedentary and moving objects, addressed to disentangle the complex meaning and uses of English prepositions or to create a holistic theory of semantic parts of speech including place and path among others (Bennett 1975; Talmy 1983; Jackendoff 1987). Other researchers during this time began investigations on the acquisition of spatial concepts in children (Clark 1973) and on the influence of space on language acquisition (Gentner 1982). Even investigations into cross-linguistic variation of spatial language had an early period of development which focused primarily on motion verbs (Kuiper and Merrifield 1975; Speck and Pickett 1976; Gandour 1978).

However, as the conversation around the value of diversity and the need for robust language documentation grew in the late 1980s and early 1990s, so too did a heightened interest in space and place. Space offered an ideal medium to study unexpected variation with cognitive and theoretical linguistic implications. While a number of linguists can be seen as having contributed to the roots of the spatial turn in the discipline (e.g., Bowerman 1993, 1996a, b; Brown 1994; Danziger 1996, 1999; Haviland 1990, 1993, 1998; De León 1992, 1994), Stephen Levinson played a singularly important role in transforming approaches to spatial analysis among linguists. Much of Levinson's research centers on the topics of linguistic relativity and the intersection of language, space, culture, and cognition. In collaboration with colleagues, he began energetically orienting his research toward spatial topics in the early 1990s with his work on linguistic variation in frames of reference (FoR; De León and Levinson 1992), demonstratives (Brown and Levinson

1993), and spatial descriptions of Mesoamerican languages (Levinson and Haviland 1994). By the mid-90s, Levinson had begun exploring human experience in space and the physical and cognitive consequences of linguistically encoded spatial systems (Levinson 1996c); how space is manifested in language through frames of reference (Levinson 1996a); and typologizing the evident trends. In his 2003 celebrated work, *Space in Language and Cognition: Explorations in Cognitive Diversity*, he notably draws attention to the richness of spatial language long-overlooked as a result of Euro-centric biases.

By establishing several methodological approaches for spatial linguistics, Levinson emphasized the need for research methodologies to capture the diverse ways in which different linguistic groups conceptualize and categorize their spatial contexts. This approach provided linguists with a much-needed foundation to conduct spatial analysis and also offered a series of pathways to perceive the relevance of this work for other disciplines. As different communities categorize the world differently at the language-culture nexus (Silverstein 2004), a deep understanding of variation between and within linguistically encoded spatial systems can illustrate how these systems impact human cognition, social structures, cultural practice, local histories, and other human phenomena. In the years since the publication of Levinson's generative works, linguists began analyzing spatial systems for their value toward understanding human knowledge and began training the next generation to consider space to be a fundamental concern for theoretical and empirical research.

Among Levinson and colleagues' contributions, their introduction of language-independent methodologies stands out. In recognition of the challenges and limits of field research—our shortcomings as researchers with limited time and resources and the tendency of space (and time) to elude the awareness of speakers and researchers alike—methods to elicit data that were not subconsciously skewed by the researchers' own linguistic experience or metalinguistic awareness were a critical development. Levinson and colleagues at the Max Planck Institute (MPI) pioneered these language-independent methodologies in the "Space Project" initiative led by the Language and Cognition Group. Subsequently, fieldworkers around the world developed replicable toolkits in order to obtain comparable data from a typologically diverse set of languages (Burenhult and Levinson 2008). These include story stimulus kits such as "Circle of Dirt" (Eisenbeiss, McGregor, and Schmidt 1999) or "Totem Field Storyboards" (Burton and Matthewson 2011). They also include picture elicitations or activities for studying topological relations (Bowerman and Pederson 1992), locative constructions (Levinson 1999), and frame of reference (Levinson et al. 1992), among others. These language-independent methodologies and, more generally, a heightened awareness of space have helped researchers identify the diversity and the complexity of spatial language. Research has revealed variation in usages of frames of reference (Levinson 1997; O'Meara and Pérez Báez 2011; Pérez Báez 2011), position and

topological relations (Vandeloise 1991; Werning 2012; Rentz 2017), spatial deixis (Hyslop 2002; Senft 2004b), the considerations that influence place-naming and topographical categorization (Cruikshank 1990; O'Meara and Bohnemeyer 2008; Rybka 2015), directionals (Fortescue 1988; Berez 2015; François 2015), and many more.

In the flowering of this methodological movement, linguists working on the languages of the first peoples of North America (Fortescue 1988; Moore and Tlen 2007; Holton 2011a), Asia (Bickel and Gaenszle 1999; Ganenkov 2010; Post 2011; Genetti and Hildebrandt 2017), Europe (van Staden, Bowerman, and Verhelst 2006; Derungs and Purves 2014; Indefrey, Şahin, and Gullberg 2017), Central and South America (Brown and Levinson 2000; Li et al. 2011; Rybka 2015), Africa (Widlok 2008; Boden 2009; Luseklo 2018), Australia (Levinson 1997; Bromhead 2011; Hoffman 2016), and island Southeast Asia (Adelaar 1997; Gallego 2018; van Staden 2018) have, over time, paid closer attention to the role of spatial language. As a result, spatial grammatical analyses have increased in detail and quality (e.g., Cauchard 2014; Johnson 2014) and in more holistically documenting and describing space-encoding functional units.

While scholars around the world offered significant theoretical and comparative purchase for the broader literature, work conducted among Oceania's languages has played a heightened role. This may not have been entirely random. Among other things, we suggest that closer attention to space emerged as a significant concern in mid-twentieth century descriptive grammars, and even in some nineteenth and early twentieth century precontemporary works, due to the need to describe the notable role of spatial nouns and functional units in many Oceanic languages (Davies 1851; Congrégation des Sacré-Cœurs de Picpus 1908; Dordillion 1931). For instance, authors of grammars of Hawaiian, Woleaian, Mokilese, Kusaiean, and Pohnpeian markedly engaged spatiality through robust attention to locative nouns, prepositions, and directionals as major topics in understanding the relationships between the grammar of these languages and the lived cultures of their speakers (Lee 1975; Sohn 1975; Harrison 1976; Elbert and Pukui 1979; Rehg 1981). Not only were the grammatical manifestations of space addressed early in Oceania, a plethora of anthropological literature on navigation and the language around it further motivated attention to the linguistic realization of culturally embedded spatialities among these languages (Riesenberg 1972; Gunn 1980; Goodenough and Thomas 1987). In the following sections, we turn to the close analysis of the dimensions, character, approaches, arguments, and stances on language and space in Oceania.

1.3. OCEANIC SPACES AND INSULAR PLACES. Research across the natural and social sciences has supported the idea that human and nonhuman dynamics on island environments are distinct from those of continental contexts (Graham et al. 2017). Islands harbor diverse ecosystems and heightened ecological sensitivities and have served as exemplary sites of reflection on

sociocultural dynamics (Braje et al. 2017; Coulthard et al. 2017). In the Pacific, where thousands of islands span an ocean that covers one-third of the world's surface area, insular distinctiveness is particularly evident. From the large continental islands near mainland southeast Asia and Australia to the atolls and mountainous volcanic islands of remote Oceania, there is a striking degree of biological, cultural, and linguistic diversity (Besnier 2004).

This sea of islands and peoples represents at least two great migrations—one of the Papuan peoples around 50,000 years ago and one of the Austronesians around 7,000 years ago (Bellwood, Fox, and Tryon 2006; Kirch 2017). Two large language groups reflect these historical movements. The Austronesian expansion originated in Taiwan and from there spread both eastward and westward, spanning over half of the globe from Madagascar in the west to Rapa Nui in eastern Oceania. Around 1,200 Austronesian languages are spoken today (Blust 2013), and over 500 languages belong to the Oceanic subfamily. The Non-Austronesian languages, numbering just over 860, are distributed across Melanesia and western Indonesia, an area recently coined as the Papuasphere (Palmer 2017). These genetically diverse languages, with respect to their still-evolving historical reconstruction, represent a proposed forty-three language families.

Together, the languages and cultures of speakers of both Austronesian and Non-Austronesian language groups reflect thousands of years of interaction and human adaptation to island environments that has resulted in extensive cultural diversity. However, just as Pacific island ecosystems are currently threatened by rising sea levels and globalization, many of the Austronesian and Non-Austronesian languages that are spoken in Oceania are threatened by cultural and climate changes (Otsuka 2007). With the loss of a language comes the loss of specialized domains, such as space, which includes features of grammatical richness, semantic breadth, and pragmatics of usage. As such, there is a timely and substantial need for researchers of the Pacific to take on space, lest this window into human cognition and culture be lost (Harrison 2008).

2. METHODS. In order to conduct our analytical review of the state of the art of language and space in Oceanic linguistics, we attempted to identify every peer-reviewed journal article and book chapter that touched directly or significantly on spatial language in Oceania. We began with key journals pertaining to the study of the languages of the Pacific Islands, particularly *Oceanic Linguistics*. We followed the citational trails available in these pieces, and recursively tracked the pieces they cited. We also searched for pieces that cited the available works using Web of Science and Google Scholar and cross-searched scholars who had published on language and space for subsequent related publications. In this big net approach, we attempted to identify keywords, key conceptual frameworks, key empirical foci, and key findings which constitute the state of the explicit conversation on space and language within Oceania.

After this initial review, we selected eight peer-reviewed articles and reviewed book chapters—identified with an asterisk in the bibliography—for close reading and discourse analysis (Johnstone 2017) with particular attention to authors' definitions of key terms, models of the function of space in language, and engagement with other disciplines. We sought a combination of high-publishing "central" figures and scholars who have entered into the conversation but whose work is not primarily centered in linguistic analysis of space. The results of our broad net approach are reflected in the following section in which we identify a working typology of spatial foci within Oceanic linguistics. The results of our close reading are presented in the discussion in section 4.

3. COUPLED LANGUAGE-SPACE DOMAINS. In this section, we draw on our review to identify, describe, and categorize the distinct issues, foci, typologies, and place engagements in the spatial linguistics of Oceania's languages. Our goal has been to identify CLSDs—broad theoretical foci at the nexus of language and space where we observe researchers to situate their methods, descriptions, analyses, and spatial ontologies. In drawing attention to them, we advance opportunities for ongoing linguistic analysis; for framing potential cross-disciplinary collaborations on the role of language in the spatial dimensions of the human condition; for contributing to the documentation and conservation of language and culture-specific variation; and for supporting the region's communities in their ground-up or island-out projects of language and culture vitalization. We present the twenty-two CLSDs in nine overarching categories: linguistic encoding, cognitive framework, environmental relation, social spatiality, metaphor, placemaking and ontology, multimodality, metalinguistic, and vitality. We observed these categories within our typology as having valuable connections with nonspatial disciplines and methodologies. Moreover, we note that some CLSDs, as well as some geographic areas, have garnered more attention from linguists than others. The underrepresented CLSDs may be opportunities for future research and cross-disciplinary collaboration, and they may also reveal linguists' perception of the connections between space, place, and language.

3.1. LINGUISTIC ENCODING. Functional linguistic units are used to encode spatial culture and cognition in grammar. Here, we organize them into three semantic categories: spatial deixis, directionals and motion verbs, and topological relations.

3.1.1. Spatial deixis. Speakers use spatial deixis to refer to objects or locations in a way that is entirely dependent on the context of the utterance (Levinson 1983). Oceanic languages syntactically express spatial deictic reference using adpositions, locatives and local nouns, directionals, position and motion verbs, presentatives, and demonstratives (Senft 2004b). However, demonstratives can be particularly valuable in understanding a language's deictic system (Hyslop 1993).

The literature suggests that there are two primary ways that the languages of Oceania delineate space deictically: systems based on person (near speaker, addressee, someone else, both, or neither) or distance (proximal, intermediate, or distal). Due to the unavoidable semantic and spatial overlap implied by these systems, many Oceanic languages have a deictic paradigm that incorporates both. This is generally a set of three terms near speaker, near addressee, and distal (Hyslop 1999; Næss 2004:200; Ozanne-Rivierre 2004; Margetts 2004, 2018). While a three-term person-oriented system is pervasive, the semantic parameters used in spatial deictic systems are diverse. For instance, Lavukaleve (ISO 639-3 lvk), a language of the Solomon islands, solely uses distance from speaker to distinguish proximal, medial, distal, and unspecified locations of a referent (Meira and Terrill 2005; Terrill 2018). Meanwhile, Vaekau-Taumako (piv) is shifting from a person-oriented system to a distance-oriented one (Næss 2004). Takia (tbc), a language of Madang Province, PNG, similarly uses distance but also defines terms using nonspatial parameters such as anaphoric role and interrogative use (Ross 2004). Nengone (nen) of the Loyalty Islands has a particularly complex deictic system with parameters such as personal orientation, distance, social standing, and absolute location (Bearune 2012). Gesture or touch may also influence lexical choice, as in both Caac (msq) of New Caledonia and Kilivila (kij) of the Trobriand Islands, PNG (Senft 2004a; Cauchard 2014).

Levinson (1983:63) distinguishes between space, time, discourse, and social deixis, but often all of these functions may coexist and interact within a single, multidimensional deictic system (Levinson 2018) ultimately contributing to the spatialization of nonspatial domains. For instance, the Tahitian deixis *nei/na/ra* can semantically function to orient a referent in either space or time (Vernaudon 2005); the expression *te tau nei* 'the season now' has a temporal meaning while *te ʻuri nei* 'the dog here' locates the dog in space. Meanwhile, Nêlêmwa (nee), a language of New Caledonia, demonstrates symmetry between its spatial and discourse deictic systems. The demonstratives—*hleny* 'proximal', *ena* 'medial', and *ali* 'distal'—indicate distance from the deictic center in physical space, and the anaphoric demonstratives—*eli* 'previously mentioned and known to speaker', *bai* 'known to speaker and addressee', and *-xo* 'unknown, unreferenced'—track discourse referents. Terms in both systems also have a temporal meaning, locating the referent event in time in relation to the present (Bril 2004).

