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Irrealis is real

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Language, Volume 98, Number 2, June 2022, pp. 221-249 (Article)

Published by Linguistic Society of America

DOI: <https://doi.org/10.1353/lan.2022.0009>

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IRREALIS IS REAL

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The question of whether IRREALIS is a meaningful concept in crosslinguistic comparison has been the subject of long-standing controversy. In this article, we argue that the semantic domain of irrealis is split into two domains—the possible and the counterfactual—and that an ‘irrealis’ marker in a given language may refer either to only one of these domains or to both. A significant part of the crosslinguistic variation in what is referred to by the term *irrealis* can be traced back to this distinction. Other factors that obscure the realis/irrealis divide include functional subdivisions of the irrealis domain and paradigmatic competition within the TAM system of a language. We conclude that ‘irrealis’ is a crosslinguistically meaningful notion.*

Keywords: irrealis, mood, semantics, typology, Oceanic languages

1. INTRODUCTION.

1.1. OVERVIEW. Many languages have been described as systematically distinguishing between utterances relating to actual events and utterances referring to future, hypothetical, or counterfactual scenarios. This phenomenon is usually characterized as a distinction between realis and irrealis mood.¹ This is illustrated by the following examples from Nanti (Arawak) (Michael 2014:254).²

- (1) Nanti (Arawak)
- | | | |
|----|--------------------------------|----------|
| a. | o=pok-Ø-i | maika |
| | 3.NONM.SBJ=COME-IPFV-REAL.I | now |
| | ‘She is coming now.’ | |
| b. | o=N-pok-Ø-e | kamani |
| | 3.NONM.SBJ=IRR-COME-IPFV-IRR.I | tomorrow |
| | ‘She will come tomorrow.’ | |

However, this practice has been dismissed for crosslinguistic research by some. The main points of criticism boil down to the following arguments:

- (i) The notion of ‘irrealis’ is conceptually unappealing. As Bybee (1998:267) states: ‘A highly generalized notion such as “lacking in reality” is probably too abstract to be of much communicative use’.

* We thank Valérie Guérin for her data collection on Mavea, and Lena Weißmann for her support on the typological studies. We also thank three anonymous referees and the editors for their insightful and constructive criticism. This research was funded through the DFG (MelaTAMP Project, 273640553).

¹ We use the term *mood* here in the sense of ‘verb mood’ as opposed to ‘sentence mood’; see Palmer 1986.

² We retain all grammatical analyses from their sources, but have regularized the glossing abbreviations for consistency and clarity for the reader. The following abbreviations are used in glosses and throughout the article: 1: first person, 2: second person, 3: third person, A: A class, ACC: accusative, AG: agentive, AGR: agreement, AL: alienable, APPL: applicative, ASRT: assertive, AUX: auxiliary, BEN: benefactive, CLF1/2/3: possessive classifier, COMP: complementizer, COND: conditional, COS: change of state, CTF: counterfactual, DEM: demonstrative, DIST: distal (TAM), DU: dual, EMPH: emphasis, EXCL: exclusive, FUT: future, I: i-class verb, IMN: imminent, INCL: inclusive, IPFV: imperfective, IRR: irrealis, LOC: locative, NEG: negation, NEG1: negation 1, NEG2: negation 2, NIMN: nonimminent, NONM: nonmasculine, NSG: nonsingular, O: object enclitic, OP: open polarity, PC: paucal, PFV: perfective, PL: plural, POSS: possessive, POT: potential, PRF: perfect, PROSP: prospective, PST: past, REAL: realis, REDUP: reduplication, REL: relative clause complementizer, REM: remote tense, RES: resultative, S: subject proclitic, SBJ: subject, SBJV: subjunctive, SG: singular, SS: same subject/reference marker, SUB: subordinator, TAM: tense, aspect, mood, TEL: telic, TRANS: transitive, V: epenthetic vowel.

- (ii) Few languages have a binary distinction between realis and irrealis mood. Compare Bybee (1998:265): ‘For any given language, there are several grams that mark off portions of the conceptual space for situations that are not asserted to exist, or if there is a highly generalized gram, it does not cover all “irrealis” situations’.
- (iii) The functions of markers that have been labeled *irrealis* are too inconsistent crosslinguistically to constitute a useful category.

The validity of comparative concepts in general has been argued to be quite arbitrary. Haspelmath (2010:678) suggests that they cannot be ‘right or wrong’, only ‘more or less productive’. We largely concur with this assessment, although we would like to briefly advocate for more specific criteria of quality when assessing a comparative concept. Even as we are not able to defend those criteria exhaustively here, they serve to make our own *modus operandi* more transparent. We also believe that similar criteria are applied often implicitly, including in Bybee’s (1998) refutation of irrealis.

- (i) CONTEXTUALIZATION: The meaning of the comparative concept should be defined in terms that clarify its relation to similar concepts crosslinguistically. In the case of ‘irrealis’, our work shows how this concept is related to the meaning of tense markers and modal expressions, for example. This part of our work directly addresses the first point of criticism as outlined above.
- (ii) PREDICTIVE POWER: A comparative concept can prove its usefulness by generating falsifiable generalizations. Assuming the realis/irrealis distinction to be a valid comparative concept generates at least the following predictions:
 - A sizeable number of languages exhibit this distinction (contra point (ii) of the criticism).
 - In languages where one of these categories has an INTERPRETATION GAP (one of the expected functions is unavailable), other more specified expressions of the language will be found to fill this gap.

Within our sample, we find both of these observations to be correct.

At the same time, our proposal may reconcile the reservations regarding irrealis of Bybee (1998) and others with the observations of its apparent validity by regional language experts in the following way: we harness the theoretical innovation of a tripartite branching-time framework by von Prince (2019), which provides a straightforward way to model the binary realis/irrealis distinction, but also generates the more fine-grained modal-temporal divisions that we find in some languages.

Our approach allows us a much more stringent delineation of which markers qualify as irrealis compared to previous approaches, and also facilitates a better understanding of the different markers that have been labeled *irrealis* in the literature. The main contribution of this article is a novel theoretical approach to the semantics of irrealis, which affords a reassessment of previously published data. We complement the theoretical work with typological case studies on Oceanic languages to support our analysis.

1.2. HISTORICAL BACKGROUND. The opposition between REALIS and IRREALIS moods was observed early, and in a wide variety of languages, especially from Oceania and the Americas. The term seems to originate in the late nineteenth century, in the German academic literature on Greek and Latin. Autenrieth (1875:5) writes that ‘[i]rrealis means that, for the speaker, the action is excluded from reality, probability and possibility, that it is untrue or impossible or is thought of that way’.³ Here, the term *irrealis* is defined in

³ ‘Der Irrealis drückt aus, dass für den Sprechenden die Handlung von der Wirklichkeit, Wahrscheinlichkeit und Möglichkeit ausgeschlossen, dass sie unwahr oder unmöglich ist oder dafür gilt’; our translation.

opposition to the *Potentialis*, *Coniunctiv*, *Indicativ*, and *Optativ*, and it seems that the intended scope is restricted to what we call the COUNTERFACTUAL domain, rather than all of what we consider to be irrealis.

In the early twentieth century, the term began to be adapted in English descriptions of a wide variety of languages, including Sapir's description of Southern Paiute, where he states about a particular suffix: 'This element indicates that the activity expressed by the verb is unreal, i.e. either merely potential or contrary to fact (potential in past time)' (Sapir 1930:168). Already in this short quote, two very important elements are present that we highlight throughout this article: (i) the subdivision of irrealis into the potential and the counterfactual, and (ii) the connection between these modal domains and time.

Another early reference to the irrealis distinction comes from Dempwolff (1939), who uses the terms *modus realis* and *modus imaginativus*; the latter was translated as *irrealis* in Dempwolff 2005 [1939]: the Oceanic language Yabem (or Jabêm) of Papua New Guinea has a paradigm of verb inflections that simultaneously encode person-number features of the subject, and a distinction between realis mood, pertaining to assertions of the past and present, and irrealis mood, pertaining to directives, assertions about the future, and epistemic possibilities. We will see that this exact situation is very widespread among Oceanic languages.

Capell acknowledges the irrealis distinction as an important feature of at least some Austronesian languages of Papua New Guinea:

A further feature of [Austronesian languages of New Guinea with VO order] worthy of attention is the general presence of a Realis-Irrealis distinction in the verbal system, i.e. a basic distinction between actions which are regarded as actually occurring and actions which are merely thought about. (Capell 1971:288)

In subsequent years, the term *irrealis* was also mentioned in Bickerton 1975, Dixon 1980, Johnston 1980, Givón 1982, Chung & Timberlake 1985, Foley 1986, and Blewett 1991 (also see references in Mithun 1995). Before the 1990s, however, the irrealis distinction was primarily used descriptively, with respect to individual, language-specific phenomena, and without a discussion of its theoretical status in semantics, cognition, or typology. More systematic treatments emerged only in the 1990s, starting with Roberts 1990 and Bugenhagen 1993, which we discuss in more detail in the following sections.

Around the same time, Trask (1993:147) comes to the following assessment:

[Irrealis:] A label often applied in a somewhat ad hoc manner to some distinctive grammatical form, most often a verbal inflection, occurring in some particular language and having some kind of connection with unreality. Palmer (1986) recommends that this term should be avoided in linguistic theory on the ground that it corresponds to no consistent linguistic content.

Bybee et al. 1994 and Bybee 1998 expand on this criticism of the category, culminating in the three main objections listed in §1.1. In the context of the publications of Bybee et al. 1994 and Bybee 1998, there were a number of language-specific and more general descriptions that on the one hand defended the use of the label *irrealis* for the purposes of language-specific description, but on the other hand presented linguistic data that sometimes appeared to validate the concerns of Bybee and others. For instance, Givón (1994) tries to relate irrealis to the better-known categories of epistemic and deontic modality through data from Romance and Bantu languages, even though neither language family has been described as basing its TAM (tense, aspect, mood) systems around the realis/irrealis distinction.

In 1995, Joan Bybee and Suzanne Fleischman edited a book on modality (Bybee & Fleischman 1995), which includes discussions of irrealis by Chafe (1995) and Mithun (1995). Both contributions come to the conclusion that, while there is considerable

crosslinguistic variation in how irrealis markers are distributed, a common, relatively stable core of functions appears to be associated with this category.

In the same special edition of *Anthropological Linguistics* that features Bybee 1998 are descriptions by Kinkade (1998) on Upper Chehalis (Salish), Callaghan (1998) on Lake Miwok (Yok-Utian), and Martin (1998) on Mocho (Mayan). It is not clear to us what prompted the selection of these particular languages, since they had never been argued to systematically encode the realis/irrealis distinction. It is therefore not surprising that a picture of bewildering inconsistency emerges from comparing the different accounts, which Bybee (1998) takes as evidence that ‘irrealis’ is not a typologically meaningful concept. Several later accounts have tended to agree with Bybee’s assessment, including Cristofaro 2012 and de Haan 2012.

This criticism notwithstanding, researchers working on individual languages or groups of languages, many of which are from the Oceanic context, have maintained that the realis/irrealis distinction is a meaningful one. These studies include Elliott 2000, Verstraete 2005, McGregor & Wagner 2006, van Gijn & Gipper 2009, Barbour 2011, Exter 2012, Cleary-Kemp 2014, Michael 2014, and Lichtenberk 2016. In what follows we contrast a fine-grained typological case study on Oceanic languages with the global sample of Bybee et al. 1994 in order to better understand the discrepancies between different accounts.

