SSWL and Terraling: some supporting documents

All property definitions on the Terraling site give explicit instructions, elicitation contexts and examples. 

*This document does not include additional supporting materials for:*

*navigating Terraling (navigating Terraling

Subject properties: pivots/subjects in existential constructions here and (here

definite and generic subjects (supporting documents in progress)

properties in current development (Ivory Coast)

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and

Hilda Koopman

July 10, 2018

Contents

1 Why SSWL/ Terraling? An introduction. ............................................ 2
  1.1 Need for a syntactic/semantic database that can support current and future theoretical research ................................. 2

2 Current data sets .................................................................................. 3

3 Structure of current SSWL properties (as of July 10, 2018.) ............ 5
  3.1 (some) Basic word order typology: 32 properties ....................... 5
  3.2 How is SSWL different from WALS here? On the notion of 'dominant' order and problems related to 'dominant' order. ....... 5
  3.3 Negative properties ..................................................................... 7
  3.4 Polar questions and answers ......................................................... 7
  3.5 V-second and Aux selection .......................................................... 7
  3.6 Universal 20 properties (Dem A N and Dem Num A) .................. 7
  3.7 Properties of definites and indefinite noun phrases ..................... 7
  3.8 Properties in various stages of development ............................... 7

4 Towards a cartography of the D region: Bare nouns and "Articles" (Demonstratives, case, classifiers, and noun classes.) ......... 8
  4.1 Variables included in the properties .............................................. 8
  4.2 Results and discussion ................................................................. 11

5 Negative existential contexts: on the form(s) of indefinite subjects: bare, articles, NPIs, "special" forms. ......................... 12
  5.1 Background ................................................................................. 12
  5.2 Expanding the current coding schema ........................................ 13
  5.3 There are two "articles" in French affirmative existentials, but only one in negative existentials. ................................. 13
  5.4 Indefinite Mass Nouns in negative existential contexts .............. 14
    5.4.1 Broadening the notion of 'article' in negative contexts: English NPIs and the negative determiner no: ................... 14
    5.4.2 French and Italian ................................................................. 15
    5.4.3 Expanding the typology: more languages ............................ 15
    5.4.4 Croatian: 'Genitive of negation' (Slavic) ......................... 16
    5.4.5 Mandarin Chinese ............................................................... 17
    5.4.6 Gungbe .................................................................................. 17
    5.4.7 Samoan (Polynesian) ........................................................... 18
    5.4.8 Impossible languages ............................................................ 19
  5.5 Singular Count nouns: negative existential contexts: indefinite articles, the numeral 'one', and NPIs ............................. 19
    5.5.1 More than one strategy: When 'un' does not disappear, and more about the possible appearance of 'aucun' ............ 20
1 Why SSWL/ Terraling? An introduction.

1.1 Need for a syntactic/semantic database that can support current and future theoretical research

- Internal to formal linguistics
  - The role of comparative syntax and future theoretical development.
  - Possible application of current available and future research tools (phylogenetics,...)

- External to formal linguistics
  - Database to complement and offer an alternative to WALS.
  - Database were variability is not hidden, properties are finegrained, which do not only code what we already know, but allow future discovery and exploration.
  - General education of the public at large.

**SSWL:** (Syntactic (and Semantic) Structures of the World’s Languages), (Chris Collins, Richard Kayne), Hilda Koopman and Dennis Shasha (Prof Computer Science NYU, plant genomics)). Pilot: Pilot: http://sswl.railsplayground.net/
Current: Terraling http://test.terraling.com/

**Goal:** develop an open-ended database (for the community by the community) of the (morpho-)syntactic structures of the world’s languages that can serve as a tool in support of fundamental research.

**Vision:** build a ‘genomics’ database of the (morpho-)syntactic/semantic properties of human languages. This project is directly related to strongly decompositional approaches to syntax, and cartography, "maps of structures".

Provide over time as detailed cross-linguistically comparable data as needed:

- to document the internal structure of such systems
- to document all the basic ingredients needed for their description
- to record the extent and limit of their variation

**Terraling**– a collection of datasets. http://test.terraling.com  SSWL Hilda Koopman (UCLA linguistics), Dennis Shasha (NYU), Hannan But (back-end), Marco Liberati (back-end), Connor Mayer (UCLA linguistics), Tyler Carson (UCLA linguistics)

**Data base functionality:**
Building a database in support of theoretical research is a longtime project: the database must be able to last, allow for new content and new languages to be added, which, in the case of SSWL must involve linguistic experts (expert crowdsourcing).