We suggest that some of the motivation for the highly energized research focus on spatial language in Oceania, can be due to the striking obligatoriness and explicitness of deictic reference in many languages. Another critical dimension is the evident comparability and diversity of these systems across Oceania's languages. As the temporality of deixis has been given less attention, both syntactic and pragmatic attention to the space of time or timespace would be a profitable site of continuing work in nonmetaphorical terms of linguistic form and function across languages (Bender and Beller 2014).

3.1.2. Motion, directionals, and motion verbs. Figures in motion are continuously changing their position along a path or vector in relation to a ground over a period of time. In the languages of Oceania, motion is expressed using a variety of syntactic means, but it is often boiled down to the classes of directionals and motion verbs. While directionals exhibit overlapping grammatical and semantic functions (Paia 2005), for descriptive purposes, researchers in Oceania tend to delineate directionals as a distinct semantic class. Syntactically, the function of directionals varies across Oceanic languages from verbal modifiers in Mwotlap (mlv, Vanuatu, François 2003) to affixes on motion verbs such as in Natügu (ntu, Solomon Islands, Lober and Boerger 2009). Semantically, directionals function to orient a referent by aligning it on a deictically based axis. The axis may be denoted by either physical motion (if the object is in motion) or a deictic vector based on the position of the ego (if the object is stationary; François 2003).

Directionals are a regionally salient feature of languages in Oceania. Indeed, their omnipresence is part of what has drawn researchers to so thoroughly document space in the region. They play an essential role in discourse and oral narratives (Ozanne-Rivierre 1997; Keating 2002). Furthermore, some directionals appear to be adapted to suit the specific island environments of the speakers (Palmer 2002, 2015; François 2015). Often, they reflect binary contrasts such as land and sea, in and out, up and down, hither and thither (Hyslop 1999; Paviour-Smith 2009). Still, directional systems range in complexity from simple binary oppositions to the highly complex systems in the languages of the Loyalty Islands (Moyse-Faurie 1983; Bearune 2013).

Directionality may also be expressed by the use of motion verbs (Chambers 2009; Næss 2011). In languages such as Caac, motion verbs may convey simple directional information such as 'go up' and 'go down' (Cauchard 2014). However, often, motion verb categorization is shaped by conceptual spatial systems, and a neo-Whorfian approach suggests that motion verbs may even influence cognitive conceptual systems (Gennari et al. 2002; Ji and Hohenstein 2014). For instance, Momu (fqs), a language of PNG has a riverine- and elevation-based orientation system, which is also reflected in its verbal paradigm for 'bring' and 'take' (table 1; Honeyman 2016:120). Similarly, Yélî Dnye (yle) has different words for 'put' and 'take' based on a figure's positional relationship with the ground. This is further discussed in section 3.1.3 and in table 2 (Levinson 2018).

TABLE 1. MOMU 'BRING' AND 'TAKE' (HONEYMAN 2016:120).

System type	Gloss	'bring'	'take'
Elevation	Down	nerni	no-wor
	Up	(no-nai)	(no-won)
Riverine	Downriver	na-key	no-woky
	Upriver	no-nai	no-won
Traverse	Across	na-ney	na-woy

The study of motion has been central to the study of space in Oceania as it has been key to revealing the linguistically diverse and culturally and topographically grounded nature of spatial cognition. Furthermore, this work has directly contributed to a key methodological insight that directionals and motion verbs can inform researchers about speakers' spatial perceptions not only of the natural environment but also of social and cultural structures, relationships, and linkages between all of the above. Moreover, further study into the categorization and expression of motion may offer access to speakers' cultural and social norms, cognitive foundations, or other motivating drivers of linguistic production and performance below the threshold of their metalinguistic or metapragmatic awareness (Lucy 1993:199; Silverstein 1993).

3.1.3. Topological Relations. Topological relations refer to the static relationship between a figure and a ground without angular coincidence. Languages generally use "adpositions, case, predicates, spatial nominals, and verbs" in an intrinsic, relative, or absolute FoR to portray a relationship between two objects (Levinson 2003). A typical example of an utterance conveying topological relations in Mavea is shown in (1) in which the tree (the figure) is located in reference to the house (the ground).

(1) Relational term; MAVEA (Guérin 2011:54)
Aru mo-tur nao-n Ima
tree 3SG-stand front-cons House
'The sea oak tree is in front of the house.'

Topological relations may be syntactically expressed by words of a distinct lexical class, or more commonly in a variety of ways within a single language. Rentz (2017) observes that Pohpeian (pon) has two classes of words that may express topological relations: prepositions and prepositional nouns (Rehg 1981:285). Example (2) exhibits a sentence using the preposition *nan*, which describes relations of containment, while (3) provides an example of the prepositional noun *pohn* 'above'.

(2) Preposition; POHNPEIAN (Rentz 2017:10)
Apel-o Mih ~ mi nan pwohl-o
apple-DIST.SG STAT ~ IPFV in bowl-DIST.SG
'The apple is in the bowl.'

(3) Prepositional noun; POHNPEIAN (Rentz 2017:4)
Kep-o Mid ~ mi poh-n tehpel-o
cup-DIST.SG STAT ~ IPFV above-CONS table-DIST.SG
'The cup is on the table.'

The grammatical devices available to a language in describing topological relations may be symmetrically reflected in other areas of grammar, an idea critically investigated in terms of "semplates" (Burenhult and Levinson 2009). For instance, in Yélî Dnye, a figure's orientation in relation to a ground may be described as standing, sitting, or hanging, each of which are associated with put/take verbs that describe motion into or out of that position. Yélî Dnye has

TABLE 2. PARADIGM OF 'PUT' AND 'TAKE' VERBS IN YÉLÎ DNYE (LEVINSON AND BROWN 2012:279).

Stative positionals (intransitive)	Put causative (transitive)	Take undo causative (transitive) + close	Take a position Active (intransitive)
Kwo 'be standing'	Kââ 'put standing, stand something up'	Y:oo 'take standing, take something which stands'	Ghê 'stand up'
Tóó 'be sitting'	Yé 'put sitting, put something down'	Ngî 'take sitting, take something which sits'	Yââ 'sit down'
T:a 'be hanging'	T:oo 'put hanging, hang something up'	Ngee 'take hanging, take something which hangs'	Kaali 'make oneself hang' (e.g., A flying fox)

three terms each for putting and taking which correspond to each stative positional, shown in table 2 (Levinson and Brown 2012:279).

Terms for topological relations frequently derive from locative nouns or body parts (Heine 1989). However, Bowden (1992) finds that most contemporary adpositions in Oceania are derived from body parts, landmarks, locatives, or verbs. The most common origins of adpositions in Oceanic languages include 'face' for 'in front of' and 'back' for 'behind'. Less commonly, 'feet' becomes 'under', 'head' becomes 'on', and 'tooth' becomes 'in'. Common landmarks origins include 'land' to mean 'under', and 'sea' to mean 'out' or 'down'.

Researchers in Oceania have generally approached topological relations from a grammatical point of view; their history, semantics, and implications for cognitive frameworks are still largely unexplored in the region. The interplay of mind, culture, and the environment evident in body-and-land linked topological relations suggests a particularly fertile research edge. Similarly, the strong evidence for language-internal complexity visible in the number of linguistic tools available to speakers to fashion spatial claims about the world raises important questions about subtlety of function in linguistic code. It also challenges us to scrutinize our capacity as researchers to perceive and account for functional nuance.

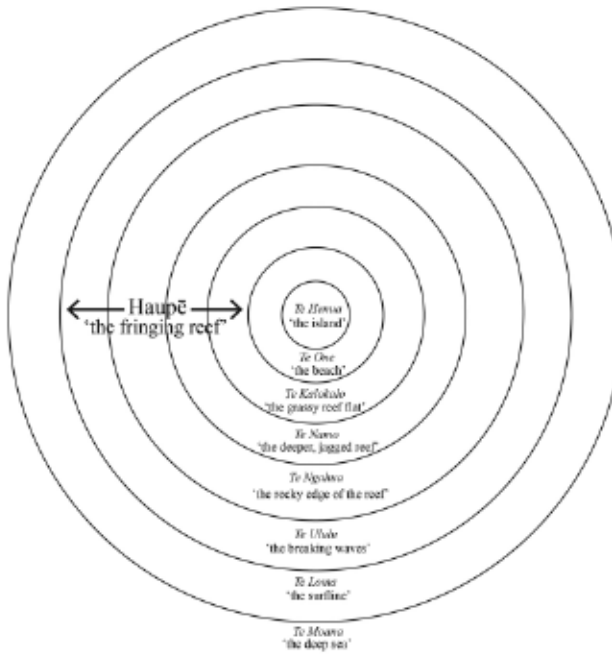
3.2. COGNITIVE FRAMEWORK. The linguistic encoding of language reveals conceptual frameworks or categorizations of space reflected in language. The cognitive frameworks adopted by researchers of Oceania's languages include Frame of reference, scales of orientation, and allocentric versus egocentric perspectives. We also note the potential for interactions between multiple cognitive frameworks within a single language.

3.2.1. Frames of reference (FoR). Three frames of reference—abstract coordinate systems defined by two or three referent points—have been distinguished in linguistic spatial work: absolute, relative, and intrinsic (Levinson 1996b; Pederson et al. 1998; Bennardo 1999). Relative FoR makes use of three referents and locates a figure in relation to the ground by projecting the observer's orientation (Bennardo 2009). Intrinsic FoR relies on the culturally defined 'nature' of the object. For instance, in Tongan (ton) or Samoan (smo), the part

of the house that is designated as the front depends on the cultural information of where the chief sits (Bennardo 2000). Similarly, among some languages, an inhabited island may be assigned a 'front' (Feinberg 1980).

Absolute FoR is an orientation system that is spatially fixed according to language-specific conventions. Absolute FoR in Oceanic languages, with the exception of the languages of the Loyalty Islands and some others, is reported to be topographically linked (Palmer et al. 2017). Many coastal languages, notably those across Oceania, distinguish the land and the sea (Lichtenberk 1983; Shore 1998; Feinberg 2014; Senft 2017), while languages spoken in island interiors may have orientation systems rooted in river flow or elevation (Priestley 2006; Fedden 2011:20). Speaker populations on island atolls make use of their landscape by distinguishing between lagoon and open ocean (Palmer 2002, 2015). Furthermore, some languages deploy nontopographic systems that are based on the sun or the wind (Gaby et al. 2017). Researchers in Polynesia have observed a radial system reflecting culturally salient spatiality, which Bennardo (2009) considers to be a subtype of an absolute system as it uses one fixed, central point of reference. An example of one of Feinberg's models for Taumako conceptions of radially organized space may be observed in figure 1.

FIGURE 1. EXAMPLE OF ONE CONCENTRIC MODEL EMPLOYED AMONG THE TAUMAKO (BASED ON FEINBERG 2014:322).



It has been hypothesized that when languages make widespread use of the absolute FoR, relative and intrinsic frames become less-essential (Levinson and Wilkins 2006), and the languages of Oceania are recognized to rely heavily on the use of absolute FoR and restrict use of relative and intrinsic FoR. Speakers of Yupno (yut) and Yélî Dnye largely prefer an absolute FoR irrespective of interaction scale (Bender and Beller 2014; Levinson and Wilkins 2006). Furthermore, it has been reported that Oceanic languages make limited use of 'left' and 'right', often reserving them for the description of the asymmetries of the body or for referents that are touching or in very close proximity to a human body (Bril 2004; Cablitz 2005; Johnson 2014:201). However, in practice, the frequency with which speakers use each FoR varies by language. Tongan speakers use all three FoRs, reserving absolute for large-scale orientation and using intrinsic and relative FoRs for interactions on a smaller-scale (Bennardo 2000, 2009). While the intrinsic and relative FoRs are sometimes used in large-scale space, the likelihood of their use appears to decrease as visibility of some focal landmark or other salient referent increases. Study of the absolute FoR in Oceania has nevertheless been a primary focus which has supported a more holistic understanding of orientation techniques and theoretical innovations such as the Sociotopographic Model (Palmer et al. 2017).

Some researchers have offered a different FoR framework than the one described above. Danziger (2010) proposes a fourth 'Direct' FoR in which egocentric deixis are incorporated into the paradigm. Meanwhile O'Meara and Pérez Báez (2011) propose six categories which additionally distinguish geomorphic- and landmark-based orientation. To our knowledge, these newer FoR frameworks have not been extensively applied to the Oceanic context. Yet, the Yupno's use of a topographically anchored orientation system within the microcontext of a home (Cooperrider, Slotta, and Núñez 2017) demonstrates the applicability of such extended FoR methodologies.

We note that work on FoR among Oceania's languages has led to significant development of foundational questions about the relationships between language, cognition, culture, and environment. Given evidence for the variability in the primacy of the absolute FoR throughout Oceania, along with the potent, distinctive, big-picture theses of Bennardo (foundational cultural models, Bennardo 2009) and Palmer and colleagues (sociotopographic model, Palmer et al. 2017), it is time for researchers to thoroughly assess the use of other FoRs in Oceania and to further clarify how FoRs usages reveal insights about the relationships between culture, nature, and mind.

3.2.2. Micro-, meso-, and macro-orientation. Spatial systems may operate on several scales. Authors tend to distinguish three scales corresponding generally to those outlined by François (2003): (i) a microscale which describes the relationship between people within microsocial or domestic contexts, (ii) a mesoscale which describes the relationship between people within interactional contexts of daily life, and (iii) a macroscale which describes the

relationship between people and the macro-environment of insular, archipelagic, or seascape contexts. Alternate models for orientation along the micro-to-macro gradient might include point versus field (Lehman and Herdrich 2002) or inside versus outside (Sperlich 2002). While the prevalence of absolute systems for the purposes of macro and sometimes even micro-orientation has received the whale's share of attention, work on meso- or microscale situations has pointed to the salience of culturally specific spatial values such as "front" (Shore 1998) or the position of the ego (Johnson 2014).