2. IRREALIS IN BRANCHING TIME. AS we have seen in the introduction, one challenge to the validity of irrealis as a linguistic concept is the difficulty of defining it in sufficiently precise terms to help us understand its relation to other TAM categories. In this section, we develop a definition of irrealis in terms of a novel approach to branching time.

Tense generally denotes a relation between different moments in time (specifically the topic time and the utterance time, in Klein’s (1994) seminal terminology). Modality is generally thought to involve quantification over (sets of) worlds (Portner 2009). These two dimensions of time and modality can be conceptualized as being independent from each other, as is usually the case in a parallel-worlds framework (see e.g. Portner 2009 for an introductory exposition).

The realis/irrealis distinction, however, is based on an inextricable link between modality and tense. The intimate relation between these two domains has been discussed extensively in the literature on tense semantics (Iatridou 2000, Condoravdi 2002, von Prince 2019). Moreover, the distinction between realis and irrealis moods relies heavily on an asymmetry between the past and present, on the one hand, and the future, on the other. As Comrie (1985:51) noted, realis/irrealis systems are often described in terms of future/nonfuture reference, even though irrealis markers are not restricted to the future but can also refer to the possible or counterfactual past and present (also compare Bhat 1999:131).

The asymmetry between the future and the nonfuture not only is often encountered in natural language, but also constitutes one of the oldest conundrums in temporal logic. The idea of ‘historical necessity’ denotes the intuition that, looking forward to the future from any given moment, it seems that several different developments are possible. But once they have happened, there is a sense of necessity and finality to them—the future is open, but the past is settled once and for all. This conundrum goes back at least to Aristotle and was picked up by Prior (1957, 1967), later modeled by Thomason (1970, 1984), and used to model semantic phenomena such as the progressive, as in Dowty 1977. These works on temporal logic rely on the idea of branching time to derive the asymmetry between the past and the future. In a branching-time model, times

(or indices) do not constitute a strict linear order. Instead, two indices that have a common predecessor may not be ordered with respect to one another. The following definition is taken from von Prince 2019.

- (2) DEFINITION 1: A branching-time frame \mathbb{I} is a pair $\langle I, < \rangle$, where
- a. I is a nonempty set of indices i ;
 - b. $<$ is an ordering on I such that if $i_1 < i$ and $i_2 < i$, then either $i_1 = i_2$, or $i_1 < i_2$, or $i_2 < i_1$.
- An index i_1 is called a PREDECESSOR of i_2 iff $i_1 < i_2$; it is a SUCCESSOR of i_2 iff $i_2 < i_1$. Within a discourse domain, all indices have a common predecessor. A branch through any $i \in I$ is a maximal linearly ordered subset of I containing i .

This definition creates a branching structure such that, given a specific index i_c (the actual present), there are several continuing developments branching off toward the future, but only one line of indices that lead to i_c . In other words, the future is open, but the past is settled. Traditional approaches to branching time are content with this binary distinction between the open future and the settled past/present and limit quantification to those branches that pass through i_c . But von Prince (2019) argues that the branching structure instead creates a three-way distinction. This innovation is crucial for our treatment of irrealis. In addition to the above definitions, we also assume that indices can be grouped into sets of simultaneous moments, so that they have a strictly ordered time value in addition to their position within the tree-like frame.

The three modal domains we can formally distinguish are the following (compare Figure 1):

- (i) i_c and predecessors of i_c (the actual);
- (ii) successors of i_c (the possible);
- (iii) and indices that are neither successors nor predecessors of nor identical with i_c (the counterfactual).

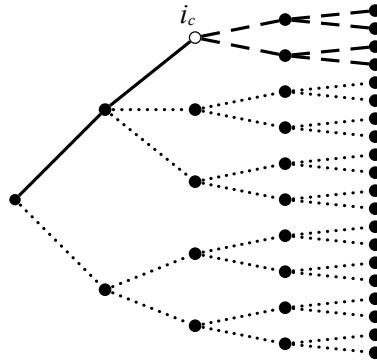


FIGURE 1. The three domains of the modal-temporal space, relative to the actual present i_c : the actual (solid line)—the realis domain, the possible (dashed lines), and the counterfactual (dotted lines). The combination of the possible and the counterfactual is the irrealis domain. Vertically aligned indices are simultaneous.

In this framework, we can define the domain referred to by irrealis expressions *ex negativo*, as the set of indices that are not predecessors of or identical with the actual present. We can also see that the domain of irrealis is composed of the possible futures and the counterfactual (past, present, and future).

- (3) DEFINITION 2: The domain of irrealis is the set of indices that are not predecessors of the actual present or identical with it: $\{i|i \not\leq i_c\}$.

This is complementary to the denotation of realis markers.

- (4) DEFINITION 3: The domain of realis is the actual present and its predecessors: $\{i|i \leq i_c\}$.

The idea that branching time is instrumental in understanding the realis/irrealis distinction is not new. Baker and Travis (1997) base their account on the assumption that speakers conceptualize time as branching rather than linear, and so do McGregor and Wagner (2006). However, their accounts follow the traditional approach to branching time in allowing only a two-way distinction between the actual present and past, on the one hand, and possible futures, on the other, and do not afford exclusive access to counterfactual indices.⁴

By contrast, several researchers working on languages with a realis/irrealis distinction have recognized the need for a tripartite rather than a binary opposition, but have not considered a branching-time framework for modeling this system. The initial quote by Sapir (1930) in the previous section already refers to ‘merely potential’ and ‘contrary to fact’ as two different types of ‘unreal activities’. Another account that expands on this distinction is that of Roberts (1990), which is summarized in Table 1. His conclusions are based on an empirical study of the TAM systems of Amele and other Papuan languages.

	UNREAL WORLDS(s) [sic]	
REAL WORLD	(FUTURE)	(NONFUTURE)
factually true in real world (positive)	potentially true in real world	not potentially true in real world but true in unreal world (counterfactual)

TABLE 1. The tripartite division into the real, the potential, and the counterfactual in Roberts 1990:398.

The same tripartite division was acknowledged and confirmed in a later comparative study of realis/irrealis systems published as van Gijn & Gipper 2009. Similar intuitions about the relation between time and mood have also been put forward elsewhere, for example in Van linden & Verstraete 2008, which, however, treats this link as a matter of pragmatic extension rather than being purely semantic.

In sum, several researchers have previously acknowledged the potential of a branching-time model for the analysis of the realis/irrealis distinction. Others have recognized the division of the irrealis domain into possible futures and the counterfactual past, present, and future. But so far, no one has combined both insights to argue for modeling the subdivided irrealis domain by means of a branching-time framework. We suggest that this theoretical innovation allows for greater conceptual clarity in defining and analyzing TAM systems that are based on the realis/irrealis distinction.

Before concluding this section, let us come back to the initial criticism leveled against irrealis as a meaningful comparative concept, which in part was based on the

⁴ In these accounts, counterfactual indices can in principle be accessed through shifting the perspective to the past. But then they can no longer be differentiated from (some) actual and possible indices. Von Prince (2019) shows in detail that traditional approaches to branching time can thus only ever make a binary distinction between modal-temporal domains and cannot single out counterfactual indices. McGregor and Wagner (2006) do not make their assumptions explicit or provide a reference for the branching-time model they assume. In the absence of a statement indicating otherwise, we do not suppose that they implicitly assumed a branching-time model that significantly deviates from all previous work in theoretical linguistics.

difficulty of giving it a succinct definition. We repeat Bybee's quote from the introduction: 'A highly generalized notion such as "lacking in reality" is probably too abstract to be of much communicative use' (1998:267). In a similar vein, Cristofaro (2012) argues that 'irrealis' denotes 'unrealized states of affairs', which is not a likely candidate for a cognitive primitive. Generally speaking, there is widespread consensus that highly abstract notions, such as 'identifiability by the speaker', can in fact be at the heart of grammaticalized categories in natural language, such as definiteness. The definition of irrealis proposed in this section is still highly abstract, but it is sufficiently precise to operationalize the categorization of individual clauses as belonging to one of three temporal-modal categories, as we further discuss in §3.3.

In effect, tripartite modality expands the temporal space into a modal-temporal space, where traditional definitions of tense and aspect can still be applied. If tense modifies the relation between topic time and utterance time, and aspect modifies the relation between topic time and situation time, then realis status modifies the relation between the utterance world (the speaker's actual world) and the situation worlds.⁵ We suggest that the well-established interactions between tense, modality, and aspect are much easier to conceptualize when all three categories are thought to operate on (parts of) the same semantic space.

3. BINARY AND NONBINARY REALIS/IRREALIS SYSTEMS. In this section, we address the argument that the realis/irrealis distinction is understood as a binary opposition, but in many languages that have a marker labeled *irrealis*, this marker may not be in binary opposition to a marker labeled *realis*. Bybee (1998) ascribes some of the popularity of the realis/irrealis distinction to the structuralist tendency to look for binary oppositions that do not match up with observations on natural languages.⁶ Contradicting this claim, Michael (2014) argues that Nanti, an Arawak language of Peru, does present a clear example of a language with a binary realis/irrealis opposition, where each category behaves as expected, and Cleary-Kemp (2014) states that Koro and other languages of the Admiralties Islands also have a well-behaved binary distinction between realis and irrealis mood.

In this section we present a case study on the Oceanic branch of the Austronesian language family in order to show that such binary systems are not at all uncommon. Furthermore, those languages that have a more than binary distinction can largely be divided into two types. The first type implements a more fine-grained modal-temporal division of the irrealis domain. We show that our tripartite branching-time approach provides a straightforward model of the binary systems, but also predicts the subdivisions of the irrealis domain that we in fact observe. In the second type, certain functions typically associated with irrealis, such as imperatives, are expressed by more specialized markers.

⁵ When we translate the concept of topic time and utterance time to worlds, the utterance world is always the speaker's actual world, the situation worlds are the worlds in which an event takes place, and the topic worlds might be different from both. Consider *If I had a dollar, I'd buy some candy*—here, the protasis of the clause introduces a set of topic worlds (counterfactual worlds where the speaker has a dollar); the situation worlds, in which the speaker buys some candy, are a subset of the topic worlds.

⁶ Note that a binary realis/irrealis contrast is not a necessary condition for a genuine irrealis or realis marker to exist within a given language. Just as a language may have an imperfective aspect marker that is not in binary opposition to a perfective marker, so an irrealis marker can exist without a realis counterpart or with more than one paradigmatic alternative. But we believe that the empirical motivation for our claim would be considerably weaker if Bybee et al. (1994) were right about not a single language instantiating a binary realis/irrealis contrast.

3.1. BINARY REALIS/IRREALIS SYSTEMS IN OCEANIC. This section presents a typological case study on a convenience sample of seventy-four Oceanic languages. We excluded six languages from the final sample because we could not determine with certainty from the literature whether they had a binary distinction. Of the remaining sixty-eight languages, twenty-six have a binary system of realis/irrealis marking, while forty-two do not. The map in Figure 2 shows the distribution of languages in our sample, and Figure 3 shows a close-up of Vanuatu.

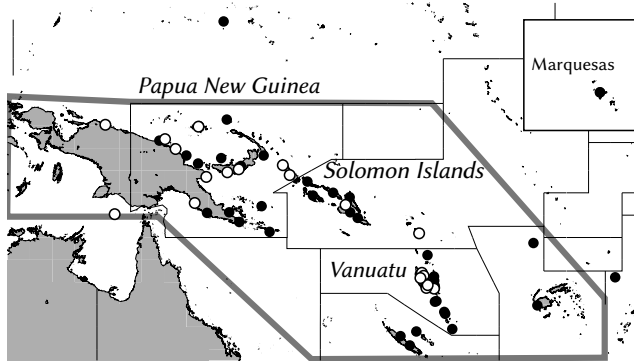


FIGURE 2. Distribution of realis/irrealis languages in our sample, with a focus on Melanesia. White dots: languages with a binary realis/irrealis distinction (twenty-six); black dots: languages without a binary realis/irrealis distinction (forty-two). Gray outline: Melanesia.