- store the data in a secure world-wide accessible database-backed website
- allow flexible additions to data as new properties and new languages are added
• allow disciplined and secure curation of data by multiple linguists (user friendly, for contributors, administration, and the general research community )
• allow sophisticated queries.

Relational database with highly flexible database scheme.

(1) Language, property, value (yes, no)
   Italian, SV, yes
   Italian, VS, yes

2 Current data sets

• Database schema can be adapted to anything, as there is no preconceived idea of what Language is.
• This means it can be adapted to other linguistic (as well as non linguistic) research projects, depending on the research questions one asks
• Or code up data from other datasets (all data from SAND have been previously translated into the Terraling dataset format).

Current datasets (which can have a private setting (for the duration of a project or dataentry) or a public setting):

http://test.terraling.com/3
• SSWL (we are ready to post approximately 40 subject properties (form (bare, article, etc)- meaning (definite, indefinite, generic)- type of noun (mass, count sg/pl, )) properties in mid July 2018).

• *Conjunction and disjunction from a typological perspective* (semantics) PI: Viola Schmitt (University of Vienna). [http://www.univie.ac.at/konjunktion/texts.html](http://www.univie.ac.at/konjunktion/texts.html)


• Cinque’s Universal-20 database

• Several individual projects are in development...
3  Structure of current SSWL properties (as of July 10, 2018.)

The SSWL database is an ever-expanding database: new properties can be added. Important to get an idea of what the 150 (soon 190) current properties in the SSWL database are.

The data range from very broad typological properties concerning word order to queries about quite detailed properties of (some) regions that make up the noun phrase.

3.1 (some) Basic word order typology: 32 properties

Properties come in groups that are thematically related, and ask for binary values (yes/no (or NA (non applicable), as described in the property definitions. (SSWL codes the occurrence of particular orders in a language, given a specific definition, and does not code for "dominant" order. Discussion on the notion of domination order Basic properties include so far (a subset of) basic word order properties and some properties about agreement, familiar from the typological literature, starting with Greenberg (1965).

3.2 How is SSWL different from WALS here? On the notion of "dominant" order and problems related to "dominant" order.

This subsection explains a crucial difference with WALS http://wals.info/feature/87A#2/18.0/152.9. in SSWL, a yes value obtains when a particular order is attested (as defined in in the query).

An example: 13_A N  Definition: The property 'A N' (Adjective Noun) has the value 'yes' when an adjective can precede the noun it modifies in a neutral context. This definition concerns attributive adjectives that modify a noun such as 'big ball', not predicate adjectives such as 'big' in the sentence 'The ball is big.' The noun should be a common noun such as 'book', 'person', 'house', etc. (as opposed to a proper noun, pronoun, or quantificational expressions like "something"). As with all word order properties, we restrict our attention to productive word order patterns.

General Note on Word Order Properties: A 'yes' value for 'A N' Adjective Noun does not exclude a 'yes' value for Noun Adjective. In other words, a language could allow both orders in a neutral context.

How would we code French?

(2) A(djective) Nom and Nom A(djective).
The SSWL properties do not "bin" orders: i.e. they simply record what orders are attested given a particular definition: Important: the notion of dominant order does not play any role in SSWL.

What is an Adjective?
Comment définir des catégories? (cf atéliers)

NB: The original properties asked to coded languages in which adjectives look like relative clauses as N(ot)A(pplicable).

<table>
<thead>
<tr>
<th>Prop</th>
<th>Value</th>
<th>Prop</th>
<th>Value</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>13_AN</td>
<td>No</td>
<td>14_NA</td>
<td>Yes</td>
<td>?</td>
</tr>
<tr>
<td>13_AN</td>
<td>Yes</td>
<td>14_NA</td>
<td>Yes</td>
<td>?</td>
</tr>
<tr>
<td>13_AN</td>
<td>Yes</td>
<td>14_NA</td>
<td>No</td>
<td>?</td>
</tr>
<tr>
<td>13_AN</td>
<td>NA</td>
<td>14_NA</td>
<td>NA</td>
<td>?</td>
</tr>
<tr>
<td>13_AN</td>
<td>No</td>
<td>12_NA</td>
<td>No</td>
<td>?</td>
</tr>
</tbody>
</table>

What is the current distribution of values in the database?
We can answer this question by going to Search on the Masthead.
Select properties 13 and 14,
click on Cross (Cross can extract all data from up to 6 properties)
The results of Cross can be downloaded, Saved, and accessed through History, which will update the search for the state of the database. Terraling cross-search (SSWL data, 7-25-2017)