Sometimes the same directionals are used on several scales but with an altered meaning. Most commonly, either the in–out axis or the up–down one on a microscale also corresponds with macroscale movement around the island (Natügu: Lober and Boerger 2009; Aulua, aul: Paviour-Smith 2009). For instance, examples (4) and (5) demonstrate the coupled uses of the directional *hag* in Mwotlap. In a microcontext *hag* refers to the vertical axis, but on a macroscale, it refers to 'eastward' (or 'along the coast in an eastward direction'). Similarly, Tongan speakers prefer a relative system attending to front–back in micro-orientation, and this preference can have consequences on meso- or macrosystems, such as the layout of a village (Bennardo 2000).

(4) MWOTLAP (François 2003:415)
Kĕy me-yem kal qēt hag le-vet liwo
3PL PFV-climb upward all up LOC-stone big
'They all climbed up the big rock.'

(5) En malig hag!
AO:lie shift east
'Please shift yourself eastward!' (François 2003:419)

Micro-orientation may also refer to the translation of a macro-orientation system onto a smaller defined space, such as a house. Studies outside of Oceania have demonstrated the importance of conceptual and physical properties of the outside world that influence the organized spatiality of the house (Bourdieu 1979; Fortescue 1988, 2011). In Oceania, modest research has been conducted on the linguistic encoding and enactment of micro-orientation within the home and has delved into the complex spatiality of house cultures throughout the region (Fox 1993, 2006b). In Yupno (yut), a language of Papua New Guinea, the absolute system has bearing on both traditional architecture and how people orient themselves within the home (Cooperrider, Slotta, and Núñez 2017). Cooperrider et al. observe that the home is organized with a long fireplace running down its length like the river in the Yupno valley. Regardless of the house's orientation in the macroworld, people perceive an up–down axis with the door as 'down', and there is also a transverse up–down axis where the side walls are 'up'. In contrast, North–East Ambae (omb) speakers maintain the exterior system of macro-orientation while in the home. Thus, 'down', when inside the house, will correspond with the slope of the land. This occurs in all buildings except in those where a front may be assigned as 'up', such as in churches (Hyslop 1999).

Oceania's researchers have observed that language-as-culture both mediates and makes visible the balance between the micro, meso, and macro. However, we note an asymmetry of attention in regional descriptive and analytical work with a persistent tendency to focus on the meso-to-macro scale. While both quotidian experiences (such as intra-island travel) and heightened moments (such as interisland travel) require speakers to orient within meso- and macroscale social and environmental contexts, language-encoded micro-orientation systems may be among the most significant features of everyday spatiality for speakers. We note that the imbalance of work conducted on the charismatic Oceanic macro- and mesosystems versus that on Oceanic microsystems should encourage future researchers to explore microsystems in more depth.

3.2.3. Allocentric versus egocentric perspective. Perspective, as we are drawing attention to it here, pertains to language-encoded/ing spatial perception and orientation. An egocentric perspective is one in which the ego is paramount as origo, and referents are located based on their relation to the ego. An allocentric perspective is one where the ego does not anchor the perspective as when speakers take a bird's-eye view of the world (Shore 2014) or when a chiefly personage or highly salient environmental feature centers the perspective as origo. Both are used throughout Oceania, although their relative frequencies of deployment may differ across languages.

The alternation in language-in-use of these two perspectives draws attention to how speakers are constantly navigating multiple models of spatial relations in the physical and societal world (Feinberg 2014). Shore (2014) and Bennardo (2002) observe this apparent opposition in perspectives in Samoan and Tongan. While these languages are notable for encouraging speakers to deploy binary oppositions of vertical or horizontal alignment for coordinating orientation around an egocentric perspective, speakers may maintain a radial view of the world, whose center is geographically or socially fixed, that also helps them navigate the geographic and societal landscape (an allocentric perspective). Researchers have also asserted that the coordination of an egocentric and an allocentric perspective is essential to navigation. Among Marshallese navigators, the simultaneous usage of geographic and wave current models (an allocentric perspective) paired with the sensory experience of the waves and the wind (an egocentric perspective) is an essential component of expertise (Genz 2014).

Despite a widespread recognition of these different perspectives, only a few researchers have begun to query the consequences of how speakers navigate multiple and potentially conflicting simultaneous perspectival stances. Alternation is one outcome, reminiscent of alternation in deployment of distinct FoRs. As in that case, this alternation raises questions about the significance of patterned differences in linguistic performance for understanding the interface of culture and cognition and how regularities of normative emplacement within one perspective or another may shape or motivate speakers' perspectives within a particular sociocultural context.

3.2.4. Spatial conflicts, discordances, disruptions. Spatiality plays a fundamental role across numerous human domains; thus, articles on space and language (or on spatiality and other dimensions of human being-in-the-world) often only focus on particular aspects of spatiality in practice, experience, or cognition. Even monograph-length works on a language's spatial systems, what we call elsewhere the spatial culture of a particular speech community, appear challenged to describe how particular spatial systems in any given domain may interact with others. There is also a tendency to privilege highly efficacious or ready-to-hand elements of spatial language with few papers addressing what may be the fuzzy boundaries where systems overlap and interact. This possibly unavoidable tendency in the literature may give the impression of simplicity. That is, one might conclude that languages offer neatly packaged spatial systems. However, neat systems among human domains are rare if not nonexistent (Byrne and Callaghan 2013). Consequently, the notion of a single spatial model guiding the relationships between spatial perception, cognition, experience, or behavior may be disingenuous vis-à-vis the complex systems at work. Some authors, using Oceanic languages as a model, have taken on the challenge of discussing the messy parts of spatial language in mind or in use particularly in areas where several systems overlap and where subjective misorientation or intersubjective miscommunications may arise. Recently, Shore (2014) recognizes that some models are binary linear axes while others are radial. This corresponds to Feinberg's (2014) complex modeling of Taumako spatial cognition and language. Among the Torres and Banks languages of Vanuatu, directionals may have a different connotation depending on the scale of orientation (macro, meso, or micro; François 2003, 2015). For instance, hōw, in Mwotlap may mean 'downward' or 'westward'. As a result, one might imagine the potential conflicts that may arise, particularly if the listener lacks crucial information.

Iaai (iai) and Nemi (nem) of New Caledonia have differing local and navigational systems, one based on the land–sea axis of the region and one adapted from a wind system. Speakers must choose between these based on the nature and location of the event described (Ozanne-Rivierre 1997), and there is likely ambiguity between choices. Sometimes several systems may be in use in the same utterance, such as in (6) in which the absolute and intrinsic FoRs in Caac are both used (Cauchard 2014:234).

(6) CAAC, New Caledonia (Cauchard 2014:234)
Alô da o jure hi-nya
look upward at/to true hand-1PL.INCL.POSS
'(They) look inland to our right.'

Mawyer (2014) theorizes fuzzy boundaries between systems with the intra-island reflection effect. Radial models around islands in a sea of islands require navigators to transition from one origo to another, thus raising a pragmatic question: At what point does a navigator stop orienting themselves in the spatiality of the origin island and begin using that of the destination island? Similar

reflection effects and the complications they generate for moving and acting persons in the world can easily be predicted for speakers across many if not all contexts. In some sense, we are all always at sea in language and space. Yet, while boundaries are fluid and may vary from person to person, Lober and Boerger (2009) suggest that speakers of Natügu can likely determine the change in system with a high degree of accuracy. Ultimately, orientation may rely on the constant interaction between multiple models relevant to context including the possible result that the orientation provided by one model may produce a discordance or, worse, disorientation, with respect to another model in use (Mawyer 2014).

The potential for multiple systems of spatial orientation should have profound consequences for how researchers approach and frame studies that are narrow in scope. Conflict and complexity, both formally and in communicative performance, are inherent features of spatial language. Furthermore, all researchers, when recognizing the existence of multiple models of space encounter the same still-unanswered question: How do speakers juggle multiple models in everyday expression and understanding? What would linguists find if they looked for spatial conflicts and misfires? What might spatial repair work look like, and what might linguistic documentation and analysis of this repair work reveal?

3.3. ENVIRONMENTAL RELATION. Language encoding of space reflects a speaker's perception and conception of how they exist within and move about the natural environment. While topographic features such as rivers, mountains, and coastlines shape land navigation, environmental features such as the waves, winds, sun, and stars influence both land and sea navigation. We observe that language plays a role in mediating perception, conception, and engagement with these environmental features.

3.3.1. Geocentric orientation. Research on island spatial systems has shown that speakers throughout the Pacific orient themselves via a widespread, acute, and omnipresent awareness of the geographic environment (Palmer et al. 2017). In coastal regions, the dominant topographic feature is the contrast between land and sea (Palmer 2002; François 2004; Cablitz 2005), a system which children begin to navigate at an early age (Cablitz 2002). This reflects a binary or radial (Feinberg 2014) cultural salience of differing uses of the land and the sea that influences navigation, farming practices, social organization (Ozanne-Rivierre 1997), village organization (Mawyer and Feinberg 2014), and the perceptual salience of distinct landforms or seaforms (Levinson 2008). For instance, among the Taumako, parts of the house are referred to as *te tua i mouku* (the back toward the bush) and *te tua i haupē* (the back toward the fringing reef; Feinberg 2014). Contrastively, inhabitants of island atolls grapple with two watery distinctions: that of the land and the sea and that of the lagoon and the sea (Palmer 2002, 2015) which may similarly shape cognition and practical orientation.

In many Pacific languages, 'toward the land' is synonymous with 'up' while 'toward the sea' is synonymous with 'down' (Lindström 2002; François 2003), a reflection of the many systems that simultaneously interact in speakers' cognitive models. However, for interior communities, particularly the Non-Austronesian languages of Papua New Guinea (see e.g., Schapper 2014), elevation and river flow often are topographic features driving orientation. Importantly, rather than being in conflict, they can exist in concert; while they can function as two separate systems used opportunistically, often the elevational axis runs orthogonal to the riverine one (Fedden 2011:140; Cooperrider, Slotta, and Núñez 2017). Several widely observed, geographically grounded oppositions are shown in table 3 with examples from Mian (mpt), a language from Sandaun province, PNG. However, in some languages, particularly those spoken in lowland areas, the riverine terms may be primary, while in others, the elevation terms may be primary or even solitary. As with the land–sea binary, there is evidence that elevational and riverine orientation systems also serve to organize conceptualization, categorization, and representations of space (Wassmann 1993), house structure (Wassmann 1994), and temporal metaphor (Fedden and Boroditsky 2012).

This vast diversity in geocentric orientation has led to the proposal of the Sociotopographic Model (Palmer et al. 2017) which suggests that cultural interactions with particular landforms may motivate the development of relevant, linguistically realized categories subsequently transmitted over generations. In Oceania, the land–sea binary has sometimes been treated as the keystone to spatial study. We note that it has been a central topic of focus since the earliest grammars of Pacific languages continuing into significant more recent works (Lee 1975; Sohn 1975; Harrison 1976; Elbert and Pukui 1979). More broadly, it has shaped anthropological work at the intersection of language–culture-and-mind, including discussion around cultural models, FoR, micro- and macro-orientation, among others. However, although existing papers suggest rich opportunities for future research on the land–sea binary, the discussion of other geocentric systems in Oceania and their broader cultural and cognitive consequences is not as well-developed.

3.3.2. Wind systems. A persistent and patterned environmental feature of marine topography with navigational salience, an instrumental natural phenomenon that Pacific navigators had to master (Lewis 1972; Osmond 2000), the wind is a key feature of traditional ecological knowledge and language across

TABLE 3. MIAN TOPOGRAPHIC TERMS (FEDDEN 2011:140).

Topographic term	Gloss
ut~wit	'up(wards)'
daak	'down(wards)'
met	'upriver, up a little'
tab	'downriver, down a little'
wät	'across (a river or valley)'
tām	'sideways, to the side (on the same level)'

Austronesia which has been called upon to play multiple roles in spatial language. While the wind axis may be variable in accordance with the direction of the wind at the time of the speech event, it has been reported that in languages throughout Oceania the wind system has become fixed to match the direction of the prevailing winds (François 2004). Wind directions may be linked to a number of environmental dynamics (seasons, weather) as a key form of Indigenous and local ecological knowledge, but throughout the Pacific 'up' often points east, southeast, or south, corresponding to the direction of the prevailing trade winds. For instance, in North–East Ambae, a voyager goes *hage* 'up' to any island to the south or east and *hivo* 'down' to any island to the north or west (Hyslop 1999). Yet, not all wind systems are a simple cross-axis. Vaeakau-Taumako evidences a compass of eight primary directionals distributed in a circle for interisland voyaging (Feinberg 2014:20). The user of the compass is normatively aware of all eight points as well as the regions between them. However, the literature has emphasized that though the wind compass is essential to Pacific voyaging, it is merely one tool in the navigator's toolkit (Pyrek 2011).

Wind systems have also been grammaticalized as part of directional systems for wayfinding across land. Often, these have become generalized as an orthogonal axis to a land–sea one, and as a result, many original wind systems have been conventionalized to follow the coastline (Palmer 2002). In New Caledonia an up–down axis running relatively south–north is widespread throughout the languages of Grande Terre, corresponding both to the general southeast to northwest direction of the trade winds and to the lengthwise direction of the island. As such, this axis is orthogonal to the land–sea axis which runs roughly east–west in New Caledonia (Ozanne-Rivierre 1999). In Nelêmwa, the 'up' and 'down' directionals are often accompanied by the terms for the winds *bweo* 'the southeast wind' and *bweeravac* 'the southwest wind', shown in (7) (Bril 2004).

(7) NELÊMWA, New Caledonia (Bril 2004:116)

...ava	yameewu	mahleena	tuume	na	bweo
...some	clan	these.DEIX	go.down	LOC	SE.wind

'some of these clans which arrived to the north from the east (coast).'