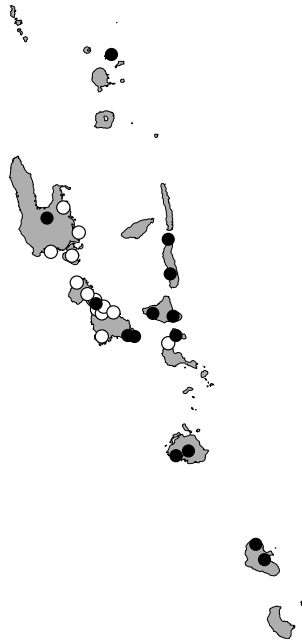


FIGURE 3. Part of Fig. 2, zooming in on Vanuatu. White dots: languages with a binary realis/irrealis distinction; black dots: languages without a binary realis/irrealis distinction.

In classifying languages as having a binary realis/irrealis distinction, we used a fairly conservative measure: there has to be a slot in the verbal complex where either a realis

marker or an irrealis marker can occur, but no other marker. Thus, while zero-marked realis, for example, is a very plausible possibility in our view, we did not count languages without an overt realis marker as binary realis/irrealis languages.

While many languages in our sample have not been investigated in sufficient detail to draw definitive conclusions, we do have sufficient insight into one language with a binary system, which is Mavea, a language of Vanuatu. This language has been extensively described by Guérin (2006), and we also have access to a corpus comprising more than 64,000 tokens (Guérin 2006, 2017). Within this corpus, several entire texts, comprising 639 clauses, were manually tagged for their TAM values by two trained annotators. Mavea has a paradigm of portmanteau subject proclitics, which simultaneously encode person-number features of the subject and TAM values; see Table 2. The realis/irrealis distinction is implemented only for the first- and third-person singular.

	SINGULAR		PLURAL	DUAL	PAUCAL/TRIAL
	REALIS	IRREALIS			
1INCL		da-	dar-	datol-	
1EXCL	na-	ka-	ki-	kir-	kitol-
2	ko-	ko-	ki-	kir-	kitol-
3	mo-	i-	ra-	rar-	ratal-

TABLE 2. The paradigm of portmanteau subject agreement markers in Mavea, as described by Guérin (2011:211).

We searched Guérin's (2006) Mavea corpus for counterexamples to the generalization that realis subject-mood proclitics occur only in realis contexts, and irrealis subject-mood proclitics occur only in irrealis contexts, as defined above. We did not find such counterexamples and are therefore confident that the two sets of portmanteau subject-TAM markers encode realis and irrealis reference, respectively. The only potential exception are contexts of epistemic possibility, in which the modal adverbial *or* 'maybe' can cooccur with realis forms (compare Guérin 2011:238). We believe that this element may take wide scope over the realis-marked utterance in order to express a lower degree of speaker commitment. We spell this assumption out in more detail in §4.7. Otherwise, epistemic possibilities/necessities are generally expressed by irrealis markers in Mavea. Targeted elicitations in Mavea further corroborated this conclusion. Guérin (2017) used storyboards such as 'The fortune teller' (TFS Working Group 2010), which targets possible future conditionals and past counterfactual conditionals (e.g. *If you marry Adam, you'll have many children*), or 'Tom and Mittens' (Rolka & Cable 2010), which targets the possible present (e.g. *The cat must be in the biggest basket*).

We classify a system as binary if there is exactly one slot in the verbal complex that has a binary realis/irrealis contrast, even if there are other slots in the verbal complex that also encode TAM-related values. This can be illustrated with Tape, as described by Crowley (2006:139ff.). The template for the finite verbal complex is given as follows.

(5) Tape: finite verbal complex template

SUBJECT-MOOD MOOD-ASPECT NEGATIVE NUMBER INCEPTIVE ROOT OBJECT

This is illustrated by the following example.

(6) Tape

pe-ska-r-vin

1NSG.INCL:IRR-NEG-DU-go

'we (DU.INCL) will not go'

(Crowley 2006:139)

As can be seen from the verb complex schema in 5, both the mood value of the predicate and the number of the subject can be further differentiated by subsequent affixes

before the verb root. In particular, predictions with a high degree of certainty, as well as obligations, are typically expressed with a necessitative affix in the MOOD-ASPECT slot in 5, in combination with irrealis marking. In this sense, Tape can be said to have more than two markers with modal implications. However, the opposition between realis and irrealis is implemented within the same morphological paradigm, while the necessitative marker occurs in a different slot in the verbal complex. At the same time, a closer look at the examples in Tape shows that the ‘realis’ set of subject-mood markers might be more accurately characterized as being neutral with respect to modality, since they also occur, for example, in the apodosis of counterfactual clauses. We have evidence from similar cases in which one set of subject-mood markers is simply neutral with respect to modality, in effect encoding only subject agreement. We return to those cases in §4.2. For the purposes of our regional typological overview, however, we counted cases such as Tape as exhibiting a binary distinction, even though this distinction may be one between NEUTRAL and irrealis rather than REALIS and irrealis.

In this study, we mostly took the language descriptions at face value, even when we could not verify whether the classification as realis and irrealis corresponds to our definitions. The entire list of languages, with our coding, is included as a supplement to this article.⁷

Among those forty-six languages without a binary realis/irrealis opposition are some languages that do not have any obligatory TAM marking at all, some that primarily distinguish aspectual or temporal rather than modal references within their TAM systems, and those that distinguish more than one modal-temporal domain. We discuss some of these latter cases in the following sections.

Just like other categories such as definiteness or aspect, irrealis is not systematically expressed by grammatical means in all languages, and its expression is certainly not equally distributed over language families and regions. In this section, we have presented a case study on Oceanic which demonstrates that, within this family, the irrealis/realis distinction is a central feature of TAM systems.

This study not only shows that binary realis/irrealis systems are by no means exceptional, but it also helps us understand the difference between those who are skeptical of irrealis and those specialists on specific language groups who perceive this notion to be useful in the contexts they work in. There has not been a quantitative typological work that considers the distribution of irrealis expressions since Bybee et al. 1994. The global sample of Bybee et al. 1994 included seven Oceanic languages. Two of the languages in their sample, Halia and Atchin, have excellent candidate markers for our definition of irrealis, but in Halia, there is no REALIS counterpart to the irrealis marker, and in Atchin, the paradigm is divided between realis, irrealis, and INDEFINITE (imperfective). In effect, none of the languages of their sample would meet our criteria for a binary realis/irrealis division.

When we compare our sample in Fig. 2 with the Bybee et al. sample in Figure 4, we can see how easy it is, even with a globally well-balanced sample, to miss significant regional trends, such as the realis/irrealis distinction in Oceanic and other language families and regions. In sum, the number of languages we have identified in our sample as exhibiting a binary realis/irrealis system contradicts the claim that the binary distinction is a mere artefact of structuralist assumptions.

3.2. MODAL-TEMPORAL SUBDIVISIONS IN THE IRREALIS DOMAIN. While our assumptions correctly predict a binary realis/irrealis division to be generally viable, they also

⁷ Supplements are available at <http://muse.jhu.edu/resolve/149>.

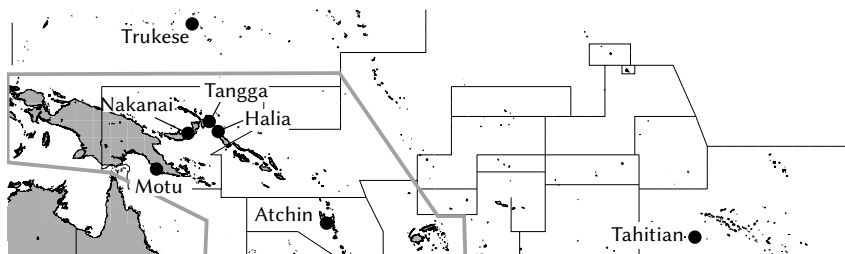


FIGURE 4. The Oceanic languages in the Bybee et al. (1994) sample.

show that the two domains can be further partitioned along both temporal and modal dimensions. As we argued in §2, the domain of irrealis in particular can further be divided into the possible and the counterfactual. These subdivisions are the reason why some languages have a nonbinary contrast between realis and other modalities. An example is the Oceanic language Daakaka, as discussed in von Prince 2015, 2018, and von Prince et al. 2018. The verbal complex of this language is given in Table 3.

SBJ.AGR	(=)TAM	(AUX)	(REDUP-)	Verb	(-RES)	(=TRANS)
na, ...	=m, ...	du, pwer	=ne

TABLE 3. Structure of the verbal complex in Daakaka (from von Prince et al. 2019).

The system of TAM markers in Daakaka is shown in Table 4. The three main modal-temporal distinctions in the system are between the (positive and negative) realis markers, the (positive and negative) potential markers, and the distal marker.⁸ The open polarity marker *doo* is restricted to embedded polarity questions, and the change-of-state marker *bwet* is found only in realis contexts with a corresponding aspectual denotation. In effect, while there is a realis marker, it is not opposed to a single irrealis marker. Instead, the domain of irrealis is split between the potential markers and the distal marker, which is the main topic of this section. In addition, there is interaction with polarity and with aspect, which we consider briefly in §4.2.

FUNCTION	GLOSS	ENCLITIC	PROCLITIC	MONOSYLLABIC
Positive realis	REAL	=m	mw=	mwe/mV
Negative realis	NEG.REAL			to
Positive potential	POT	=p	w=	wV
Negative potential	NEG.POT	=n	n=	nV
Distal	DIST	=t	t=	tV
Open polarity	OP			doo
Change of state	COS			bwet

TABLE 4. The system of TAM markers in Daakaka, adapted from von Prince 2015.

Through a targeted elicitation study in Daakaka, we showed in von Prince et al. 2018 that the division of labor between the realis, the potential, and the distal marker in Daakaka is roughly as follows: the distal marker overlaps with the realis in that it also refers to the actual past, in addition to the counterfactual past and present. The potential

⁸ The distal marker is named for its use in discontinuous past and counterfactual contexts; see von Prince 2018.

marker is restricted to future contexts and the possible present. This picture is summarized in Figure 5.⁹

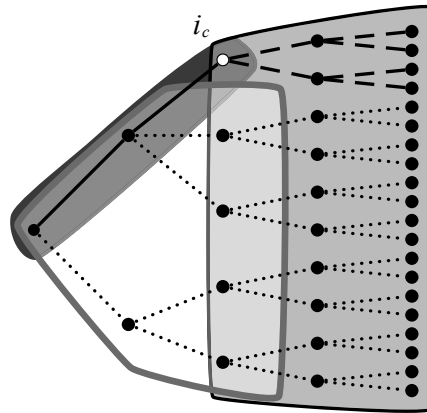


FIGURE 5. The main modal-temporal oppositions marked in Daakaka: realis (dark gray), potential (light gray), distal (white with gray outline). The distal marker overlaps with both the realis and the potential, as indicated by shading.

Thus, the distal marker is found, for example, in contexts expressing either possibilities of the past or the counterfactual present, as shown in 7 and 8.

(7) Daakaka

ma wese ka **te** me yan vilye s-an vi
 REAL enough COMP DIST come on place CLF3-AL.PL white.man
 ‘it may have come from a Western country’¹⁰ (4104)
 (lit. ‘... from the place of white men’)

(8) na=**t** ka pini or.