<table>
<thead>
<tr>
<th>Prop</th>
<th>Value</th>
<th>Prop</th>
<th>Value</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>13_AN</td>
<td>No</td>
<td>14_NA</td>
<td>Yes</td>
<td>90</td>
</tr>
<tr>
<td>13_AN</td>
<td>Yes</td>
<td>14_NA</td>
<td>Yes</td>
<td>80</td>
</tr>
<tr>
<td>13_AN</td>
<td>Yes</td>
<td>14_NA</td>
<td>No</td>
<td>70</td>
</tr>
<tr>
<td>13_AN</td>
<td>NA</td>
<td>14_NA</td>
<td>NA</td>
<td>3</td>
</tr>
<tr>
<td>13_AN</td>
<td>No</td>
<td>12_NA</td>
<td>No</td>
<td>0</td>
</tr>
</tbody>
</table>

• Note that this is not a balanced language sample, it simply reflects what is found for the languages in the database.
• This will allow micro-comparisons between closely related languages, either historically or synchronically. It is possible to do the same search for a balanced sample.
• This table of course says nothing about the analysis of the data!
For a spelled out theories which generates testable hypotheses, see Koopman Adjectival questionnaire). 3 languages have the property NA (non applicable). (Warlpiri, Chicasaw
3.3 Negative properties
There is a block of negative properties, concerning order, and form. (submitted by 15 minutes)

3.4 Polar questions and answers
There is a set of properties for polar questions, and answers (written by Anders Holmberg and Craig Sailor) (25 minutes)

3.5 V-second and Aux selection
(10 minutes) V second: pas relevant pour les langues africaines

3.6 Universal 20 properties (Dem A N and Dem Num A)
Order of Dem Num A N
So far: Greenberg (1965), Cinque (2005).
- simple combinations: AN, and NA; Dem N and N Dem, Num N and N Num.
- combinations of 3 properties: 2 sets of 6 (12 properties) (10 minutes)
- A set of 4 properties for indefinite and definite Num N combinations.
  There are three children and two cats on the street.
  The three children are playing soccer.
  The two cats are watching the children. ...with follow up properties about form
  (initial attempt for determiner system and definiteness and indefiniteness in the
  noun phrase): (10 minutes)

3.7 Properties of definites and indefinite noun phrases
(see next chapter)

3.8 Properties in various stages of development
- demonstratives (cristina Guardiano)
- definiteness marked outside of the noun phrase/clitic doubling?
- clitic combinations (PCC)
- scope of indefinites w.r.t. negation
- (position) subordinators
- verbal possession– and the verb need (Stephanie Harves)
- compounds
- on culmination/non-culmination accomplishments (Lisa Travis)
- relative clauses
- adjectives (adjectival questionnaire) and something interesting
- 'other'
- ordinals
- superlatives
- causatives...
4 Towards a cartography of the D region: Bare nouns and "Articles" (Demonstratives, case, classifiers, and noun classes.)

Cristina Guardiano and Hilda Koopman. Please Read this document before you start the object properties.

This short document discusses three aspects of the documentation project which aims to code certain properties of the D region, related to the distribution of bare nouns and determiners/articles, and their interpretation. This is an area known to exhibit much crosslinguistic variation, and of considerable interest to the syntax/semantics literature.

This requires defining what we understand by article, and what we understand by bare nouns, which we do below.

So far, we posted:
- a set of 40 object properties (subdivided in groups of 3, 4, or 5, as explained below) have been posted that probe for a particular set of phenomena related to nominal structures in object position.
- 37 properties for subject position (including properties of existential constructions, and negative existential constructions)
- 16 properties related to vocatives.

Usually, a group of property can be set on the basis of quite simple elicitation task, that asks for examples given a particular scenario/context, and then asks how to classify the examples according to a number of variables.

4.1 Variables included in the properties

The properties are organized around the following variables: which can be further expanded, or refined

1. indefinite vs. definite reading of (unmodified) noun phrases, and generic readings for:
   (a) mass nouns vs. sg/pl count nouns
   (b) nouns with (intrinsically) unique reference (sun, sky, moon)
   (c) proper names, proper names modified by adjectives

   with respect to syntactic position:
   (a) syntactic position: object
   (b) syntactic position: object
   (c) vocatives

2. ordering properties (if there is an 'article' does it precede the N or follow?)

3. subject properties (36 properties)
In particular, we are interested in whether a nominal expression, according to each of the variables 1-6/1-5-7:

a. can be "bare" (i.e. lack an "article"), or
b. must have an "article", or
c. can have an article (i.e. can either be bare or occur with an article)

This gives rise to different property definitions for objects, organized in the following fashion. The task (defined below) asks for yes/no values:

(3) Indefinite mass nouns in object position
a. can be bare yes/no
b. must have an article yes/no
c. can have an article yes/no

(4) definite mass nouns in object position.

a. can be bare yes/no
b. must have an article yes/no
c. can have an article yes/no

and so forth.