Feinberg (2014) reports that the winds can affect topographical names. In Vaeakau-Taumako, the directional terms based on the wind have also become designators for parts of the island. For instance, the name for the south side of Tahua, a small artificial island, is *te ngatae* which is the "term for the trade-wind season, when prevailing winds blow roughly from the southeast; *te angeho*, refers to the monsoon season, a time of unstable winds which often blow from the west or north" (311). Similarly, the Leeward moku (districts) of some of the Hawaiian Islands are named Kona after the famous leeward wind (from EO *toga '(Wind from) south-easterly quarter; southern trade wind', Greenhill, Clark, and Biggs 2010), and some island names, such as Tonga, may reflect the heightened significance of winds in the era of ancestral voyaging and regional settlement.

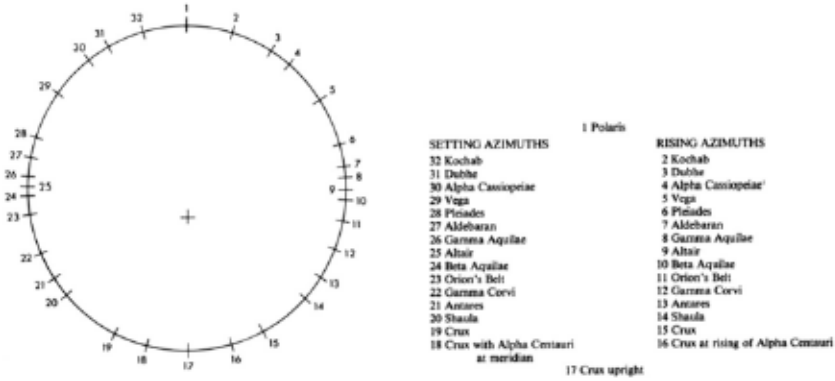
Wind terminology has evidently become grammaticalized into spatial systems throughout Oceania. This raises a striking possibility of a comparative analysis of grammaticalization across other language families or across other sorts of locally high-salience environmental phenomena. Similarly, that winds have frequently been mapped to landforms and places across Oceania is striking. Finally, we note that wind compasses have become frequent and potent tools in language vitalization projects across the region. We speculate that this is perhaps because of their intersecting social, cultural, and environmental salience, everyday accessibility, lexically reflected symmetry, cross-cultural mapability, and teachability.

3.3.3. Celestial systems. The documentation and conservation of asterisms was not a primary focus of lexicographical work during the nineteenth or early twentieth centuries, possibly reflecting the historical development within Euroamerican cultural contexts of alternate CLSDs for navigation at sea (e.g., the solution of the latitude and longitude), and the relatively recherche status of astronomical knowledge among speakers of European languages (Holton et al. 2015). In many parts of Oceania, it has only been since the emergence of potent cultural vitalization movements that refreshed attention to skies and stars emerged within academic work at the language-culture nexus (Finney 1996; Nāmakaokeahi and Malcolm 2004; Ruggles 2015). The names of asterisms, discursive frameworks for actualizing asterisms in navigational (or orientational) acts/practices, and relationships between asterisms and other environmental or ecological phenomena all evidence language and spatial coupling. Furthermore, celestial bodies can play a role in ordering social worlds and natural cycles over annual seasons (Sissons 2014).

Among the best-studied celestial systems are those employed by Micronesian navigators, used in concert with the *etak* method of determining the gaps between islands (Gunn 1980). This navigational technique requires knowledge of the relative locations of several stars and a reference island or *etak* (Gladwin 1970; Finney et al. 1986).

Ethnographic studies have detailed how navigators from several island groups in the Pacific employ wind directions and the movements of celestial bodies to form conceptual compasses that are used for orientation and course setting (Finney 1996). Interestingly, as evidenced in the Hawaiian star compass developed by master navigator Nainoa Thompson and the Polynesian Voyaging Society (available at https://www.hokulea.com/education-at-sea/polynesian-navigation/the-star-compass/), the wind compass intersects with the star compass (figure 2), in a clear demonstration of the interacting character and dynamics of CLSDs and, cognitively, of multiple models (Shore 2014). Similarly, like navigational knowledge, for most of Oceania's languages, celestial knowledge has not usually been grammaticalized into the language and has, thus, been subject to and remains at heightened risk of endangerment or loss. Thus, the interaction between celestial systems and one or more other CLSDs may offer a productive avenue for future research.

FIGURE 2. MICRONESIAN SIDEREAL COMPASS: AN INTERPRETATION BY GOODENOUGH (1953).



3.3.4. Navigation-at-sea. The peopling of the Pacific is one of the greatest feats of humankind and a striking accomplishment of Oceania's peoples (Buck 1938; Howe 2007; Kirch 2017). While the greatest attention in this context has often been directed toward other cultural dimensions—such as canoe design, sail forms, and the transportation of material culture, fauna, and flora—language is an integral part of navigation and navigators' toolkits. In contrast to regional outlanders who tend to focus on the watery expanse of the world's largest ocean as something like a blue desert, Pacific peoples have perceived Oceania as a 'sea of islands' (Hau'ofa 1993, 2000) constituted by linguistically encoded landscapes and seascapes possessed of a variety of CLSDs and practices.

Successful navigation at sea is deeply rooted in cultural practices and requires multiple models of experiential and cognitive ways of knowing and engaging with sea spaces (Kitchin and Blades 2002; Feinberg and Genz 2012). The categorization of the seascape and its spatialities is evidenced in terminology, the use of particular orienting devices during navigation, and the spatially linked engagement with other lexically encoded environmental features—such as sea life or disrupted swell patterns which may be used to sense land before it becomes visible—which have all been documented in various languages of the region (Gladwin 1970; Lewis 1972; Feinberg 1988, 1991; Ammarell 1999).

Though cognitive, celestial, and wind systems are important (Osmond 2000), an embeddedness in the voyage itself as experiential or embodied knowledge is also critical (Lauer and Aswani 2009). Intriguingly, it may not always be possible for navigators to put into words the cues they are reading from the environment (Feinberg and Genz 2012). Rather, anthropological research suggests that the navigator 'feels his way' using a combination of

egocentric and allocentric interpretations of orientation and location (Genz 2014). A navigator in some traditions, such as Marshallese and Taumako navigators, may sense the pitch and roll of the vessel to discern the pattern of the swells and to map these onto their knowledge of the stars, winds, and/or known islands to maintain a sense of orientation (Feinberg 2014; Genz 2014). The Carolinians of Micronesia, in contrast, use a sidereal star compass to guide their navigation (Goodenough and Thomas 1987). Because of navigators' extensive experiential knowledge of specific material contexts, the intangible is sometimes tangible and much of what seems intangible to speakers of other languages can be demonstrated as tangible within the speech practices of a particular language. For instance, linguistically encoded wave forms transmitted in Marshallese (mah) through a 'teaching and learning' framework that cannot easily be made legible using state of the art wave detection and processing equipment have been shown by physicists to be entirely 'real' (Genz et al. 2009).

Each of the ways in which people successfully navigate the seas requires cognitive, visual, auditory, and kinesthetic information expressible via linguistic encoding (Levinson 2003:219). Such skills and awareness of the sea are developed by a lifetime of interaction with its currents, and the knowledge is passed on via the practice of wayfaring (Ingold 2001). However, while knowledge has survived in enclaves in Micronesia and the Solomons, it was generally endangered or lost across most of the region. In one of numerous comparable pieces, Hyslop, for instance, documents that the Ambae of Vanuatu no longer sail far from their shores (Hyslop 1999). Elsewhere in Oceania, the cultural and spiritual rebirth of Polynesian seafaring only gained traction in 1976 with the first successful voyage of the Hōkūleʻa (Finney 1991, 1994; McMullin 2005; Gentner and Stevens 2014).

Despite a significant and well-established literature which indicates the centrality of language to the study of navigation at sea, we note that to date there is no seminal or focalizing work that documents the multiplex role of language in Oceanic navigation. However, several intriguing points were observed in the literature. Navigation is an exemplary context for noting the practical, cognitive, and linguistic intersection of space and time. For instance, ethnographers have observed that the length of time one has been journeying is an essential component of orientation strategies (Hutchins 1995; Ingold 2000). Moreover, language shift, endangerment, and loss have played and may be playing a role in the vitality of navigational knowledge transmission, enactment, and the vitality of navigation practices in their linguistic encoding (Feinberg 1995).

3.4. SOCIAL SPATIALITY. The linguistic encoding of space is intimately intertwined with society in that the choice of spatial language is shaped by but also shapes social norms. We note that social norms play a particularly heightened role in how people give directions, navigate speech events, address others in society, or orient the construction of homes or towns.

3.4.1. Directions and direction-giving. Giving directions is an activity that requires an intimate knowledge of the landscape and of the salient cultural norms of inhabiting it (Bennardo 2014). Tversky (2003) establishes that one may give directions in one of two ways—with reference to a survey (or allocentric) perspective or to a route (or egocentric) perspective—both of which have been documented to be employed by speakers of Oceania's languages. In a survey perspective, one adopts a bird's-eye view of the terrain and locates landmarks relative to each other using an absolute FoR. Cross-linguistically, this is generally used in larger-scale space. A route perspective takes the viewpoint of the traveler and uses a relative FoR which is more commonly used in smaller-scale space. However, Bennardo (2014) finds that in Tongan, while speakers tend to use the survey perspective in large-scale space and the route perspective in small-scale space, both strategies are used interchangeably in effective direction-giving. In contrast, in North–East Ambae, speakers seem to adopt an allocentric perspective and only use absolute terms such as up and down (synonymous with 'uphill/toward inland' and 'downhill/toward the sea', respectively) when giving directions, a reflection of the land–sea axis that is pervasive in their spatial culture (Hyslop 1999).

In addition to the perspective adopted by the speaker, culturally rooted models relying on the speaker's "spatial mental models" may also play a role in the selection of the path and reference landmarks (Tversky 2003:14). In Tonga, chosen landmarks are generally man-made (e.g., villages, houses, churches, bridges) but can be people. Tongan speakers center their mental representation of their island in a socioeconomic center (Bennardo 2002). As a result, they sometimes give preference to this other-than-ego over the ego in orienting route directions. At times, this preference motivates the speaker to provide a longer route that passes through the largest town rather than providing the shortest route. From this evidence, Bennardo (2014) concludes that cultural models play a salient role in direction-giving.

Direction-giving is clearly a potent method for eliciting and documenting spatial language, speaker intuitions, and underlying spatial foundations in culture and cognition. However, methodical study of direction-giving appears underrepresented in the linguistic literature and may be underutilized by field linguists engaged in documentary, conservation, or theoretical work. Thus, though relatively little work on direction-giving appears to have been undertaken elsewhere in the Pacific, because of Bennardo and Hyslop's findings, one may suspect that various spatial cultures throughout Oceania will be realized in different forms of direction-giving.

3.4.2. Space within events of speech. Speech events are inherently spatially organized (Duranti 1981). The inclusion of spatial elements allows speakers to establish referents both in the world and in event-of-speech-narration in order to effectively locate, orient, frame, and otherwise dynamically track those referents (Bowerman 2000). The role of spatial context in events of speech points to the more- or less-structured character of social interaction along a scripted to

improvised gradient (Bauman 1975; Goffman 1981). Linguistic anthropology and the ethnography of speaking in Oceania is ripe with studies which can be examined for insights into the spatial organization of speech events—both how speech is positioned (we say particular things in particular places), and how spatiality is organized within discourse. However, relatively little of this work explicitly attempts to bridge broader anthropological concerns with analyses of linguistic form and function. Works by Keating and Duranti are a notable exception. Keating (2015:255) observes that in Pohnpeian, the speaker must consider multiple sets of coordinates which relate to "sociocultural structures that both transcend the present space and influence it." With a related, but distinct focus, Duranti emphasizes that the social dimension of the ordered nature of speech is a feature of both everyday and culturally heightened interactions. For instance, in everyday contexts, most cultures have different kinds of greetings—which feature both linguistic and nonlinguistic spatial elements—whose appropriateness relies on the location, purpose, and participants of the encounter.

In Samoan, everyday greetings are both bound to specific contexts and are context-creating (Duranti 1992a:668). They are used to greet guests to a home, and the type of greeting and whether a person receives a ceremonial greeting is reliant on the social status, situation, and space that the guest occupies when they enter the home (Duranti 1992a). Importantly, Duranti suggests that even such everyday speech acts as greetings demonstrate a ritual character which can be useful for understanding far more heightened, socioculturally complex moments such as chiefly debates (Duranti 1981). The everyday Mangarevan (mrv) greeting in (8) is used when encountering someone for the first time in any given day. It seems to draw on an available spatial tool to both recognize and acknowledge social distance and then remediate that distance as a social solidarity (Duranti 1992a).

(8) MANGAREVAN, French Polynesia
Speaker 1: 'Ēnā koe?
DEIX 2SG
'[Is] that-there [addressee near] you?'
Speaker 2: Ko koe noti!
FOC 2SG REFL
'You yourself!'

Similarly, (9) is a quotidian example of small talk given that the response is predictable since prevailing winds are seasonal. However, an answer deviating from the wind at the time of the speech event can also be used to indicate a person's direction of travel, possibly suggesting where one has been and what one has been doing.

(9) E a'a te matagi?
PART what DET wind
'What [is] the wind?'

How bodies are positioned within or over the course of events of speech—how cultural values of appropriateness of positionality are normatively imposed upon speakers' bodies in space—is another aspect of the speech event which has received some attention. Not only is it essential for the speaker to juggle several spatial structures at once but the position and orientation of the participants of a speech event is also important. For instance, in Sāmoa, when an important person visits a house and speaks, they sit at the front of the house; listeners sit in the back. Materializations of spatial culture such as these seating arrangements play a role in structuring the order of talk and interactivity within the speech event (Duranti 1983, 1992b).

The spatiality of a speech event is realized in discourse in a variety of ways: to illustrate abstract concepts, navigate social hierarchy, or intimacy, to assert identity, and to create space for the invisible (Duranti 1988; Weiner 1991). However, the current literature on this topic has largely been conducted by (linguistic) anthropologists who rarely ask how space within the speech event shapes linguistic form—being more fundamentally concerned with how linguistic form may shape social or cultural orders or dynamics. In this regard, linguists may find that the study of space within events of speech has the potential to augment linguistic research at the nexus of linguistic form, function, society, and culture.