1SG=DIST fly fill place
 ‘[I wish I had wings,] I would fly around everywhere.’ (4209)

Future possibilities, by contrast, are expressed by the potential marker, just as the ordinary future is, in combination with the assertive marker *ka*.¹¹

(9) ko=**m** kuowilye ka ko=**p** vinye ne vis ane tes
 2SG=REAL know COMP 2SG=POT shoot with weapon TRANS sea
 ‘You can shoot [sharks] with a harpoon’ (1741)

⁹ We take the morphosyntactic paradigms at face value: that is, a marker contrasts with all of those markers that compete for the same morphosyntactic slot. The paradigmatic contrasts in Daakaka are therefore different from those of Mavea, for example, even as the realis/irrealis distinction arguably plays a role in both languages.

¹⁰ This is syntactically an embedded structure with the literal translation ‘it is possible that it came ...’. The same applies to example 9; see also von Prince & Margetts 2019.

¹¹ Abilities are sometimes thought to be properties of an individual, rather than a property of temporal-modal indices (Vetter 2013). We believe that this perspective may very well become instrumental to our understanding of certain expressions of ability in language. At the same time, many abilities seem to have habituality-like meanings: both *she plays the piano* and *she can play the piano* are amenable to an analysis that quantifies over indices in both the actual past and the possible future. The main difference seems to be that the generic sentence implies a certain regularity, which is missing in the ability sentence.

- (10) barvinye swa ka we luk teve-sye m-ada em
 grass one ASRT POT grow side.of-3SG.POSS CLF2-1DU.INCL house
 ‘a grass will grow next to our house’ (2523)

Daakaka therefore represents languages that do not implement a purely binary division between realis and irrealis domains, but that carve up the irrealis domain into smaller subdomains. The three-way distinction between realis, potential, and distal corresponds roughly, but not completely, to the three-way distinction between the actual, the counterfactual, and the possible (compare von Prince et al. 2018).

3.3. FUNCTIONAL SUBDIVISIONS OF THE IRREALIS DOMAIN. The modal-temporal domains outlined in §2 are not the only dimensions along which the irrealis domain can be further divided. Irrealis markers can also be described in terms of their discourse functions and the sentence types they occur in. Thus, the temporal-modal domain of possible futures is associated with various clause types, ranging from assertions about the distant and imminent future to imperatives, prohibitives, purpose clauses, and complements of verbs like *want*. Some languages use an irrealis or relative-future marker to cover all of these functions. But others may have more specialized markers for individual functions. In Oceanic languages, the following functions are frequently expressed by more specialized markers: IMPERATIVES, PROHIBITIVES, TIMITIVES, and IMMEDIATE FUTURES.

Imperatives and prohibitives are specific clause types associated with directive speech acts. Among our sample of Oceanic languages, we found accessible information on directives in fifty-four. Of those, twenty-six languages use an irrealis marker for directives. In eighteen, both positive and negative directives are expressed by only a bare verb (in combination with a negator, in the negative cases).¹² This set includes languages such as Banomi, in which bare verbs are also the default form in other irrealis environments. Nine languages in our sample use one TAM marker that is specific for imperatives, or one that is specific for prohibitives, or two markers, one for each type of directive. We discuss two examples showing the latter case below. Ifira-Mele was described as using an INTENTIONAL marker for imperatives (Clark 2002:688), although the existing accounts are too scarce for a precise characterization of this marker. Rotuman not only has a special marker for prohibitives, but also optionally uses word-order inversion from SV to VS to mark imperatives.

Directives, which comprise exhortatives (*Let's go!*) and third-person directives (*I want the knife* *IRR* *come*) in addition to imperatives and prohibitives, have been analyzed in various ways. Recent approaches treat them either as performative deontic modals (cf. Kaufmann 2011), as specifying an item on a to-do list (cf. Portner 2005), or as expressing a preference order on the worlds of the common ground (cf. Starr 2020). What all of these proposals have in common is that they implicate that the proposition is not currently true but can become true in the future. In this way, they are compatible with an irrealis marking.

Dedicated markers for timitive modality, which is sometimes also referred to as apprehensive or aversive modality, are relatively widespread among Oceanic languages (Lichtenberk 2016). This category is characterized by a combination of epistemic possibility and undesirability (*they might fight*). Timitives partially overlap with prohibitives in their function: a warning to an addressee about some possible, undesirable event beyond their immediate control, such as (*watch out*), *don't fall*, is simultaneously prohibi-

¹² Languages that use an irrealis marker to express directives generally also allow bare verb forms as imperatives, in addition to the irrealis-marked verb form. We still counted those as using irrealis.

tive and timitive. In some languages, this relation between timitives and prohibitives corresponds to identical or similar markers for both functions (cf. Smith-Dennis 2019).

Immediate futures are used to refer to imminent events and actions. In languages that distinguish between imminent and nonimminent futures, it is not always clear from the description whether this contrast instantiates a graded-tense system, or whether the imminent future marker would be more aptly characterized as an aspectual category.¹³ For our current purposes, the distinction is not crucial.

Table 5 shows how different functions map to temporal-modal subdomains of irrealis. Functions above the double rule are typically encoded by a single form in Oceanic languages, while functions below it are often expressed by more specialized markers.

FUNCTION	EXAMPLE	MODAL-TEMPORAL DOMAIN
Fut. assertions	It will rain tomorrow.	Possible fut.
Conditional	If you had been quiet, they would not have found us. If you were quiet, they would not find us. If you are quiet, they won't find us. If you were quiet, they didn't see us.	Ctf. past Ctf. pres./fut. Possible pres./fut. Possible past
WANT	I want [to visit Beijing].	Possible (rel.) future
WISH	I wish [I had tried harder/had more money/could visit Beijing].	Ctf. past/pres./fut.
Ability	She can make pasta.	Possible (rel.) fut.
Obligation	We have to leave.	Possible (rel.) fut.
Purpose	She shouted [to get their attention].	Possible (rel.) fut.
Timitive	She ran [lest she miss the train]. Watch out [you might fall]. They might be/have been sick.	Possible (rel.) fut. Possible (rel.) fut. Possible pres./past
Imperative	Sit down!	Possible fut.
Prohibitive	Don't touch that!	Possible fut.
Immin. future	I'm leaving.	Possible fut.

TABLE 5. Mappings from functions to modal-temporal subdomains of irrealis; inspired by Bugenhagen (1993). Ctf.: counterfactual.

Note that future/irrealis markers in Oceanic languages typically express RELATIVE FUTURE: that is, they are relative to the topic time, not necessarily the utterance time (see Klein 1994). Thus in sentences like *she wanted/was able/had [to run]*, the embedded predicate will typically be marked as future/irrealis even when the event time it refers to is prior to the time of utterance.¹⁴ In the literature, such markers are variably referred to as *relative futures* or as *prospective aspect*. We choose the former term, but this choice does not come with a strong commitment; our approach is compatible with either analysis.¹⁵

One example of a TAM system that distributes the range of irrealis functions over several different markers is Paamese. Crowley (1982) characterizes the system as shown in Table 6.

¹³ Copley (2008) does not analyze imminent events and actions, as in English *It is going to rain* or *Mary is about to leave*, as a special case of a future tense, but instead argues that such forms should be analyzed as cases of present tense. They express that at the reference time, a preparatory phase of an event—for example, a plan for an action—holds at present. The combination of aspectual semantics with branching time has been explored by Dowty (1977).

¹⁴ In unembedded contexts, topic time is usually identical with utterance time.

¹⁵ Irrespective of the label, such markers quantify over indices that are later than the topic time, which may be in the past.

Crowley (1982:129)	NOTES
realis	realis (zero-marked)
immediate	immediate future
distant	distant future
potential	timitive
prohibitive	prohibitive
imperative	imperative

TABLE 6. TAM categories in Paamese, according to Crowley (1982), with notes about correspondences to terms used in this article.

In addition to a zero-marked realis category, Paamese has one form to refer to the immediate future, one for the distant future, one for prohibitives, and one for imperatives. According to Crowley (1982:133), the ‘potential’ form ‘indicates that a non-real event may become real. It is often used as a warning that something the addressee regards as unpleasant might happen’. An example is given in 11.

(11) Paamese

Sim nemavul
 sii+mo na+mavulu
 bone.2SG 3SG.POT.break

‘Your bones might break.’ (i.e. ‘Watch out or your bones might break.’)

The description and the example suggest that the Paamese potential marker primarily expresses timitive modality. The closely related language Vatlongos (Southeast Ambrym), spoken on the neighboring island of Ambrym, has a very similar system. Ridge (2019) describes it as follows.

(12) Vatlongos TAM system (Ridge 2019)

Realis:

- Prior
- Nonfuture

Irrealis:

- Immediate future
- Distant future
- Apprehensive (corresponds to *timitive*)
- Imperative
- Prohibitive

Cases such as these illustrate how the irrealis domain (and to a lesser extent, the realis domain) may be further subdivided according to specific functions and clause types.

3.4. SUMMARY. We have seen that in many Oceanic languages, the TAM system does in fact center around a binary realis/irrealis divide. For those that have a realis/irrealis distinction in a nonbinary system, we have shown that the irrealis category is often split up into more fine-grained domains. In sum, the systems we see are fully compatible with the idea that the realis/irrealis distinction can be central in the organization of TAM systems, even in languages that further subdivide the irrealis domain along its temporal-modal dimensions or discourse functions.

The phenomenon is illustrated quite succinctly by a pair of languages discussed by de Haan (2012), Limbu (Tibeto-Burman) and Hualapai (Pai, Yuman). Both languages have a marker labeled *irrealis*. But in Limbu, this marker appears to be restricted to counterfactual situations of the present or past, while the Hualapai irrealis refers only to the immediate future. This contrast is shown by the following two examples, from de Haan 2012:108.

- (13) Limbu (Tibeto-Burman)
 yaŋ kott-u-ŋ-gɔ:ni iŋ-u-ŋ-ba.
 money have-3PL-1SG.AG-IRR buy-3PL-1SG.AG-IPFV
 ‘If only I had the money, I would buy it.’
- (14) Hualapai (Pai, Yuman)
 olo-h-ch ha: thi:-hi-k-wi
 horse-DEM-SUB water 3/3.drink-IRR-SS-AUX/be
 ‘The horse is going to drink the water.’

In effect, the Limbu ‘irrealis’ marker has no overlap at all with the Hualapai ‘irrealis’ marker. In this particular instance, the approach we have developed so far is sufficient to account for the mismatch between labels: we have already seen that the domain of irrealis can be divided into more fine-grained temporal and modal subdomains. Markers of individual languages might refer to only one of these. Thus, the two ‘irrealis’ markers can be understood as referring to two separate, nonoverlapping subdomains of irrealis, as illustrated in Figure 6.

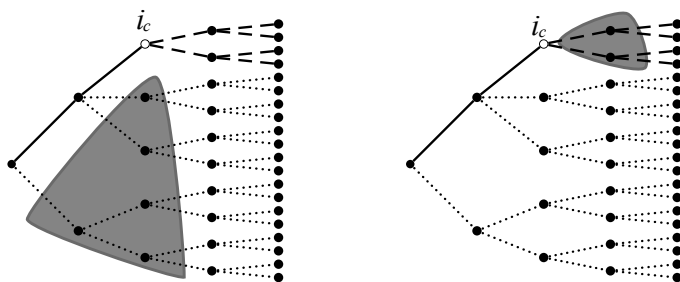


FIGURE 6. Suggestions for the references of the Limbu irrealis (left) and the Hualapai irrealis (right).