3.4.3. Honorifics. Across Oceania, hierarchy influences many aspects of life such as architecture and land tenure, social groups and interactions, and ceremony (Völkel 2010). But social order and social status are subject to constant negotiation through language (Duranti 1992b; Keating 2000), a context which Agha terms 'honorification' (Agha 1994). A primary means of negotiation is the use of spatial language in social navigation. This may be especially notable in highly stratified societies. In New Caledonia, directionals play an integral role in orienting speakers within social interactions (Ozanne-Rivierre 1997). Speakers effectively maneuver through the social realm by referring to it as if it were geographical space and likewise locating people and places within that space. Ozanne-Rivierre observes that in Nyelâyu a speaker will use the word *ta* 'go up' to refer to someone of a higher rank or the directional particle *-du-* 'down' in reference to someone of a lower rank. Such language indicates that members of this society have organized social hierarchy on a vertical plane with the highest-ranked people at the top. Pohnpeian speakers also use a vertical axis to spatialize the social realm. However, they also employ notions of left and right and east and west to engage in 'power-sharing', a constant process of building and negotiating social hierarchy (Keating 2000, 2002). One way that this is done is through choice of directional suffixes on either exaltative or humiliative verb stems (Keating 1998).

In societies with a less strong sense of social hierarchy, such as the Taumako of the Solomon Islands, spatial language may not typically be used so starkly to navigate different levels of social status (Feinberg 2014).

The study of space and honorifics raises questions about the universality and variability of the role of spatial language in producing, maintaining, transforming, or allowing speakers to negotiate social relations. It reveals that many languages conceptualize hierarchy in a linear fashion, usually on a vertical plane. However, future research may aim to obtain a better understanding of the social, cultural, cognitive, and historical factors that motivate speech communities to develop honorifics and as a result, a spatial culture within which to organize them.

3.4.4. Architecture. Architecture plays an important role in creating and mediating the use of physical and social spaces within a society. Local spatial culture, cognitively founded and often linguistically encoded, is realized in the built environment both at the microscale of the domestic organization of households; the mesoscale of communities' houses, roads, and other structures; and the macroscale of the communities' ordering with respect to the insular landscape. As a result, there is a connection between how speakers talk about space and how they choose to represent it in the forms and layouts of their buildings. Researchers throughout the Pacific have noticed the influence of linguistically encoded spatial systems on the location and layout of villages and homes as in Taumako (Feinberg 2014), Tonga (Bennardo 2014), Aotearoa (van Meijl 1993), and elsewhere (Fox 2006a). Among the Māori, the location of homes within a village is linked to historical people and events and used as a tool to remember the past (van Meijl 1993). In the villages of Tonga, an element of radiality derives from the concentric models of space utilized by speakers. In Sāmoa, this radiality has been argued to be linked to the perception that the center of the village is the source of mana (Shore 1989) and, as a result, the size of the buildings and the status of their inhabitants increase toward the center (Allen 1993). Village layouts are influenced both by contemporary culture and historical patterns and traditions (Quintus and Clark 2016).

The architecture of the buildings themselves may reflect topography. For instance, the Yupno of PNG build long, ovular homes with a fireplace down the middle similar to the river running through their valley (Wassmann 1994; Cooperrider, Slotta, and Núñez 2017). Architecture may also reflect spatial models including those of social space (Refiti 2008, 2015). The orientation of homes and their intrinsic features assigned by Tongan speakers normatively rely on the cultural importance of the seating position of the chief. In neighboring Sāmoa, the front of the house or the *tala* is also determined by the position and the orators during ceremonial gatherings. The *tala* is designated for important guests and people of high status (Duranti 1992a).

In reviewing the literature, we note that the built environment reflects linguistically encoded spatial culture. Indeed, architecture may be among the most ubiquitous contexts in which culture-specific spatiality is elicited in day-to-day speech and, given the large variation in traditional architecture throughout the Pacific (Memmott and Davidson 2008), the intersection of language, space, and architecture appears to us a low-hanging fruitfulness for future research.

3.5. METAPHOR. Metaphor is a powerful tool for mediating perception, conception, experience, and their intersubjective communication; and spatial metaphor is a valuable tool for communicating about and giving meaning to nonspatial concepts. CLSDs in Metaphor refer to the use of spatial language to communicate about society, people, research endeavors, and temporality.

3.5.1. Metaphors one might live by. The subject of a sea of ink, metaphor plays a crucial role in shaping speakers' perceptions and perspectives (Block 2008). They are both a "product—a perspective or frame, a way of looking at things—and [. . .] a process by which new perspectives on the world come into existence" (Schön 1993:254). As linguistic devices that translate our conceptual systems to linguistic structures or convert linguistic structures into communicable concepts within particular sociocultural contexts, metaphors play fundamental roles in discourse, shaping both individual, interpersonal, and broadly circulating imaginaries (Lakoff and Johnson 1980). The fact that metaphors mediate conceptual and physical spaces at the intersection of language and culture is well evidenced across Oceania.

In each of the following examples (12, 13, 14), we observe that spatial metaphors are linked to metaphors of social space, namely the culturally foundational cognitive model of radiality (Bennardo 2009). In them, notions of physical and social space are inseparable to the extent that spatial metaphors here do not describe movement, position, or orientation but rather characterize social relationships (Young and Borders 1998, ii). For instance, a Mangarevan proverb in (10) locates the chief (or canoe) in the middle to emphasize his central role in society. Example (11), a well-known alternate toponym for Rapa Nui, demonstrates the use of a body part as a spatial figure to conceptualize macrospace; the broadly shared Polynesian cultural figure in which every island may have or be a 'navel' or orientational/navigational origo. Similarly, the highly salient proverb in (12) may connote the covert role of islands as centering orientation in a radial model of macrospatiality (e.g., Bennardo 2009) thus demonstrating the implicit encoding of cultural models of spatial orientation and mobility.

(10) MANGAREVAN, French Polynesia
Te vaka pu ko te akariki
ART canoe center FOC ART chief
'The chief [is] the canoe [in the] middle.'

(11) RAPA NUI (rap), Rapa Nui
Te Pito o te 'Enua
ART navel POSS ART world
'The navel of the world'

(12) HAWAIIAN (haw), Hawai'i
He wa'a he moku he moku he wa'a
ART canoe ART island ART island ART canoe
'A canoe is an island, an island is a canoe'

The above examples demonstrate fixed space. However, metaphors connected to movement and place may also reveal information about identity and embodied experience, or in some cases, both stability and mobility may coexist to offer multifaceted socioculturally salient conceptions. For instance, the Tanna people of Vanuatu invoke a tree and canoe metaphor for community identity—reflecting both the rootedness of kinship and place-belonging as well as the expansive agency of voyaging (Bonnemaison 1994).

Metaphors have long served as a rich area of study to further understand cultural concepts, cognitive models, perspectives on the world and its events, and the conception of intangible concepts. Metaphors used by Oceania's peoples stimulate and shape everyday and academic discourses. Conversely, metaphors may not always be a beneficial tool toward advancing particular understandings. For instance, Hau'ofa (1993) suggests that, in the Pacific, scholars' overuse of metaphors pertaining to the sea as something like a watery desert has hindered understanding the connections and communications between different Pacific peoples (Steinberg 2013). Here, we note that an investigation of culturally salient metaphors is a pertinent aspect of language documentation and may offer an underutilized and alternate site of inquiry for the linguistic study of the cognition or articulation of spatial conception, perception, and experience.

3.5.2. Time-space. All humans experience time with, apparently universal, reference to directionality and continuity. Yet, as an intangible concept, different languages encode, speak about, and are thus suggested to conceptualize time in different manners, providing a rich domain for cross-cultural and cross-linguistic study (Boroditsky and Gaby 2010; Winter, Marghetis, and Matlock 2015). While strictly temporal language is available in many languages (e.g., English '9:00am is earlier than 10:00am'), temporal and spatial language are intimately connected, and there is broad evidence that spatial language influences the conception of time (Lakoff and Johnson 1980; Alverson 1994). However, different languages evidence a range of mappability of space onto time. For instance, Yélî Dnye, a language of the Papuasphere, demonstrates little space-time mapping, and its temporal terminology is strictly temporal (Levinson and Majid 2013). Tongan, in contrast, directly and explicitly maps absolute, intrinsic, and relative frames of spatial reference onto time (Bender and Beller 2014). However, temporal language is changing in Tongan, Mian, and likely in other Pacific languages as well (Beller, Bennardo, and Bender 2005). Writing direction plays a large role in how people organize time (e.g., Tversky, Kugelmass, and Winter 1991; Fuhrman and Boroditsky 2010) and as literacy rates grow, diversity in temporal metaphor diminishes. For instance, Mianmin with relatively little formal education usually use river flow and the sun as absolute temporal frames, but speakers with higher levels of education tend to use more egocentric terminology such as 'left' and 'right' (Fedden and Boroditsky 2012).

Cross-linguistic study of space-time mappings indicates that variation in how speakers of different languages talk about time shapes how they conceptualize time and represent it nonlinguistically in a spatial frame. Such variation may be both linguistically and culturally motivated. In Yupno, the uphill–downhill absolute FoR is primary in spatial reference and can be mapped onto temporal expression. In (13), the past is downhill.

(13) YUPNO, Papua New Guinea (Núñez et al. 2012)
omo-ropmo Bilak
down.there-year other.side
'a couple of years ago'

Interestingly, spatiotemporal mappings can also be reflected in embodied gestures. Yupno speakers adopt an allocentric mapping of time that is uninfluenced by the body's orientation. Always the past is 'downhill', and the future is 'uphill' in both language and gestural representation (Núñez et al. 2012). Conversely, because of the lack of space-time mapping in Yélî Dnye, Levinson and Majid (2013) observe that there is thus little influence from spatial models onto temporal conception. In Yélî Dnye, space is conceptualized cyclically, and seasonal distinctions are not fixed. Thus, Levinson and Majid (2013) hypothesize that space-time mappings may be reliant on fixed temporal units.

Furthermore, across the Pacific, spatiotemporal mappings have been shown to affect cosmological understandings of historical change and the often highly politically sensitive relationships between communities and politics in the present and the people and political states of the past. For instance, in Hawai'i and elsewhere across Polynesia, highly salient and common articulations that frame the past as front and the future as behind have been extraordinarily influential among cultural activists and scholars (Kame'eleihiwa 1992; Dator 1998; Hau'ofa 2008). In brief, how people talk about and visualize Oceania represents vast differences in spatial and temporal representations between Western and Indigenous cultures (see also the Indigenous metalinguistics section on *tā/vā* below).

Work on the mapping of space and time in Oceania contributes to the broad goal of understanding the multitude of ways that humans may conceptualize the intangible concept of time and the relationship between spatial and temporal language. This underresearched domain may offer profound insights into the spatialization of the nonspatial through language, cognitive models, and Indigenous identity.

3.6. PLACEMAKING AND ONTOLOGY. Spatial language provides a means of making sense of and assigning importance to the physical landscape. It allows speakers to name places and categorize the landscape and as a result, create places.

3.6.1. Place-naming and placemaking. People create places of all sizes by assigning a name to a location that has a personal, cultural, spiritual, or economic purpose, among others (Basso 1996). Place names may reflect a place's

physical or nonphysical properties, function, spiritual connection, or events that may have happened there. Furthermore, as place names tend to be diachronically stable, they often hold historical significance and reflect the myriad of cultures and peoples who have inhabited the islands (Fox 2006b). Indeed, when place names do evince change over time—as in the wake of settler colonial projects across many Oceanian contexts—the salience of prior and postcolonial names and naming practices becomes only more heightened (Banivanua Mar 2012). The multilingual environment of most Pacific islands means that many places have multiple names. In this way, place names can reflect the synchronic or diachronic relationships between groups as is particularly seen among Norfolk Islanders and the way their descriptive place-naming strategies differ from the Australian mainland (Nash 2015).

Speakers' cultural or social expectations delineate whether a location is given a name. In Marquesan (mrq, mqm), what becomes a place that warrants a name relies on the features of the object, such as its definable boundaries and size (Cablitz 2008), and places may be syntactically defined (Huber 2018). However, once something is recognized as a place, speakers of different languages choose different strategies to mark the significance of the location. In Marquesan, place names reflect the importance of the place within Marquesan culture. They can simply describe the place: *Teho'oho'o* 'assemblage of stones' describes the physical attributes of the location. They may also relate to mythological figures or events, such as the name *Temiminaohina* 'the urinating of Hina' which describes a rock fissure that is said to have been caused by the god Hina's potent urine. Finally, Marquesan place names may assign great historical and cultural weight to a place (Cablitz 2008; Donaldson 2019). Similarly, in Hawaiian, the historical depth of place names helps places to serve as cultural reference points for current generations to locate themselves both spatially and temporally, so Hawaiian resistance to the imposition of nonnative names by non-Hawaiians illuminates the presence of significant political, social, and cultural stakes (Louis 2011). Place names among the Kilivila revolve around the sea and the soil, the two most important providers of their livelihood. They are generally single words that are often semantically opaque and "refer to events, landmarks, states, places, things, villages, songs, people, activities, anecdotes, food, animals, plants, and stones," all of which are culturally and conceptually important to Trobriand islanders (Senft 2008:357). Evidently, places in Oceania have rarely been static. Rather, they are dynamic entities that are part of a living, changing world which encourages speakers to develop diverse responses. For instance, in the Morehead district of southern New Guinea where the landscape and thus places are always changing, coconut palms stabilize place by anchoring salient memories (Evans 2020).

Place names serve as monuments of cultural and personal memory, and therefore, their importance extends beyond linguistics. Researching native place names is a form of cultural, historical, and personal reclamation and documentation and has the potential to diversify representation in technological

innovations in GIS and geography. We note that a more typologically robust understanding of place-naming strategies is required to test the typological validity of the claims made in these studies.