In cases like this, it is clear that the label *irrealis* is not entirely inappropriate for the respective markers, but it is ultimately misleading. For the purposes of crosslinguistic comparison, it would be better to use more precise terms that correspond more closely to the semantics of each marker, such as *counterfactual (past/present)* in the case of Limbu, or *immediate future* in the case of Hualapai.

A realis marker should refer to events of the actual past and present and may encode habitual meanings (also see §4.5), but nothing else. An irrealis marker should refer to the future (*all will be fine*), the possible present and past (*maybe they saw them*), and the counterfactual past, present, and future (*I wish [I had wings]; If I was you, [I would have run]; With just a bit of luck, they could have won*). If one of these interpretations is missing, it might be that it is blocked by a more specialized marker in the paradigm (see §4.1).

4. CROSSLINGUISTIC MISMATCHES AND CORRESPONDENCES.

4.1. THE EFFECTS OF BLOCKING. We have seen in §3.2 and §3.3 that temporal-modal markers may refer to only a subdomain of the irrealis domain. We have analyzed the corresponding cases as involving LEXICALLY determined differences between markers. In some other cases, however, a more plausible approach is to assume PRAGMATICALLY conditioned restrictions on the interpretation of irrealis markers. When a marker *A* covers the entire range of irrealis meanings except one, and there is another marker *B* in the language that exclusively expresses this specific meaning, marker *A* may in fact be an irrealis marker, whose range of interpretations is restricted by blocking.

The notion of blocking has been used in various contexts to explain the behavior of certain elements within the same morphosyntactic paradigm in terms of their paradigm-internal competition.¹⁶ The term was introduced by Aronoff (1976:43) to account for the behavior of derivational paradigms, and he defines it as follows: ‘*Blocking* is the non-occurrence of one form due to the simple existence of another’.

In semantics, Heim (1992) introduced a related principle, later referred to as MAXIMIZE PRESUPPOSITION, in order to derive the competition between the German definite and indefinite articles and the interpretation of the indefinite article. The main idea is that if you can choose between two expressions of the same paradigm, you should use the strongest one that is appropriate for your intended meaning. An expression *A* is usually thought to be STRONGER than an expression *B* if (the presupposition of) *A* entails (the presupposition of) *B*. This principle has since been leveraged for the derivation of interpretations of a wide range of expressions, including tense and aspect markers (Altshuler & Schwarzschild 2012).

Without committing to one particular framework or theoretical approach, we assume here that competition between TAM markers in the same paradigm can cause gaps in their interpretation. As an example, consider Nakanai, which has been described as having two irrealis markers, *ge* and *ga* (Johnston 1980:63ff.). The ‘nonimminent irrealis’ marker *ge* covers a wider range of contexts, including future reference, hypothetical, and counterfactual conditionals, complements of ‘want’, purpose clauses, and expressions of possibility. This is illustrated in 15.

- (15) Nakanai
 Eia **ge** tuga.
 3SG NIMN.IRR depart
 ‘He will/might/could/should depart.’ (Johnston 1980:63, our glosses)

The ‘imminent irrealis’ marker *ga*, by contrast, is reserved for contexts referring to imminent or frustrated actions.

- (16) a. Eau **ga** la-lea.
 1SG IMN.IRR REDUP-sick
 ‘I’m getting sick.’
 b. Eau **ga** tuga so-io, ouka.
 1SG IMN.IRR walk to-there no
 ‘I was about to proceed on, but didn’t (i.e. because something prevented me).’ (Johnston 1980:64; glosses adjusted from IRR to IMN.IRR)

We can model the difference between the two irrealis markers in Nakanai as indicated in Figure 7: the imminent irrealis marker refers to the indices directly preceding (and possibly including) i_c , where i_c is the topic time rather than the utterance time. The nonimminent irrealis marker appears to cover the entire irrealis domain, but is not used in contexts of imminent future reference. We assume that, in these contexts, its use is blocked by the availability of the more specific imminent marker.

The TAM system of Sisiqa (Solomon Islands) appears remarkably similar to that of Nakanai in terms of dividing the irrealis domain into REALIS, IRREALIS, and IMMEDIATE FUTURE. It has a system of thirty-three subject-TAM portmanteau markers that feature

¹⁶ It is this sense of the term *blocking* that we are appealing to here. There have also been other uses. For example, in Prince & Smolensky 2004 [1993] and much of the early literature on optimality theory, *blocking* denotes a relation between rules rather than a relation between expressions. In generative syntax, *blocking* can denote the property of a syntactic element that prevents the movement of another element.

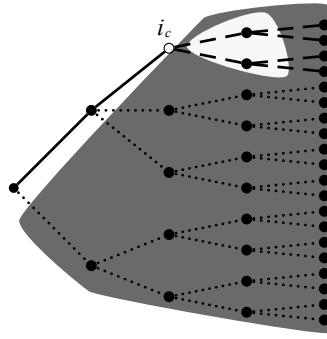


FIGURE 7. The two irrealis markers of Nakanai: the ‘nonimminent irrealis’ (shaded dark gray) and the ‘imminent irrealis’ (shaded white).

four person distinctions and three number distinctions in addition to the tripartite TAM values (Ross 2002:462).

In short, some irrealis markers do not show the full range of functions associated with irrealis. In cases like the Nakanai nonimminent irrealis, this function is a reference to the immediate future. Its absence can be derived from the fact that Nakanai has a more specialized marker that is restricted to this particular function and therefore blocks the use of the more general (nonimminent) irrealis marker. Of course, most data in cases like this one will also be compatible with the view that the interpretation gap in the irrealis marker is lexically conditioned. We would like to propose, though, that the Nakanai nonimminent irrealis marker, and similar cases crosslinguistically, can be treated as genuine irrealis markers without causing theoretical inconsistencies.

4.2. REALIS, IRREALIS, AND UNSPECIFIED. Finally, markers labeled *realis* sometimes show a wider distribution than expected. These markers typically occur in paradigms featuring portmanteau markers that simultaneously encode person-number features of the subject and TAM values. In some of these cases, the set of markers labeled *realis* appears to be in fact neutral with respect to TAM, encoding only subject agreement. Their usual interpretation as expressing realis reference derives from pragmatic defaults and from their contrast with other forms in the same system.

For example, Nafsan (Vanuatu) has been analyzed as expressing realis and irrealis by portmanteau subject proclitics (Thieberger 2006), similar to what we saw in §3.1. In her work on Nafsan, however, Krajinović (2020) found that the subject proclitics labeled *realis* appear in many contexts that should be incompatible with realis meanings.

A good illustration of contexts with irrealis meanings in which realis subject proclitics are found are the combinations of subject proclitics and TAM markers seen in two Nafsan corpora (Thieberger 2006, Krajinović 2017). While the irrealis and perfect subject proclitics occur only with the markers that match their TAM values, the ‘realis’ proclitics can occur with almost all TAM markers. For instance, the realis proclitics can combine with the perfect *pe* in all perfect contexts, including those with future reference, as shown in 17.

(17) Nafsan (Vanuatu)

Malnen $\tilde{p}a=ler$, **a=pe** mtir natus su.
 when 2SG.IRR=return 1SG.REAL=PRF write letter PFV

‘When you come back, I will have finished writing the letter.’

(AK1-083-01, based on Dahl 2000:FQ 17)

There are also other cases of the realis proclitics being used with future reference, as in 18 and 19.¹⁷

- (18) Ko **ru=fla**, **ru=fla**, mees **i=fla** ta
 or 3PL.REAL=might 3PL.REAL=might today 3SG.REAL=might NEG1
 nom, **i=fla** ta nom mau, matol **ru=mai**,
 finish 3SG.REAL=might NEG1 finish NEG2 tomorrow 3PL.REAL=come
 pkaskei pa pnut nawesien gar.
 same go close work 3PL.BEN
 ‘And if it is not finished today, if it is not all done, tomorrow they’ll come
 to their work.’ (085.017)

- (19) [There are black clouds in the sky.] It RAIN (very soon). (Dahl 2000:FQ 47)
 Us **i=wo** pelpel.
 rain 3SG.REAL=rain soon
 ‘It will rain soon.’ (AK1-086-01)

Another striking context in which realis proclitics are very frequent are protases of counterfactual conditional clauses with the conditional marker *f*, as in 20. While both realis and irrealis subject proclitics are felicitous in counterfactual conditional protases, only irrealis is felicitous in the apodosis of 20.

- (20) **a=f** mer mes matol, go n_fag nen kin a=tai
 1SG.REAL=COND CTF play tomorrow and sore REL COMP 1SG.REAL=cut
 nakn-i-k **ke=fo** mer makot
 finger-V-1SG.POSS 3SG.IRR=PROSP.IRR again break
 ‘If I played tomorrow, the sore I cut on my finger would bleed again.’
 (AK1-098-01, 00:03:39.185–00:03:57.063)

The fact that ‘realis’ proclitics appear in irrealis contexts in 17–20 shows that they are not restricted to past and present reference to the actual world and should not be analyzed as encoding the realis mood, according to our definition in 4. A similar situation is attested in Wogeo, a Western Oceanic language spoken on the island of Wogeo in the north of Papua New Guinea (Exter 2012, Krajinović 2020).

4.3. NEGATION, QUESTIONS. In this section, we revisit two additional contexts that have been associated with the domain of irrealis, mainly through Chafe 1995 and Mithun 1995, namely negation and interrogatives. In Oceanic, we do find a mild interaction between mood and negation. However, it is not the case that realis mood is incompatible with negation in the Oceanic context—in contrast to Caddo as described in Chafe 1995. Instead, there are sometimes two sets of negative markers, one for realis mood, one for irrealis.¹⁸ We saw in §3.2 that Daakaka has a positive and a negative set of realis and potential markers. In a convenience sample of fifty-one Oceanic languages, we found four others with a similar pattern. These are highlighted in Figure 8.

A similar picture is found in several Australian languages. In some of them, polarity is fused with TAM: some have one negation marker each for realis and irrealis clauses,

¹⁷ The choice of the general proclitic in 19 might be related to the choice of the temporal adverb. Examples including ‘in a few minutes’, ‘in the evening’, and ‘tomorrow’ were produced with irrealis and the prospective irrealis *fo*. Our referees suggested that cases of PLANNED or SETTLED future might play a role here (Kaufmann 2005, Copley 2009). However, examples such as 19, which is concerned with the weather, suggest otherwise. Alternatively, speaker commitment might play a role.

¹⁸ The situation in Kampan languages such as Nanti could be described in similar terms; compare Michael 2014.

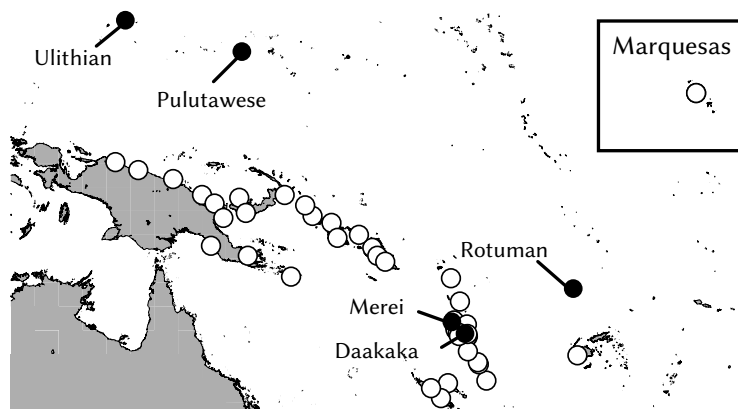


FIGURE 8. Black dots: languages that show significant interaction between negation and mood marking.
White dots: languages without such interaction.

and in others, negation is compatible only with irrealis marking (Miestamo 2005, Verstraete 2005, Phillips 2022).

Irrespective of negation's interaction with mood, we find that Oceanic languages have a general tendency to express it not through syntactically flexible and independent particles, but through special forms merged with subject agreement marking (e.g. Toqabaqita) or negative verbs with irrealis complements, as in Niufo'ou (also compare Hovdhaugen & Mosel 1999).

(21) Niufo'ou

Ne kailoa ke mahino tana leá kiaa koe?
 PST not SBJV clear POSS:A:3SG language all 2SG
 'Didn't you understand what he said?'

(Tsukamoto 1988:355, adapted glosses from Early 2002:861)

Interrogatives, by contrast, are neutral with respect to the realis/irrealis distinction in Oceanic and, as far as we could ascertain, most other realis/irrealis languages. The only exception to this rule that we found in a survey of sixty-seven languages is embedded polarity questions in Daakaka, for which there is a special TAM marker (compare §3.2). At the point of writing, we do not have sufficient data on questions restricted to irrealis to form a clear opinion about possible processes in the corresponding languages.

There are several ways to think about the relation between negation and reality status. Mithun (1995) suggests that languages may have different scope relations between reality status and polarity. Verstraete (2005) argues that negative statements and irrealis statements share a united semantic core of *NONACTUALIZATION*. In this view, some languages would extend irrealis markers to also cover negative statements. Krifka (2016) suggests that realis markers may presuppose the existence of actual events, which makes them unavailable for a simple compositional negator. All of these approaches are in principle compatible with our understanding of irrealis.

4.4. IRREALIS AND SUBJUNCTIVES. Another category that is often discussed in the context of irrealis is the subjunctive verb mood. The connection between these two ideas has been made early and often (e.g. Givón 1994, Mauri & Sansò 2016). These discussions are also picked up by de Haan (2012), who shows that, while there are certain correlations between subjunctives and the typical functions of irrealis, there is no one-to-one mapping. In his example of Latin, he observes that the future forms are labeled

indicative, and there is no future subjunctive. We would maintain that the Latin subjunctive forms are probably reasonable candidates for expressions of irrealis. The fact that the future forms are labeled *indicative* rather than *subjunctive* in traditional descriptions of Latin grammar is quite arbitrary; it could as well have been done the other way around. Objectively, we can see that there is no indicative/subjunctive distinction in verb forms referring to the future, which is in fact what we would expect from a realis/irrealis system.

In general, though, verb moods that have been labeled *subjunctive* are hard to pin down crosslinguistically and seem to perform a wide range of only loosely related functions. German Konjunktiv II is an exemplary expression of counterfactuality, except when coopted as an expression of indirect speech. Subjunctives in modern Romance languages, by contrast, appear to have emotive qualities in addition to modal ones, or to be lexically requested by specific verbs.

In fact, in some languages, especially in Romance, the semantic impact of the subjunctive is so opaque that some authors have disregarded it altogether. Thus, Noonan (1985:61) describes the subjunctive as a purely syntactic marker of subordination, without any semantic content of its own. Then again, irrealis verb forms, too, are very frequent in subordinate environments, and this has an obvious semantic motivation: when we talk about possible and counterfactual worlds, we need to restrict this potentially infinite set in order to be at all intelligible. So instead of saying, out of the blue, *I IRR fly to Paris*, we will often say *I wish/think/plan/want to IRR fly to Paris*. The embedding verb informs us about how the counterfactual worlds where *p* is true relate to the actual world and why they matter to us.

Moreover, we find that irrealis markers are usually anchored to the topic time rather than the utterance time (also see §3.3), in contrast to realis markers, and the topic time is often introduced by a superordinate clause.

In short, in some languages, subjunctives might in fact express a broad irrealis reference or refer to one of its subdomains such as counterfactuality. In other languages, the distribution of subjunctives may be similar to that of irrealis expressions, even though they may not strictly encode irrealis as their meaning.

4.5. HABITUALITY. Another category that has often been mentioned in the context of irrealis is the habitual, as in sentences such as *When I was small, we would always swim in the lake*. These cases are, at least optionally, marked as irrealis in quite a few languages (cf. Cristofaro 2004, de Haan 2012, Cleary-Kemp 2014, von Prince et al. 2019). One line of reasoning that may help us make sense of this puzzle comes from observations about generic passages. These are longer stretches of discourse that depict habitually reoccurring scenes in a sequence of sentences. As Carlson and Spejewski (1997) argue, the habitual aspect is a property of the entire text span, in which each clause can have individual and partially independent TAM properties, as illustrated below.

- (22) a. My grandmother used to bake the most wonderful pies every Saturday.
 b. She went to the orchard on Shady Lane early in the morning.
 b'. The alarm clock would have gone off at 6 a.m.
 c. She then would pick a basket each of apples and peaches.
 c'. Cows would be in the orchard mooing at her.

(from Carlson & Spejewski 1997:132; see also Tjuka et al. 2019)

In such cases, forms like English *would* appear to signal that the situation described holds within a contextually specified time frame, or is anchored to a specific time span or set of conditions. We believe that irrealis markers in such environments might be

used to highlight and maintain a contextually given topic time that is different from the utterance time. As mentioned in §3.3 and §4.4, irrealis markers are generally anchored to the topic time, while realis markers always appear to refer to the utterance time. In generic passages, the use of the irrealis marker might thus be a signal that the topic time is different from the utterance time and that the events described are situated relative to the topic time.

4.6. CONDITIONALS. De Haan (2012) describes conditionals as prototypical examples of irrealis contexts, but also says that, in some languages, realis markers occur in indicative conditionals. This is illustrated by the following example from Sinaugoro.

(23) Sinaugoro

bema bo daroa-ni nai tu kurabo
if 2SG.REAL.REM sweep-IPFV when top floor
'If you clean the floor, it will look nice.'

(de Haan 2012, ex. 49; originally from Tauberschmidt 1999:27)

We agree that this particular environment is not compatible with a genuine realis marker, since it is future-oriented, which entails that the Sinaugoro 'realis' marker is not a realis marker as we define it. However, our approach to irrealis and realis differs from previous treatments in that it predicts that realis markers are not incompatible with all types of conditionals. As we define it, realis markers denote a specific temporal-modal reference. They do not directly encode speaker commitment, veridicality, epistemic certainty, ACTUALIZATION OF EVENTS, or related notions, even though most utterances also have implications for these aspects of meaning.

Our approach predicts that conditional clauses referring to the actual past or present should be compatible with realis marking. Future-oriented and counterfactual conditionals, by contrast, are incompatible with realis as we understand it. While a systematic study of this prediction is beyond the scope of this article, finding particular languages that support it is not difficult. One such example is Lolovoli. The following two sentences are in realis mood, as they refer to the actual present and actual, habitual past, respectively.

(24) Lolovoli

[Vo ngire hate lo vale,] ra=mo ga-garu lolo tahi.
if 3NSG NEG LOC house 3NSG.S=REAL REDUP-swim in sea
'If they're not at the house, they're swimming in the sea.'

(actual present; Hyslop 2001:422, ex. 166)

(25) [Vo ra=mo domi-gi na loli boe Maevo,] ra=mo tai
if 3NSG.S=REAL think-APPL ACC make pig Maewo 3NSG.S=REAL chop
na aka-ra revol ngihie ...
ACC canoe-3NSG.POSS k.o.canoe EMPH

'If they planned a pig killing ceremony on Maewo, they would carve their
revol canoe ... '

(habitual past; Hyslop 2001:423, ex. 168)

Some languages, including Daakaka, differ from Lolovoli in that they never allow a realis marker in the protasis of a conditional clause, regardless of its temporal-modal reference.¹⁹ By contrast, conditionals about the possible future or about the counterfactual future and past are marked as irrealis in Lolovoli.

¹⁹ The protasis of conditional clauses is generally an interesting environment for TAM markers. In English and other languages, the simple past form can famously be used to refer to future counterfactual contexts, as in *If you went to Paris tomorrow, you could have a croissant and espresso for breakfast*. In Abaza, a verb form that usually expresses discontinuous past loses this interpretation in the protasis of conditionals (Klyagina

- (26) [Vo ne=ni vei didihi=e,] na=ni godo gimiu.
 if 2NSG.S=IRR make spill:APPL=3SG.O 1SG.S=IRR chase 2NSG
 ‘If you spill it, I’ll whip you.’ (possible future; Hyslop 2001:423, ex. 171)
- (27) [Vo na=ni geni na gatabola ngihie,] na=ni geni=e
 if 1SG.S=IRR eat ACC dragon.plum that 1SG.S=IRR eat=3SG.O
 mwerehilogo?
 how
 ‘If I were to eat that dragon plum, how would I eat it?’
 (counterfactual future; Hyslop 2001:423, ex. 172)
- (28) [Vo nu vei mwere ngaha,] na=ni mate.
 if 1SG.S:TEL do like this 1SG.S=IRR die
 ‘If I had done that I would have died.’
 (counterfactual past; Hyslop 2001:423, ex. 173)

Note that the division between realis and irrealis conditionals is not the same as the division between subjunctive (counterfactual) and indicative conditionals, since indicative conditionals traditionally include sentences with future reference.

4.7. IRREALIS AND MODALITY. Obviously, the concept of irrealis is also intimately related to various types of modality, as expressed in English by auxiliaries such as the following.

- (29) The cook must be the thief. (epistemic necessity)
- (30) First-graders may stay inside the classroom. (deontic possibility)

And indeed, these meanings are typically expressed by irrealis expressions in the languages that have them, often in combination with more specific expressions of possibility and necessity (see also §4.4). In the following example, the irrealis marker combines with *mas*²⁰ to express deontic necessity in Lolovoli.

- (31) Lolovoli
 Re maresu ra=ni mas vano lo sigulu.
 PL child 3NSG.S=IRR must go LOC school
 ‘The children must go to school.’ (Hyslop 2001:256, ex. 111)

In eliciting the ‘Tom and Mittens’ storyboard (Rolka & Cable 2010), Guérin (2017) also shows a modal auxiliary expressing epistemic necessity in combination with irrealis marking in Mavea.

- (32) Mavea
 ro mo-v i-ria to na tanga viria
 then 3SG-say 3SG.IRR-must stay LOC bag black
 ‘Then he said, “He must be in the black basket!”’ (VG20171031.027)

The easiest way to model traditional approaches to modal meanings in the context of our framework is an intersection between indices of a specific temporal-modal domain and lexically or contextually provided accessibility relations such as epistemic or deontic accessibility. For example, among contextually relevant indices of the possible fu-

2020). With regard to the virtually identical situation with the distal marker in Daakaka, von Prince (2018) argues that the lack of contrast with the realis marker in this environment leads to the loss of the discontinuous interpretation. We also saw in §4.2 above that a marker labeled *realis* occurs in the protasis of counterfactual conditionals, and this, among other observations, has led us to conclude that it does not lexically encode a realis reference.

²⁰ This is borrowed from Bislama *mas*, which in turn goes back to English *must*. This is a frequent borrowing in Vanuatu languages.

ture, you might further want to pick out only those that conform to a certain set of rules. This would give you a future-oriented deontic modal. Generally speaking, we therefore expect to find irrealis markers in most modal contexts (also see von Prince & Margetts 2019). However, some modal contexts are also compatible with realis markers. Thus, epistemic attitude can be expressed not only at the level of the core of the sentence, but also at a higher level of the sentence periphery. Compare *The cat **must be** the culprit* to *In my opinion, the cat **is** the culprit*. In our approach, the first utterance corresponds to saying *Both the relevant (epistemically accessible) actual and counterfactual worlds are such that the cat is the culprit*; the second utterance corresponds to *The model of reality in my mind is such that the cat is the culprit in the actual world*. Another example of a modal context that is in principle compatible with realis marking is circumstantial and dynamic meanings. To the extent that circumstantial possibilities, as in *Hydrangeas can grow here*, are based on the observation that hydrangeas have grown here in the past or present, these contexts can be interpreted as quantifications over both actual past/present and possible future indices. The same reasoning extends to utterances such as *Hilda can swim* (see e.g. Löwenstein 2017:25ff.).