3.6.2. Landscape terminology. Ethnophysiography is the study of the variation of landscape terms and their conceptualization by speakers and realization in language (Mark and Turk 2003). Language, through the names given to landscape features, offers an invaluable window into human conceptualization and categorization of a continuous landscape (Mark and Turk 2017). According to Campbell (2002:147) "[l]andscapes are essentially cultural constructs arising out of the mutual interaction of environment and society, each continually forming and reforming the other. Landscape is a signifier of social mores, identity and history, but at the same time is constrained by the environment." Although landscape terms can play various roles in place-naming, they nevertheless form a distinct semantic domain. Importantly, what were long-assumed to be universal landscape terms, such as mountain, river, and forest, are now understood not to be as universal as once thought. Cross-linguistically different boundaries have been identified for the reference of such terms which complicates claims of one-to-one semantic correspondence between languages (Burenhult and Levinson 2008; Burenhult et al. 2017).

Burenhult and Levinson (2008) identify three driving factors that determine how speakers delineate landscape terms: perceptual salience, human affordance, and cultural and linguistic models. In Yélî Dnye, the term *mbu* refers to anything of a conical shape, from a mountain to a mound in the sand (Levinson 2008). Meanwhile, in a near-Oceania example, in Western Pantar, human affordance guides the categorization of bodies of water (Holton 2011b). Cultural salience is often reflected in the historical and mythological names given to landscape features (Ottino-Garanger and Ottino-Garanger 2017; Saura 2017). Similarly, the land–sea binary is rooted in both human affordance and cultural models, and Polynesian toponyms may describe the features of or events associated with the land or seascape. Several Marquesan land and sea toponyms are shown in table 4.

The study of the ontological diversity of toponyms and the role of culture, religion, and perception in categorizing the landscape may have profound consequences for research in linguistics and other disciplines. Nonlinguistically, an

TABLE 4. TOPONYMS REFERRING TO THE LAND AND THE SEA IN MARQUESAN (FROM CABLITZ 2008:206).

Land		Sea	
Tahuna	'gravel beach'	Maoana	'far out at sea'
Tahatai	'shoreline, beach'	Aũ	'sea current'
Ka'avai	'valley'	Toka	'fish bank'
Ava	'mountain passage'	Ava	'sea/reef passage'
Pu'u'u	'large, pointed stone'	Puka/puna	'coral'

understanding of such categories established by different communities is an essential part of improving GIS and its utility for locally meaningful spatial planning and resource management in the future (Wartmann and Purves 2014). Similarly, Palmer et al.'s (2017) sociotopographic model, which suggests that the landscape may guide the choices speakers make in categorizing its features, reveals numerous pathways for further research on the connection between landscape terminology and cognitive representations of space.

3.7. MULTIMODALITY. Communication about space is multimodal. Gestures and other body cues are critical if not essential for spatial communication.

3.7.1. Gesture. In communication about space, gesture is particularly important; speakers use gesture nearly twice as frequently when talking about space (Alibali, Heath, and Myers 2001), and the use of gesture may facilitate a speaker's ability to talk and even think about space (Alibali 2005). Despite the evident cognitive and physical links between gesture and spatial communication, the topic remains understudied, in particular among endangered languages (Seyfeddinipur 2012), and the languages of Oceania are no exception. Yet, Oceania is a promising area for such research. For instance, in New Guinea, nose-pointing seems to be a gesture exclusive to Oceania (Kendon 1980; Cooperrider and Núñez 2012), and the availability of this and other nonmanual gestures impacts how the Yupno people employ different body parts in deictic reference.

Furthermore, the demonstrative systems of several languages are closely intertwined with gesture (Cooperrider 2016). Gestures are a tool to help disambiguate referents, and sometimes, the form of the demonstrative may rely on whether it is accompanied by pointing. For instance, in Samoan, whose demonstrative system is shown in table 5, touch and gesture are part of the demonstrative paradigm. There is an expectation that a gesture accompanies *lele* 'near speaker', *nale* 'near addressee', and *lale* 'not too far' (Mosel 2004). Similarly, the presence of a gesture may serve to alter boundaries between demonstratives. In Saliba "the occurrence of finger points versus eye gaze or head nods can influence the choice between the distal and the speaker-based proximal forms. The finger point will typically accompany a demonstrative of the near-speaker series, basically as if the act of pointing extends the speaker's personal space beyond the boundaries of what can be reached by hand" (Margetts 2004:41). For example, the utterance in (14) is not accompanied by a gesture, and the speaker chooses the 'near

TABLE 5. SAMOAN DEMONSTRATIVES (MOSEL 2004:145).

Gloss	Near speaker	Near addressee	Distal
Very close, in possession	lea, lenei	lenā	
Near, within reach	lele (+gesture)	nale (+gesture)	
Not too far away, beyond reach			lale (+gesture)
Far away			Lelā

addressee' demonstrative form *temeta* to position the addressee's finger. In (15), however, the utterance is accompanied with a gesture, and although the referent is nearer to the addressee, the speaker chooses the 'near speaker' form *teina*, thus extending the speaker's personal space to include that of the addressee.

(14) SALIBA, PNG (Margetts 2004:41)
Temeta nima-m gibu-na me ye kamkamna?
N.ADDR hand-2SG finger-3SG N.ADDR 3SG hurt
'That finger of yours (near you), does it hurt?' (without gesture)

(15) SALIBA, PNG (Margetts 2004:41)
Teina nima-m gibu-na me ye kamkamna?
N.SPKR hand-2SG finger-3SG N.ADDR 3SG hurt
'That finger of yours (near me), does it hurt?' (with gesture)

Gesture is also a particularly useful tool to study space-time mapping. Yupno speakers point downhill when referring to the past, toward the ground when referring to the present, and uphill when referring to the future, a reflection of the Yupno topographic coordinate system that delineates elevation based on the sloping of their valley (Núñez et al. 2012). Similarly, co-speech gestures were critical in revealing that the FoR used in Tongan speakers' temporal mapping is changing because of language contact (Bender and Beller 2014). In contrast, terminology used to describe time has little overlap with space in Yélî Dnye, a language isolate of Papua New Guinea, and gestures that reference time rarely use metaphorical space but rather point to the literal position of heavenly bodies in the sky (Levinson and Majid 2013).

These studies show that the systematic study of gesture has the potential to augment the state of the literature on language and space in Oceania in a range of topics. Studies have shown that gesture reflects the spatial orientation system used in speech (Haviland 1998) or may be the primary way such systems are communicated (Le Guen 2011). Thus, it can provide information about spatial (or spatiotemporal) conceptualization that may be left out of speech. Gesture is also intertwined with grammatical structure and may be a valuable tool for documentation and vitality purposes. The overall paucity of data on gesture's relationship to the geocentric orientation systems, navigation techniques, social mediation, and various other CLDS reveals various opportunities for future research endeavors.

3.8. METALINGUISTIC. Between researchers positioned within different disciplines, space may well exemplify characteristics of what Star and Griesemer famously identified as "boundary objects" (Star and Griesemer 1989). Because of the cultural and political centrality of spatial language to numerous human domains, we note that among Oceania's languages, Indigenous and non-Indigenous researchers engage with spatial language in notably distinct ways.

3.8.1. Indigenous metalinguistics. The study of spatial language in the Pacific has recently been highly energized among Indigenous authors who have centered spatiality not only within society and culture, but also within the

character of Indigeneity itself (Ka'ili 2017). This work has drawn attention to culture-specific ideas about mobility, social relationality, and the philosophical nature of timespace itself as part of an Oceanian worldview and way of being in the world. An influential discourse around the Tongan and Samoan concept of *vā* 'space between social actors' and *tā* 'temporality of social relations', often referred to as *tā/vā* theory, has become extremely energetic in recent work, particularly within anthropology (Ka'ili 2005; Ka'ili, Māhina, and Addo 2017). In *tā/vā* theory, Indigenous understanding of space can be inherently connected to that of time (Māhina 2004). Some scholars assert that it is not possible to fully understand the spatial dimension of Tongan *tauhi vā* without consideration of the cultural understanding of time (Ka'ili 2008). Both notions are essential for maintaining relationships but may also change them for the worse (Māhina 2004). Bennardo's (2009) theory of radiality may also reflect the idea that *tā* and *vā*, time and space, are the common medium of all things—natural, mental, and social—and that all things exist within time and space. As such, all of these aspects contribute to Tongan notions of radiality in culture, architecture, and cognition among others. Importantly, the notion of *vā* may be changing due to the introduction of non-Tongan spatial and temporal concepts over the last centuries (Kape 2005).

Regardless, as Ka'ili emphasizes in *Marking Indigeneity: The Tongan Art of Sociospatial Relations*, much of the broader literature suggests that separation in physical space is much less problematic than separation in social space. This is true both in home (is)land communities and for Pacific Islanders living in diaspora. Among Tongans who no longer live in Tonga, the responsibility of maintaining balance and sociospatial harmony or *tauhi vā* remains an important value in motivating actions and decisions (Ka'ili 2017). In a notable work on Samoan spatiality in an era of demographic mobilities and unfolding diaspora, Lilomaiava-Doktor suggests that *malaga*, journeyings back and forth in physical space, maintain civility and are motivated by cultural and social obligations. All *malaga* is purposeful and has a social origin, whether it is a celebration, to financially support family members, or an expulsion (Lilomaiava-Doktor 2015). Yet, with a broad regional perspective in mind, while movement in space is always meaningful to Pacific Islanders, the spatiality of relationships may be more culturally salient. 'We move only in body, not in spirit', as Bautista (2010:85) notes. We speculate that the social history of diaspora across Oceania may have heightened attention to culturally salient metalinguistic spatiality in an age of accelerating and intensifying mobilities.

3.8.2. Non-Indigenous metalinguistics. Across the literature, we have noted that linguists, and social scientists of language broadly, have their own metalinguistic tendencies. While Indigenous scholars in Oceania have been exploring and theorizing space as a foundational dimension of cultural being and practice and, perhaps, even a keystone of Indigeneity itself (Ka'ili 2017), other scholars, though they recognize the centrality of society to space (and time),

often separate space from everyday social life and relationships. Non-Indigenous scholars may be more likely to study specific aspects of space within particular disciplinary frameworks and the paradigmatic questions they both generate and seek to resolve (Lober and Boerger 2009; Paviour-Smith 2009; Rentz 2017). These scholars likely recognize the value of society and human relationships but may nevertheless downplay the salience of spatiality within the lived experience of specific and particular cultural worlds. Alternately, some linguistic work on space has emphasized its utility for reflecting the structural change of language itself over time. For instance, Bohnemeyer et al. (2014) note the importance of language and its intergenerational transmission for maintaining cultural spatial models. Language contact, a likely driver for change, may both initiate and accelerate the spread of invasive or nonlocal spatialities, linguistically encoded spatial models, and spatial language.

Despite necessary focal attention to other matters, non-Indigenous linguists working with Oceanic languages may benefit from considering the relationships between their metalinguistic concerns and those of Indigenous researchers who study space and language. Attention to metalinguistic awareness and engagement with culturally salient spatial language, including communities in and not in diaspora, would likely prove a fruitful point of engagement between linguists and colleagues in other disciplines.

3.9. VITALITY. As a domain of traditional ecological knowledge, spatial language is susceptible to language shift and loss. It should, therefore, be incorporated into and focalized within language documentation endeavors.

3.9.1. Shift and loss, endangerment of spatiality. While Oceania is home to 1200+ languages, this number is all-too-quickly decreasing as social, ecological, and linguistic threats endanger many of the region's languages. As culture and ecology are driving factors to linguistic change (Bohnemeyer et al. 2014), and as spatial and placial language is culturally and environmentally rooted and often below the threshold of speaker awareness (as the above typology of CLSDs should make clear), it is among the most endangered domains in language. The current disciplinary turn to space and place could only be more aptly timed, if it had happened with such vigor earlier. Spatial and placial knowledge informs human cognition, culture, and ways of interacting with the land. The importance of the window that spatial study provides into cognitive and cultural diversity has been recognized by LD&C researchers (Evans 2010), and as a result, motivates contemporary work to document and understand this domain.

As people shift to different languages, language-encoded ways of knowing the land are put at risk. For instance, many Hawaiian place names have been replaced by place names of contrived combinations of Hawaiian words or whose meanings are anchored in the nineteenth and twentieth century histories of settler colonialism (e.g., street or places names reflecting missionaries, agents of U.S. government, or military officers) and thus, no longer encode

placial and genealogical history (Louis 2011). Such culturally etiolated or semantically depauperate replacements contribute to a loss of the record of how the land was used and who lived on it, and to possibilities of lived experience and engagement.

Even where language is not endangered, the linguistic foundations of spatial cognition may be changing. Researchers have noted a state of disconnection between older and younger generations as ways of conceiving island spaces are not being passed down due to language contact and the introduction of Western schooling and ideologies (Kape 2005). Jürg Wassmann (1993) observes that speakers conceptualize their valley differently depending on whether they have received a Western education. Similarly, although navigational techniques have seen a rebirth with the popularity of Hōkūleʻa, as sailors in communities throughout the Pacific adopt modern techniques, the detailed knowledge of the wind and celestial systems has been lost (Hyslop 1999; Blust 2013). Space-time mapping is also changing due to Western influence (Beller, Bennardo, and Bender 2005; Bender and Beller 2014), and Raapoto (2005) similarly questions the transmission of conceptual temporal systems in Tahitian to younger generations

Spatial language helps humans make sense of their environment by dividing it up and categorizing it. Importantly, given this foundational role in individual and collective experience, the danger of the loss of spatial and placial language or performative competence is clear as the languages and cultures of smaller communities are challenged by macrosocial and supralinguistic pressures by governmental, economic, or other social forces motivating linguistic and cultural unity. Only recently have LD&C researchers begun to regularly and methodically elicit and draw attention to the various cultural, metaphorical, and personal impacts of spatial language. The corrosive and often traumatic legacies of settler colonial, mission, nation building, or globalization projects over centuries highlight the critical timeliness of language documentation and conservation of the spatial domain. With reference to recent work on Indigenous spatial and spatiotemporal research, we note that this work will be well-aligned with the needs, desires, and vitalization projects of local communities.