5. CONCLUSION. For any given label, be it *past tense*, *plural*, or *transitive*, it is trivial to find expressions to which they have been applied but which do not conform entirely to a common definition. Thus, past-tense markers in languages like English can refer to (counterfactual) future contexts in the apodosis of a conditional. And not all past contexts are referred to by the simple past in English, as it competes with the present perfect, past perfect, and with *would* in habitual past contexts. Other languages, such as Luganda, have more than just one past tense, depending on the temporal remoteness from the present. And yet other languages, such as Hausa, do not have grammaticalized tense markers at all. These observations have not prompted us to abandon the concept of ‘past tense’, or ‘tense’ more generally, as a meaningful comparative notion. Most researchers would agree that, for a large number of languages, finite verb forms encode some kind of temporal reference and that, in these languages, the past is one of the most prominent temporal domains. In this article, we have argued that the same case can be made for the notion of irrealis: TAM systems of many languages are structured around a basic realis/irrealis distinction. Even though we find a lot of variation at the fringes, we also find a broad shared core of functions between irrealis markers of different languages. Most importantly, irrealis markers are used for talking about future and counterfactual events. They are used in future and counterfactual conditionals, in complement clauses of verbs expressing wishes and intentions, in purpose clauses, and in expressions of ability and obligation.

They are usually found in imperatives and prohibitives and usually also play a role in expressions of epistemic possibility and necessity, often in combination with more specific expressions. And they sometimes show an interaction with polarity. We have discussed how minor deviations from these functions do not necessarily preclude the categorization of a marker as irrealis, since language-specific syntagmatic and paradigmatic processes can cause a certain amount of variation. However, markers referring exclusively to counterfactual indices, such as the Sinaugoro ‘irrealis’, or only to the immediate future, like the ‘imminent irrealis’ in Nakanai, should probably receive more specific labels.

We have argued that the tripartite approach to branching time as developed by von Prince (2019) can be used to develop a precise definition of irrealis and more concrete delineations of its scope and expected functions. This approach also allows for a new understanding of its meaning in relation to more established categories such as tense

and aspect, and of crosslinguistic variation with respect to realis/irrealis systems. We have sketched out the implications of our theoretical assumptions for the relation between irrealis and phenomena such as subjunctives, habituals, conditionals, and various modal meanings. We believe that our approach shines a light on some previously understudied phenomena and theoretical questions, and close with the hope that it will stimulate new empirical and theoretical work in this domain.

REFERENCES

- ALTSHULER, DANIEL, and ROGER SCHWARZSCHILD. 2012. Moment of change, cessation implicatures and simultaneous readings. *Proceedings of Sinn und Bedeutung* 17.45–62. Online: <https://ojs.ub.uni-konstanz.de/sub/index.php/sub/article/view/332>.
- ARONOFF, MARK. 1976. *Word formation in generative grammar*. (Linguistic Inquiry monographs 1.) Cambridge, MA: MIT Press.
- AUTENRIETH, GEORG. 1875. *Grundzüge der Moduslehre im Griechischen und Lateinischen*. Erlangen: Junge.
- BAKER, MARK, and LISA TRAVIS. 1997. Mood as verbal definiteness in a ‘tenseless’ language. *Natural Language Semantics* 5.213–69. DOI: 10.1023/A:1008262802401.
- BARBOUR, JULIE. 2011. Exploring mood in Neverver. *Oceanic Linguistics* 50.198–220. DOI: 10.1353/ol.2011.0012.
- BHAT, D. N. S. 1999. *The prominence of tense, aspect and mood*. Amsterdam: John Benjamins.
- BICKERTON, DEREK. 1975. *Dynamics of a creole system*. Cambridge: Cambridge University Press.
- BLEWETT, STEPHEN C. 1991. Irrealis in Manam discourse. *Language and Linguistics in Melanesia* 22.1–20. Online: <https://uploads.documents.cimpress.io/v1/uploads/656f9eb1-f41e-4f57-8f4d-c79afaec2358~110/original?tenant=vbu-digital>.
- BUGENHAGEN, ROBERT D. 1993. The semantics of irrealis in the Austronesian languages of Papua New Guinea. *Topics in descriptive Austronesian linguistics*, ed. by Ger P. Reesink, 1–39. Leiden: Rijksuniversiteit Leiden.
- BYBEE, JOAN L. 1998. ‘Irrealis’ as a grammatical category. *Anthropological Linguistics* 40(2).257–71. Online: <https://www.jstor.org/stable/30028628>.
- BYBEE, JOAN L., and SUZANNE FLEISCHMAN (eds.) 1995. *Modality in grammar and discourse*. (Typological studies in language 32.) Amsterdam: John Benjamins. DOI: 10.1075/tsl.32.
- BYBEE, JOAN L.; REVERE PERKINS; and WILLIAM PAGLIUCA. 1994. *The evolution of grammar: Tense, aspect, and modality in the languages of the world*. Chicago: University of Chicago Press.
- CALLAGHAN, CATHERINE A. 1998. Lake Miwok irrealis. *Anthropological Linguistics* 40(2). 228–33. Online: <https://www.jstor.org/stable/30028625>.
- CAPELL, ARTHUR. 1971. The Austronesian languages of Australian New Guinea. *Linguistics in Oceania* (Current trends in linguistics 8), ed. by J. D. Bowen, 240–340. DOI: 10.1515/9783111418827-010.
- CARLSON, GREG N., and BEVERLY SPEJEWSKI. 1997. Generic passages. *Natural Language Semantics* 5(2).101–65. DOI: 10.1023/A:1008264518504.
- CHAFE, WALLACE. 1995. The realis-irrealis distinction in Caddo, the Northern Iroquoian languages, and English. In Bybee & Fleischman, 349–65.
- CHUNG, SANDRA, and ALAN TIMBERLAKE. 1985. Tense, aspect, and mood. *Language typology and syntactic description, vol. 3: Grammatical categories and the lexicon*, ed. by Timothy Shopen, 202–58. Cambridge: Cambridge University Press.
- CLARK, ROSS. 2002. Ifira-Mele. In Lynch et al., 681–93.
- CLEARY-KEMP, JESSICA. 2014. Irrealis as verbal non-specificity in Koro (Oceanic). *Berkeley Linguistics Society* 40.20–41. DOI: 10.3765/bls.v40i0.3131.
- COMRIE, BERNARD. 1985. *Tense*. (Textbooks in linguistics.) Cambridge: Cambridge University Press.
- CONDORAVDI, CLEO. 2002. Temporal interpretation of modals: Modals for the present and for the past. *The construction of meaning*, ed. by David Beaver, L. Casillas, Brady Clark, and Stefan Kaufmann, 59–88. Stanford, CA: CSLI Publications.

- COPLEY, BRIDGET. 2008. The plan's the thing: Deconstructing futurate meanings. *Linguistic Inquiry* 39(2).261–74. DOI: 10.1162/ling.2008.39.2.261.
- COPLEY, BRIDGET. 2009. *The semantics of the future*. London: Routledge.
- CRISTOFARO, SONIA. 2004. Past habituals and irrealis. *Irrealis and irreality*, ed. by Yury A. Lander, Vladimir A. Plungian, and Anna Yu. Urmanchieva, 256–72. Moscow: Gnosis.
- CRISTOFARO, SONIA. 2012. Descriptive notions vs. grammatical categories: Unrealized states of affairs and 'irrealis'. *Language Sciences* 34(2).131–46. DOI: 10.1016/j.langsci.2011.08.001.
- CROWLEY, TERRY. 1982. *The Paamese language of Vanuatu*. (Pacific linguistics B-87.) Canberra: The Australian National University. DOI: 10.15144/PL-B87.
- CROWLEY, TERRY. 2006. *Tape: A declining language of Malakula (Vanuatu)*. (Pacific linguistics 575.) Ed. by John Lynch. Canberra: The Australian National University. Online: <http://hdl.handle.net/1885/146275>.
- DAHL, ÖSTEN. 2000. The future time reference questionnaire. *Eurotyp, vol. 6: Tense and aspect in the languages of Europe*, ed. by Östen Dahl, 789–99. Berlin: De Gruyter. DOI: 10.1515/9783110197099.bm.
- DE HAAN, FERDINAND. 2012. Irrealis: Fact or fiction? *Language Sciences* 34(2).107–30. DOI: 10.1016/j.langsci.2011.06.016.
- DEMPWOLFF, OTTO. 1939. *Grammatik der Jabem Sprache auf Neuguinea*. Hamburg: Friederichsen de Gruyter.
- DEMPWOLFF, OTTO. 2005 [1939]. *Grammar of the Jabêm language in New Guinea*. (Oceanic Linguistics special publication 32.) Trans. and ed. by Joel Bradshaw and Francisc Czobor. Honolulu: University of Hawai'i Press. Online: <https://www.jstor.org/stable/20006782>.
- DIXON, ROBERT M. W. 1980. *The languages of Australia*. Cambridge: Cambridge University Press.
- DOWTY, DAVID R. 1977. Toward a semantic analysis of verb aspect and the English 'imperfective' progressive. *Linguistics and Philosophy* 1.45–77. DOI: 10.1007/BF00351936.
- EARLY, ROBERT. 2002. Niufo'ou. In Lynch et al., 848–64.
- ELLIOTT, JENNIFER R. 2000. Realis and irrealis: Forms and concepts of the grammaticalisation of reality. *Linguistic Typology* 4(1).55–90. DOI: 10.1515/lity.2000.4.1.55.
- EXTER, MATS. 2012. 'Realis' and 'irrealis' in Wogeo: A valid category? *Melanesian languages on the edge of Asia: Challenges for the 21st century* (LD&C special publication 5), ed. by Nicholas Evans and Marian Klamer, 174–90. Honolulu: University of Hawai'i Press. Online: <http://hdl.handle.net/10125/4564>.
- FOLEY, WILLIAM A. 1986. *The Papuan languages of New Guinea*. Cambridge: Cambridge University Press.
- GIVÓN, TALMY. 1982. Tense-aspect modality: The creole proto-type and beyond. *Tense-aspect: Between semantics & pragmatics*, ed. by Paul J. Hopper, 115–63. Amsterdam: John Benjamins.
- GIVÓN, TALMY. 1994. Irrealis and the subjunctive. *Studies in Language* 18(2).265–337. DOI: 10.1075/sl.18.2.02giv.
- GUÉRIN, VALÉRIE. 2006. Documentation of Mavea. *Endangered languages archive*. London: SOAS. Online: <https://elar.soas.ac.uk/Collection/MPI67426>, accessed on March 1, 2017.
- GUÉRIN, VALÉRIE. 2011. *A grammar of Mavea: An Oceanic language of Vanuatu*. Honolulu: University of Hawai'i Press.
- GUÉRIN, VALÉRIE. 2017. Storyboards in Mavea. Digital collection VG2 managed by PARADISEC at catalog.paradisec.org.au. DOI: 10.26278/DYTM-GV63.
- HASPELMATH, MARTIN. 2010. Comparative concepts and descriptive categories in crosslinguistic studies. *Language* 86(3).663–87. DOI: 10.1353/lan.2010.0021.
- HEIM, IRENE. 1992. Artikel und Definitheit. *Semantics: An international handbook of contemporary research*, ed. by Arnim von Stechow and Dieter Wunderlich, 487–535. Berlin: De Gruyter. DOI: 10.1515/9783110126969.7.487.
- HOVDHAUGEN, EVEN, and ULRIKE MOSEL (eds.) 1999. *Negation in Oceanic languages: Typological studies*. (Studies in Austronesian languages.) Munich: LINCOM Europa.
- HYSLOP, CATRIONA. 2001. *The Lolovoli dialect of the North-East Ambae language, Vanuatu*. (Pacific linguistics 515.) Canberra: The Australian National University. DOI: 10.15144/PL-515.