4. SPEAKING OF COUPLED LANGUAGE-SPACE DOMAINS: A DISCUSSION. This review of the spatial linguistic literature demonstrates a pluralism in disciplinary engagements with spatial language and its centrality to human perception, conception, experience, and behavior. We have identified twenty-two CLSDs within nine overarching categories—linguistic encoding, cognitive framework, environmental relation, social spatiality, metaphor, placemaking and ontology, multimodality, metalinguistic, and vitality—which reveal key features of and dynamics within Oceanic linguistics (table 6). These domains are central to the investigation of language, space, and place as they represent the active points of articulation where spatial language meets culture

TABLE 6. TYPOLOGY OF COUPLED LANGUAGE-SPACE DOMAINS, THE KEY FEATURES AND DYNAMICS OF RESEARCH IN EACH CLSD AS WELL AS THE PUBLICATIONS THAT HAVE WORKED IN EACH CLSD (EXCLUDING LANGUAGE GRAMMARS).

Category	Key topic	Flash summary	References
Linguistic encoding	Spatial deixis	How speakers specify a figure or location in physical, social, temporal, or discursive space in relation to a deictic center; the role of language in mediating speakers' perception, cognition, and relationships to objects in the environment; the linguistic division of the physical, temporal, or discursive environment through arbitrarily assigned stimuli.	Levinson (1983, 2018); Hyslop (1993, 1999); Bril (2004); Margetts (2004, 2018); Næss (2004); Ozanne-Rivierre (2004); Ross (2004); Senft (2004a, b); Meira and Terrill (2005); Vernaudon (2005); Bearune (2013); Terrill (2018)
Linguistic encoding	Motion, directionals, and motion verbs	The creation of a physically denoted or deictic vector between objects, people, or entities; the role of language in mediating a referent's relationship with its environment; the perception and categorization of movement; the spatialization of nonspatial concepts.	Ozanne-Rivierre (1997); Hyslop (1999); Keating (2002); Palmer (2002, 2015); François (2003, 2015); Paia (2005); Chambers (2009); Lober and Boerger (2009); Paviour-Smith (2009); Næss (2011); Bearune (2013)
Linguistic encoding	Topological relations	How speakers process and relate referents in the 3d environment to each other; perceptions of boundaries and salient points of objects; interplay of mind, culture, and body in orienting objects; the grammaticalization of spatial terminology as a result of the experience of being a human in the world.	Bowden (1992); Levinson and Brown (2012); Rentz (2017)
Cognitive framework	Frames of reference	How speakers mediate the perception, conception, experience with, and relation to entities in the external world; the role of language in mediating cognition of 'objective' reality; how living beings create systematic order in an orderless environment.	Feinberg (1980, 2014); Ozanne-Rivierre (1997); Pederson et al. (1998); Shore (1998); Bennardo (1999, 2000, 2009); Palmer (2002, 2015); François (2003, 2015); Bril (2004); Cablitz (2005); Levinson and Wilkins (2006); Priestley (2006); Bearune (2013); Bender and Beller (2014); Palmer et al. (2017); Cooperrider, Slotta, and Núñez (2017); Gaby et al. (2017); Senft (2017)
Cognitive framework	Micro-, meso-, and macro-orientation	How speakers process and orient themselves within a manifold of potential spatial relations; how referential scale plays a role in ordering orientation; how the size/distance of the reference points affect cognitive processes.	Fox (1993, 2006b); Shore (1998); Hyslop (1999); Bennardo (2000); Sperlich (2002); François (2003, 2015); Lober and Boerger (2009); Paviour-Smith (2009); Cooperrider, Slotta, and Núñez (2017)

Category	Key topic	Flash summary	References
Cognitive framework	Allocentric versus egocentric perspective	How speakers' spatial perception, conception, and experience is shaped by the importance of the ego or other focal center of reference; frames of reference and their influence on cognition.	Bennardo (2002); Feinberg (2014); Genz (2014); Shore (2014)
Cognitive framework	Spatial conflicts, discordances, disruptions	How speakers produce, repair, and are conscious/not conscious of ambiguities inherent in the multiple cognitive models implied by particular language-encoded spatiality; incompleteness of categorization; inherent complexity of systems that organize a complex world.	Ozanne-Rivierre (1997); François (2003, 2015); Lober and Boerger (2009); Feinberg (2014); Mawyer (2014); Shore (2014)
Environmental relation	Geocentric orientation	How living beings process and relate to the environment with reference to natural phenomena as mediated by language-and-culture encodings; environmental motivation for spatial language.	Wassmann (1993, 1994); Ozanne-Rivierre (1997); Cablitz (2002, 2005); Palmer (2002, 2015); François (2003, 2004); Levinson (2008); Fedden and Boroditsky (2012); Feinberg (2014); Mawyer and Feinberg (2014); Cooperrider, Slotta, and Núñez (2017); Palmer et al. (2017)
Environmental relation	Wind systems	How living beings represent wind patterns in language to aid in categorizing and efficaciously moving through the environment; the influence of environmental phenomena on spatial conceptualization; the coordination between land and sea navigation.	Lewis (1972); Ozanne-Rivierre (1999); Osmond (2000); Bril (2004); François (2004); Hyslop (1999); Pyrek (2011); Feinberg (2014)
Environmental relation	Celestial systems	How living beings use the night skies to aid in categorizing and efficaciously moving through the environment; spatial orientation strategies and the limits of their usage; navigation as endangered traditional ecological knowledge.	Goodenough (1953); Gladwin (1970); Gunn (1980); Finney et al. (1986); Finney (1996); Nāmakaokeahi and Malcolm (2004); Sissons (2014); Holton et al. (2015); Ruggles (2015)
Environmental relation	Navigation-at-sea	How humans draw on linguistic resources to aid in categorizing and efficaciously moving through the environment; experiential versus cognitive ways of knowing; practical, cognitive, and linguistic intersection of space and time; navigation as endangered traditional ecological knowledge.	Gladwin (1970); Lewis (1972); Goodenough and Thomas (1987); Feinberg (1988, 1991, 1995); Finney (1991, 1994); Hutchins (1995); Ammarell (1999); Hyslop (1999); Osmond (2000); Ingold (2000, 2001); Kitchin and Blades (2002); McMullin (2005); Genz et al. (2009); Lauer and Aswani (2009); Feinberg and Genz (2012); Feinberg (2014); Gentner and Stevens (2014); Genz (2014)

Category	Key topic	Flash summary	References
Social spatiality	Directions and direction-giving	How speakers create/inhabit mental models of routes and conceive potential movement in relation to salient aspects of environment; the role of culture in determining environmental salience; the importance of objects/places/people as orienting and direction-changing devices; egocentric versus allocentric perspective.	Hyslop (1999); Bennardo (2002, 2014)
Social spatiality	Space within events of speech	The organization of the speech event (both within the conversation and how people are oriented during the conversation); the role of participants of the speech event on the event itself; greetings; ritual praxis.	Bauman (1975); Goffman (1981); Duranti (1981, 1983, 1988, 1992a, b); Weiner (1991); Bowerman (2000); Keating (2015)
Social spatiality	Honorifics	How speakers process social personhood and social status; the spatialization of the nonspatial as exemplified by the use of spatial language in enacting and thus maintaining or transforming social structure or social identity; spatial performance.	Duranti (1992b); Agha (1994); Ozanne-Rivierre (1997); Keating (1998, 2000, 2002); Völkel (2010); Feinberg (2014)
Social spatiality	Architecture	The spatial representation of cultural norms/values; the materialization of spatial culture which might otherwise be enacted in language; the material representation of cognitive, cultural, and linguistic models.	Shore (1989); Duranti (1992b); Allen (1993); van Meijl (1993); Wassmann (1994); Fox (2006a); Memmott and Davidson (2008); Refiti (2008, 2015); Bennardo (2014); Mawyer and Feinberg (2014); Quintus and Clark (2016); Cooperrider, Slotta, and Núñez (2017)
Metaphor	Metaphors one might live by	Linguistic productivity; transposition of spatial culture across domains to achieve varied effects.	Hau'ofa (1993); Bonnemaison (1994); Young and Borders (1998); Block (2008); Steinberg (2013)
Metaphor	Time-space	The use of spatial language to shape the nonspatial realm; the effect of language on the perception of the nonspatial; the relationship between time and space.	Beller, Bennardo, and Bender (2005); Bender and Beller (2014); Dator (1998); Fedden and Boroditsky (2012); Hau'ofa (2008); Kame'eleihiwa (1992); Levinson and Majid (2013); Núñez et al. (2012)
Placemaking and ontology	Place-naming and placemaking	Means through which speakers impress salience on an object or location; linguistic encoding of cultural, historical, spatial properties of an object/location; why, how, and what places are named.	Fox (2006b); Cablitz (2008); Senft (2008); Louis (2011); Banivanua Mar (2012); Nash (2015); Huber (2018); Donaldson (2019); Evans (2020)
Placemaking and ontology	Landscape terminology	Influence of place/landscape on language; use of perceptual, useful, or cultural qualities to categorize the continuous (or discontinuous) plain of the landscape; perception of boundaries.	Campbell (2002); Burenhult and Levinson (2008); Cablitz (2008); Levinson (2008); Wartmann and Purves (2014); Burenhult et al. (2017); Ottino-Garanger and Ottino-Garanger (2017); Palmer et al. (2017); Saura (2017)

Category	Key topic	Flash summary	References
Multimodality	Gesture	How speakers use multiple modalities in concert to express spatial information; the interrelationship between gesture and grammar; variation of gestural expression of space.	Kendon (1980); Margetts (2004); Mosel (2004); Cooperrider and Núñez (2012); Núñez et al. (2012); Levinson and Majid (2013); Bender and Beller (2014); Cooperrider (2016)
Metalinguistic	Indigenous metalinguistics	Spatial models or conceptions of space, place, and mobility explicit in Oceanian scholars' work to establish Indigenous ontologies, epistemologies, and decolonial methods.	Māhina (2004); Ka'ili (2005, 2008); Kape (2005); Bautista (2010); Lilomaiava-Doktor (2015); Ka'ili (2017); Ka'ili, Māhina, and Addo (2017)
Metalinguistic	Non-Indigenous metalinguistics	Spatial models or conceptions of space, place, and mobility explicit in linguistics literature by non-Indigenous scholars.	Bohnemeyer et al. (2014); Lober and Boerger (2009); Paviour-Smith (2009); Rentz (2017)
Vitality	Shift and loss, endangerment of spatiality	Space as an endangered linguistic domain; space as traditional ecological knowledge.	Wassmann (1993); Hyslop (1999); Beller, Bennardo, and Bender (2005); Kape (2005); Raapoto (2005); Evans (2010, 2020); Louis (2011); Blust (2013); Bender and Beller (2014); Bohnemeyer et al. (2014); Mawyer (2014)

(e.g., architecture, place-naming, and placemaking), where it meets grammar (e.g., motion verbs, demonstratives), where it meets cognition (e.g., micro-, meso-, and macro-orientation, frames of reference), and where it meets social practices (e.g., direction-giving, social structure). All of these areas have been identified by linguists, anthropologists, ethnologists, geographers, among others, as being crucially spatially entangled. Yet, their primacy in linguistic study arises as these spatial aspects have evidently become grammaticalized in language to the point where speakers unconsciously make use of linguistic tools to navigate being-in-the-world in everyday speech. The goal of the remainder of this section is to provide concrete evidence toward our claims about the conceptualization of and the research around space and place in linguistics. In addition to analyzing the relationships between the CLSDs, we aim to identify how the literature demonstrates a disciplinary approach to defining the concepts of space in contrast to place. Finally, we seek to encourage a broader discussion that identifies key interdisciplinary intersections and foci for future analysis.

We are not surprised, exactly, but rather intrigued by the diversity and breadth of intersecting yet discrete topics in spatial linguistics demonstrated in table 6 and discussed as CLSDs. We suggest that the typology reveals general currents in the linguistic engagement with space. Moreover, we cannot help but observe the persistence and durability of particular trends in linguistic research in Oceania which in turn may support a potential definition of spatial language or working model of spatial research in linguistics (see Introduction)

which may help to inform or frame research on language and space globally. These include:

1. linguistic devices are used to encode and manifest spatial culture and cognition;
2. language-encoded spatiality reveals conceptual frameworks or categorizations—either in the mind or in the world, either static or dynamic, either world-reflecting or world-making—providing researchers a bridge for the investigation of culture's role in cognition or the role of cognition in culture;
3. language encoding of space facilitates existing within and moving about the environment by providing a potent and efficacious coupling of perception, conception, and experience of a wide variety of aspects of physical and nonphysical structures, relations, and patterns;
4. linguistic encoding of space both influences and is influenced by the organization, navigation, and negotiation of both tangible and intangible aspects of social and cultural life;
5. spatial language is a valuable tool for communicating about and giving meaning to nonspatial systems, concepts, values, and beliefs within the human experience;
6. spatial language provides a means of categorizing, making sense of, and assigning importance to the physical landscape and its implications for conceptual, experiential, and practical being in the world;
7. spatial language is expressed multimodally; spatial culture—including spatial cognition, spatial metaphor, and spatial deixis—can be expressed in gesture;
8. language-encoded spatiality contributes to various scholarly disciplines, and thus, its nature may only be well-understood with consideration of how it is framed by researchers of different backgrounds and disciplines; and
9. spatial language is an important aspect of speakers' traditional ecological and culturally grounded knowledge and is subject to endangerment and loss.

The typology (summarized in table 6) which resulted from our review of the literature reinforces a sense that linguists have been primarily concerned with understanding how space and place manifest in spatial language as opposed to asking themselves 'what is space', 'what is place', or 'what is the significance of either for the human condition'. This suggests that a number of near-field inquiries may be generative areas for future research within linguistics due to the fact that the grammatical or functional level of language encoding of space can be subtle, require expert knowledge to decode, and that more philosophical or alter-disciplinary approaches may miss significant insights into the research reviewed here.

A major finding of our review is that there is interesting and somewhat notable variation between scholars whose work attempts to explicitly and overtly define 'spatial language' or 'space' in contrast to pieces that, intriguingly enough, may objectively be read as never explicitly defining their key term. This is perhaps related to or even a byproduct of the relative complexity or diversity of spatial work in linguistics. In any event, we suggest that a strong program for centering definitional understanding of spatial language in this large and growing literature has not yet emerged. Instead, space has been working as something like a disciplinary frontier where empirical observations in CLSDs have been generative for a large number of cross-referencing but largely sui generis projects.

In general, 'space' is used to refer to an a priori culturally mediated/ing manifold evident in all of the CLSDs above. Interestingly, we came out of this review with a strong sense that authors who took on the definitional question directly and explicitly, and those who approached the key term(s) without explicit definition, ultimately seemed to be on the same page (table 7). That is to say, their spatial definitions or conceptions bear a family resemblance even though they do not explicitly co-identify.

We also note that place has a significant if somewhat covert presence in this literature. Like space, engagement with place in spatial linguistics demonstrates a pattern of topical centering for researchers. We observe a similarly overlapping and centered engagement with place especially evident in discussions of ontological, social, and environmental CLSDs. The following are the recurring topics where we observed 'place/placial' being used in the literature reviewed here: place names and practices of place-naming; landform and place categorization and designation; place and the sacred; the association between god- and place-based cultural practice; places of residence; travel to places; foreign, domestic, or alien places; places and cultural salience or value; personification of places; place descriptions; and the role of place in speech acts and events. Place is also commonly used congruently with 'location'—the sitedness of human or nonhuman activity or therenesses—in glossing as well as prose. These foci suggest that, to linguists, places are located, named, moved between, traveled to, lived in, or known. Places exist, can be identified and described within space, and can be used to locate other objects. These definitions, while centered among linguists, contrast distinctly from related disciplines. Among anthropologists, for instance, the existence of and the making of place has become a central focus. Linguists, we suggest, tend to avoid discussing place as produced in and by language phenomena and have perhaps missed a significant opportunity to observe the essential role of the more grammatically focused CLSDs in placemaking.

Given this extraordinary potential richness, we were somewhat shocked in our review, that when place was engaged, we were not able to identify any authors among linguists who provided an overt definition. While a number grappled with notions of place, that engagement was generally en passant

TABLE 7. EXAMPLES OF AUTHORS' EXPLICIT AND IMPLICIT DEFINITIONS OF SPACE WITH OUR INTERPRETATIONS OF THEIR RELATIONSHIP.

Reference	Space (implicit or explicit)	Place (implicit or explicit)	Analysis of the author's proposed relationship between space and place
Hyslop (1999)	A general term to discuss the location of objects, mostly used to refer to the discipline.	Implied to be synonymous with 'location' (itself perhaps little defined).	Places can be located while space is a surrounding manifold.
Cablitz (2002)	An area in which something may exist and a descriptor for any topic that relates to an item's position or relation to another entity.	The position of an object, either physical or intangible, in the world.	Place exists in space; places are recognized or created by humans.
Palmer (2002)	The surrounding area devoid of any cultural or cognitive categorization that may be subject to human interpretation. Palmer states "In reality [absolute spatial systems] are merely features of certain culturally specific systems of spatial reference" (p. 116) suggesting that reference to space is variable and culturally specific.	Implied to be synonymous to 'location' (itself perhaps little defined).	Space seems to be primary in linguistic study. It emerges in language that reflects cognitive models which serve to organize the surrounding natural or social environment. Place seems to refer to culturally salient locations within space.
Burenhult and Levinson (2008)	Something is spatial if it has to do with positional or dynamic relationality within an environmental manifold.	"Places can be freely introduced by locative adjuncts [. . .], and they provide the grounding for spatial movement, freely collocating with special cases [. . .] or spatial prepositions" (137) suggesting that places can be defined by grammatical devices.	Space plays a key role in producing placidness, for example, the use of 'spatial prepositions' turns objects into places. This is the closest to a grammatical approach to defining place by implying that places are in fact byproducts of grammaticalized linguistic encoding.
Levinson (2008)	Does not directly use 'space', but implies that it might be something like a meta-linguistic manifold which speech acts both bring into view and engage with differentially on the basis of the cultural spatiality constituted by particular languages.	A location, often named, with some relation to meaningful human experience.	Places are human; space is an inherently nonhuman manifold which will be perceived and conceived as mediated by spatial language.
Paviour-Smith (2009)	Defines space for its role in language "Human languages encode space as direction or location in a number of different ways" (4).	Implied to be synonymous to 'location' (itself perhaps little defined).	Spatial language refers to the ways that human languages encode places or direction between, through, toward, or away from those places.

Reference	Space (implicit or explicit)	Place (implicit or explicit)	Analysis of the author's proposed relationship between space and place
Bennardo (2014)	Space seems to be a three-dimensional extra-human environment that is subject to limitation by the particular spatialities imposed by a given language (e.g., Tongan) in use.	Place seems to be the parts of space that are touched by culture and society. Starting and ending points on a path are places as well as landmarks along the way, which are overwhelmingly culturally significant.	Space is the three-dimensional world in which we exist devoid of any influence from human meaning-making processes; while place refers to locations in space that we create by giving meaning or significance to them.
Senft (2017)	Explicitly frames space as a linguistic or cognitive byproduct, something that is thought about or mentally modeled and that does not necessarily exist outside of the human experience.	Place goes undefined. Notions of place coincide with and become scrutable in place names and in connections between local landmarks and sociocultural conceptions or experiences of place.	Places are often given culturally or historically significant names which shape the spatial systems in languages. Spatial systems are used by speakers to locate, name, move between, travel to, live in, or know places and their significance. Spatial systems can lead to the creation or altered understanding of the relationships between places.

and never corresponded with a dispositive definition. Table 7 exemplifies the implicit and explicit definitions that authors have assigned to space and place along with our own interpretation of how the terms relate. For instance, in his review of Yèlî Dnye toponyms, Levinson (2008) suggests that a place is a location with some relation to humans; often places are named and have some sort of cultural, visual, or utilitarian importance. In this key piece, Levinson's lack of discussion of space's role in toponymy suggests that he views toponyms and their names as a distinctly placial topic even though there is evidence in the literature that some toponymy is spatially entangled. This suggestion is augmented by the relative avoidance of discussion of space except in distinctly nonhuman-related contexts.

We found these results suggestive. While we entered into this review thinking that notions of space were more slippery than those of place, we found that both appear to contribute to a relatively centered if fractionated discussion. Both terms contribute to specific topics of spatial linguistics as we have shown, and linguists and linguistic anthropologists seem to agree about their significance. However, our reading is that, across this literature, space has taken the status of the foundational concept of which place is a subset. As such, here, we have called our CLSDs 'coupled language-space domains', not CLSPDs 'coupled language-space-place domains'.

What is curious here, is a fundamental irony. As a human phenomenon, space can only ever be realized or actualized in the crispness of a here-and-now for speakers in the lived enactment of being human (Hanks 2005). Ultimately, the linguistic encoding of space is always already *about place*. Place, we note, is what spatial language is inherently about. Yet, in linguists' engagement with the CLSDs, we have identified that it may be that they have reversed the order of importance. Despite minor differences, authors view place as part of space even as they recognize the importance of placemaking for individuals and communities. This conceptual consistency across a large body of work with diverse foci is fascinating given the lack of explicit discussion, and it largely coincides with a position which has become standard in spatial studies which espouses that space is a *tabula rasa* out of which place coalesces or manifests through human being-in-the-world. However, with attention to the coupling of space-and-language within the domains described above, we note that, in practical terms space is clearly *not* a *tabula rasa*. Linguists are, thus, presented with an opportunity to articulate how place is formally produced at the language–culture–cognition nexus as the outcome of speakers' lived enactment of CLSDs.

While we observe points of conceptual and methodological convergence between linguists, linguistic anthropologists, and the broader scientific community, we have identified several ways in which linguists' treatment of space and place differs from researchers of different backgrounds and training. For instance, with the introduction of the CLSDs that fall within "linguistic encoding,"—which linguists are uniquely trained to study—linguists offer a means for investigating how space is materialized and becomes place through linguistic acts. However, for those who prefer to remain focused on space in its own right, work within these CLSDs reveals that language can be spatial, and spatial language can refer to the semantic, syntactic, lexical, pragmatic, and metalinguistic dimensions of language.

Some CLSDs pertaining to language and space, however, are inherently interdisciplinary and are more commonly, though not exclusively, addressed by those who align as linguistic anthropologists or anthropological linguists. The now-widespread recognition that spatial language is multifarious and illuminating has led to the accentuation of the large-scale implications of spatial organization on discourse, metaphor, wayfinding, place-naming, social navigation, and the juggling of multiple models. In particular, space and place seem to create an energized feedback loop with culture. Many anthropologists and linguistic anthropologists have recognized the important role that spatial language has in the study of culture (e.g., Bennardo, Feinberg, Hanks, Shore), and culture very often plays a role in discussions of space.

However, this highly energized research focus somewhat obscures a lack of discussion between linguistics and other disciplines despite the evident potential of interdisciplinary engagement. The ways that other disciplines study space have the potential to broaden linguists' foci and approaches to the study

of spatial language. Similarly, the conclusions that linguists have arrived at over the past several decades are not only useful for linguists. The CLSDs and the ideas and methodologies around them are key pieces of 'linguistic ecologies' (Mühlhäusler 1996; Maffi 2005) with cross-disciplinary ramifications. In addition, work at the interface of landscape and language is notable for its evident purchase on contemporary issues across disciplines in the social and natural sciences including ethnoecology (Johnson and Hunn 2010; Duvall 2011) and biocultural well-being (Dacks et al. 2019; Leong et al. 2019) among others. The development and incorporation of ecolinguistic approaches may also serve to shape mainstream linguistic theory (Nash 2016). Studies such as these represent the potential for the linguistic study of space to contribute to currently active issues across the human and natural sciences, which include, indigeneity, decolonization, ecology, biocultural connections, international law and geopolitics, city-planning, sustainability and conservation, place-based education and pedagogies, mental health and well-being, among many others.

5. CONCLUSION: TALKING ABOUT SPACE AND LANGUAGE. As we hope was clear in this synthetic analysis, the coupling of language and space has become an enormously productive edge for linguistics and near-fields, such as linguistic anthropology. While we took a comprehensive stance toward our general review and suggest that the articles selected for closer scrutiny are representative of the space–place discussion, we do not assume that our characterization of the state of linguistic analysis of space and place is complete. We were surprised to find that the primary engagement with space in Oceanic linguistics was even larger than we had anticipated. It turned out that there were more articles, chapters, and volumes than we had expected based on citational trails evident in any one or even any number of individual articles, particularly taking into account near-field work in anthropology. That is, this literature is more active than we initially thought and motivated our sense of the need for a close examination of the state of the conversation. Beyond clearing ground or laying new paths for empirical study, researchers developing spatial theories have made postulations that have had profound implications for linguistic, cognitive, cultural, and behavioral theory. Nevertheless, while the literature is already substantial and expanding, it also appears to be something of a prolegomena to future studies and engagement with colleagues in other fields.

We have identified twenty-two CLSDs which we suggest are the centralizing foci around which linguists and linguistic anthropologists appear to have organized their work. They exemplify how linguists of various backgrounds have engaged with space in relation to linguistic encoding, cognitive frameworks, the environment, society and culture, metaphor, place and placemaking, gesture, and language endangerment. We further note that the CLSDs are not exclusive but instead, frequently intersecting. When working on any one CLSD virtually, linguists appear to bump into one or more others. However,

there does not yet appear to be a strong synthetic theory for how the various couplings are integrated beyond foundational philosophical insights that space is a foundational module within the cognitive package responsible for language. To our knowledge, no one has explicitly tried to systematize the connections between any of these CLSDs or to systematically unpack the entangled linkages between them. We argue that the identification of these CLSDs is valuable in showing that researchers' engagement with space, place, and language is both patterned and path-dependent, hence, potentially, somewhat conservative. We have shown that while there is little explicit definitional language guiding notions of space and place, CLSDs serve as foci around which research and discussions are framed. We have also drawn attention to how linguists' treatment of space and place differs from researchers in other disciplines. We note that in particular the relationship between cultural spatialities materialized in spatial language and place remains underconceptualized.

Though we cast a wide net, we recognize that we have inevitably overlooked some publications on language and space in Oceania. Furthermore, we may have failed to identify one or more CLSDs evidenced in the existing literature. However, we also suggest that any gaps and those CLSDs that are less-robustly described likely represent areas that have not yet been well-researched or, possibly, well-formulated even by the researcher who opened up the topic. Furthermore, we note that certain CLSDs attract linguists—such as those in the domain of linguistic encoding—while others attract linguistic anthropologists or anthropologists—such as those in social spatiality and placemaking and ontology. Similarly, by identifying linguists' definitions of space and place and comparing these to related disciplines, we have revealed a disconnect in the kinds of questions researchers are asking about space as well as in how researchers define their key terms. With these findings in mind, we suggest that more interdisciplinary communication and adoption of CLSDs in research endeavors will lead to a more unified and thus strong inquiry into the nature of language, space, and place.

Some possible future questions for investigation considering the outcomes of this study include: How does our *linguistic* understanding of space and place relate to cognition across the various CLSDs as opposed to within them? How are the identified CLSDs integrated into the fundamental understanding of the ontology of space and/or place? Furthermore, considering the relatively recent turn to space in general, or the specific turn to landscape terms or Indigenous metalinguistic spatiality, one might wonder whether there are yet other CLSDs waiting to be identified by linguists as a means to investigate space and place. Finally, we hope that by bringing to attention which areas are unique to linguistics and which are lacking we may encourage researchers of various disciplines to stray further from their comfort zones and find new ways to integrate topics which have thus far failed to cross disciplinary boundaries.

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