- IATRIDOU, SABINE. 2000. The grammatical ingredients of counterfactuality. *Linguistic Inquiry* 31(2).231–70. DOI: 10.1162/002438900554352.
- JOHNSTON, RAYMOND LESLIE. 1980. *Nakanai of New Britain: The grammar of an Oceanic language*. (Pacific linguistics B-70.) Canberra: The Australian National University. DOI: 10.15144/PL-B70.
- KAUFMANN, MAGDALENA. 2011. *Interpreting imperatives*. Dordrecht: Springer.
- KAUFMANN, STEFAN. 2005. Conditional truth and future reference. *Journal of Semantics* 22(3).231–80. DOI: 10.1093/jos/ffh025.
- KINKADE, DALE. 1998. Is irrealis a grammatical category in Upper Chehalis? *Anthropological Linguistics* 40(2).234–44. Online: <https://www.jstor.org/stable/30028626>.
- KLEIN, WOLFGANG. 1994. *Time in language*. London: Routledge.
- KLYAGINA, EVGENYA. 2020. Semantics and pragmatics of past tenses in Abaza. Moscow: HSE University term paper.
- KRAJINOVIĆ, ANA. 2017. Nafsan recordings (AK1). Digital collection managed by PARADISEC at catalog.paradisec.org.au. DOI: 10.4225/72/5b2d1d0a315a2.
- KRAJINOVIĆ, ANA. 2020. *Tense, mood, and aspect expressions in Nafsan (South Efate) from a typological perspective*. Berlin: Humboldt-Universität zu Berlin, and Melbourne: University of Melbourne dissertation. Online: <http://hdl.handle.net/11343/237469>.
- KRIFKA, MANFRED. 2016. Realis and non-realis modalities in Daakie (Ambrym, Vanuatu). *Proceedings of Semantics and Linguistic Theory (SALT)* 26.566–83. DOI: 10.3765/salt.v26i0.3865.
- LICHTENBERK, FRANTISEK. 2016. Modality and mood in Oceanic. *The Oxford handbook of modality and mood*, ed. by Jan Nuyts and Johan van der Auwera, 330–61. Oxford: Oxford University Press. DOI: 10.1093/oxfordhb/9780199591435.013.15.
- LÖWENSTEIN, DAVID. 2017. *Know-how as competence: A Rylean responsibilist account*. Frankfurt am Main: Vittorio Klostermann.
- LYNCH, JOHN; MALCOLM ROSS; and TERRY CROWLEY (eds.) 2002. *The Oceanic languages*. (Language family series.) London: Curzon.
- MARTIN, LAURA. 1998. Irrealis constructions in Mocho (Mayan). *Anthropological Linguistics* 40(2).198–213. Online: <https://www.jstor.org/stable/30028623>.
- MAURI, CATERINA, and ANDREA SANSÒ. 2016. The linguistic marking of (ir)realis and subjunctive. *The Oxford handbook of modality and mood*, ed. by Jan Nuyts and Johan van der Auwera, 166–95. Oxford: Oxford University Press. DOI: 10.1093/oxfordhb/9780199591435.013.9.
- MCGREGOR, WILLIAM B., and TAMSIN WAGNER. 2006. The semantics and pragmatics of irrealis mood in Nyulnyulan languages. *Oceanic Linguistics* 45(2).339–79. Online: <http://www.jstor.org/stable/4499968>.
- MICHAEL, LEV. 2014. The Nanti reality status system: Implications for the typological validity of the realis/irrealis contrast. *Linguistic Typology* 18(2).251–88. DOI: 10.1515/lingty-2014-0011.
- MIESTAMO, MATTI. 2005. *Standard negation: The negation of declarative verbal main clauses in a typological perspective*. Berlin: Mouton de Gruyter. DOI: 10.1515/9783110197631.
- MITHUN, MARIANNE. 1995. On the relativity of irrealis. In Bybee & Fleischman, 367–88.
- NOONAN, MICHAEL. 1985. Complementation. *Language typology and syntactic description, vol. 2: Complex constructions*, ed. by Timothy Shopen, 42–140. Cambridge: Cambridge University Press.
- PALMER, FRANK R. 1986. *Mood and modality*. 2nd edn. Cambridge: Cambridge University Press.
- PHILLIPS, JOSH. 2022. Negation. *The Oxford handbook of Australian languages*, ed. by Claire Bowern. Oxford: Oxford University Press, to appear.
- PORTNER, PAUL. 2005. The semantics of imperatives within a theory of clause types. *Proceedings of Semantics and Linguistic Theory (SALT)* 14.235–52. DOI: 10.3765/salt.v14i0.2907.
- PORTNER, PAUL. 2009. *Modality*. Oxford: Oxford University Press.
- PRINCE, ALAN, and PAUL SMOLENSKY. 2004 [1993]. *Optimality theory: Constraint interaction in generative grammar*. Cambridge, MA: Blackwell.
- PRIOR, ARTHUR NORMAN. 1957. *Time and modality*. Oxford: Oxford University Press.
- PRIOR, ARTHUR NORMAN. 1967. *Past, present and future*. Oxford: Oxford University Press.

- RIDGE, ELEANOR. 2019. *Variation in Vatlongos verbal morphosyntax: Speaker communities in Southeast Ambrym and Mele Maat*. London: SOAS, University of London dissertation. DOI: 10.25501/SOAS.00032205.
- ROBERTS, JOHN R. 1990. Modality in Amele and other Papuan languages. *Journal of Linguistics* 26(2).363–401. DOI: 10.1017/S0022226700014717.
- ROLKA, MATTHEW, and SETH CABLE. 2010. Tom and Mittens. *Totem field storyboards*. Online: http://www.totemfieldstoryboards.org/stories/tom_and_mittens/, accessed September 21, 2017.
- ROSS, MALCOLM. 2002. Sisiqa. In Lynch et al., 456–66.
- SAPIR, EDWARD. 1930. Southern Paiute, a Shoshonean language. *Proceedings of the American Academy of Arts and Sciences* 65.1–296. DOI: 10.2307/20026309.
- SMITH-DENNIS, ELLEN. 2019. *Don't be fearful, lest it be undesirable*: Prohibitives and precautions in Papapana. Paper presented at the 11th International Austronesian and Papuan Languages and Linguistics Conference (APLL11), Leiden.
- STARR, WILLIAM B. 2020. A preference semantics for imperatives. *Semantics and Pragmatics* 13:6. DOI: 10.3765/sp.13.6.
- TAUBERSCHMIDT, GERHARD. 1999. *A grammar of Sinaugoro: An Austronesian language of the Central Province of Papua New Guinea*. (Pacific linguistics C-143.) Canberra: The Australian National University. DOI: 10.15144/PL-C143.
- TFS WORKING GROUP. 2010. The fortune teller. *Totem field storyboards*. Online: http://www.totemfieldstoryboards.org/stories/fortune_teller/, accessed September 21, 2017.
- THIEBERGER, NICK. 2006. *A grammar of South Efate: An Oceanic language of Vanuatu*. (Oceanic Linguistics special publication 33.) Honolulu: University of Hawai'i Press.
- THOMASON, RICHMOND H. 1970. Indeterminist time and truth-value gaps. *Theoria* 36.264–81. DOI: 10.1111/j.1755-2567.1970.tb00427.x.
- THOMASON, RICHMOND H. 1984. Combinations of tense and modality. *Handbook of philosophical logic, vol. 2: Extensions of classical logic*, ed. by Dov M. Gabbay and Franz Guenther, 135–65. Dordrecht: Springer. DOI: 10.1007/978-94-009-6259-0_3.
- TJUKA, ANNIKA; LENA WEIßMANN; and KILU VON PRINCE. 2019. Habitual aspect as a property of text spans. *Human language technologies as a challenge for computer science and linguistics: Proceedings of 9th Language & Technology Conference*, ed. by Zygmunt Vetulani and Patrick Paroubek, 195–99. Poznań: Wydawnictwo Nauka i Innowacje.
- TRASK, ROBERT LAWRENCE. 1993. *A dictionary of grammatical terms in linguistics*. London: Routledge.
- TSUKAMOTO, AKIHISA. 1988. *The language of Niuafo'ou Island*. Canberra: The Australian National University dissertation. DOI: 10.25911/5d78d861861ac.
- VAN GIJN, RIK, and SONJA GIPPER. 2009. Irrealis in Yurakaré and other languages: On the cross-linguistic consistency of an elusive category. *Cross-linguistic semantics of tense, aspect, and modality*, ed. by Lotte Hogeweg, Helen de Hoop, and Andrej Malchukov, 155–78. Amsterdam: John Benjamins.
- VAN LINDEN, AN, and JEAN-CHRISTOPHE VERSTRAETE. 2008. The nature and origins of counterfactuality in simple clauses: Cross-linguistic evidence. *Journal of Pragmatics* 40(11).1865–95. DOI: 10.1016/j.pragma.2008.03.008.
- VERSTRAETE, JEAN-CHRISTOPHE. 2005. The semantics and pragmatics of composite mood marking: The non-Pama-Nyungan languages of northern Australia. *Linguistic Typology* 9(2).223–68. DOI: 10.1515/lity.2005.9.2.223.
- VETTER, BARBARA. 2013. 'Can' without possible worlds: Semantics for anti-Humeans. *Philosophers' Imprint* 13(16).1–27. Online: <http://hdl.handle.net/2027/spo.3521354.0013.016>.
- VON PRINCE, KILU. 2015. *A grammar of Daakaka*. Berlin: De Gruyter Mouton.
- VON PRINCE, KILU. 2018. Paradigm-induced implicatures of TAM-expression: The case of the Daakaka distal. *Proceedings of Sinn und Bedeutung* 21.969–84. Online: <https://ojs.ub.uni-konstanz.de/sub/index.php/sub/article/view/178>.
- VON PRINCE, KILU. 2019. Counterfactuality and past. *Linguistics and Philosophy* 42.577–615. DOI: 10.1007/s10988-019-09259-6.
- VON PRINCE, KILU; ANA KRAJINOVIĆ; MANFRED KRIFKA; VALÉRIE GUÉRIN; and MICHAEL FRANJIEH. 2018. Mapping irreality: Storyboards for eliciting TAM contexts. *Proceedings of Linguistic Evidence 2018*. DOI: 10.15496/publikation-32623.

- VON PRINCE, KILU; ANA KRAJINović; ANNA MARGETTS; NICK THIEBERGER; and VALÉRIE GUÉRIN. 2019. Habituals in four Oceanic languages of Melanesia. *STUF—Language Typology and Universals* 72(1).21–66. DOI: 10.1515/stuf-2019-0002.
- VON PRINCE, KILU, and ANNA MARGETTS. 2019. Expressing possibility in two Oceanic languages. *Studies in Language* 43(3).628–67. DOI: 10.1075/sl.18051.pri.

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[Received 7 April 2020;
revision invited 13 October 2020;
revision received 13 April 2021;
revision invited 4 August 2021;
revision received 17 September 2021;
accepted pending revisions 18 September 2021;
revision received 28 September 2021;
accepted 29 September 2021]