These properties apply to:

• unmodified mass/count nouns (NO quantifiers, adjectives, possessors, relative clauses, adpositional complements)
• objects in affirmative transitive sentences (NO negative, interrogative, passive)

Each property definition: is a small field-work questionnaire with instructions on how to set the value, elicitation contexts and illustrations, and is organized in the following way:

• definition of the property
• elicitation context(s)
• explicit instructions on how to set the values for the language in question
• examples that illustrate the yes/no values for different languages
• comments

Definitions: What counts as bare and what counts as an "article"?
This is necessary because of the absence of stable linguistic definitions: the current terminology depends on the language, but does not allow crosslinguistic comparisons. For the purposes of this set of properties, we do this as follows (this is repeated and slightly adjusted in each property definition).

A bare noun phrase ....
for languages with definite/indefinite articles, specificity markers, definite/indefinite affixes:
lacks an article (can be bare)

for languages without articles but with case, adpositional affixes/ends, classifiers, noun classes/augments,
exhibits no structural alternation with noun phrases of a particular type (defined in each property definition)

An "article" .....  

• self explanatory for languages with articles  
• for languages without articles: sometimes "case", adpositions, count as 'article'  
  (if case expresses a contrast definite and indefinite readings of objects.)  
• Demonstratives counts as an 'article' if they can be used like articles (and should show homogeneity (aka as consistency) effects (Löbner, 2000))  
• Classifiers can count as articles (in certain readings/circumstances).  
• noun class markers/ augments may count as articles in a subset of contexts.

The way to proceed: read the property definitions.. (these define what you are supposed to do)

(5)  
  a. step 1: "fieldwork": elicit examples in language X. (Questionnaire, with elicitation sentences and contexts;  
  b. step 2: construct the examples (can be more than one per property), paying attention to the property definitions.  
     Type up the examples in the format given, (and feel free to send them to me and Cristina for comments).  
  c. step 3: Classify the examples: read property definitions carefully, and set the property values. (Use the supporting excel sheets..(we still need to update these))  
     Can the task be done in your language? note any questions/ unclarities, and run them by us.  
  d. step 4: (creating the language and ) enter the property values, with examples, and comments into the database (we added a how sure are you measure in Terraling.  
     Comments about distribution are particularly important. In many cases further work will be needed, please feel free to indicate so !  
  e. step 5: explore with the database search tools. (Searches include: complex searches, implications, compare (up to 8 languages), similarity trees, map results, download, saved searches with stable handle (when one returns to the database the searches will update... )

Findings and Theory

The property definitions define 3 types of languages for each set of a/b/c/:  
3 types of languages are excluded.
<table>
<thead>
<tr>
<th>(In)def sg Count N</th>
<th>can be bare</th>
<th>must have article</th>
<th>can have article</th>
<th>found?</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>found</td>
</tr>
<tr>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>*</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>0 contradictory</td>
</tr>
<tr>
<td>*</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>0 contradictory</td>
</tr>
<tr>
<td>*</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>0 contradictory, for same article</td>
</tr>
</tbody>
</table>

Note that contradictory statements hold only for the 'same' article. Since we classify some expressions of case as an article, and similarly we classify some uses of Demonstratives as articles, we allow for languages that have an obligatory case marker for objects expressing definiteness, and an optional Demonstrative yield both 'must' Yes and 'Can have'.

4.2 Results and discussion

Write to me if you want the draft.
5  Negative existential contexts: on the form(s) of indefinite subjects: bare, articles, NPIs, "special" forms.

Cristina Guardiano¹
and Hilda Koopman²

Version of July 10, 2018. (This document lacks some references.)

Each property definition includes instructions, an elicitation contexts, examples of values in individual languages. A file with examples to elicit can be found here.

PLEASE READ THIS DOCUMENT TO GET AN IDEA OF THE GENERAL CODING SCHEMA BEFORE CODING THE NEGATIVE EXISTENTIAL PROPERTIES.

1. WE PRESUPPOSE FAMILIARITY WITH THE CODING SCHEMA FOR OBJECT PROPERTIES here, WHICH INCLUDE OUR DEFINITION WHAT COUNTS AS AN ARTICLE, AND EXISTENTIAL CONSTRUCTIONS here.

5.1 Background

Here we are interested in coding the possible form(s) of an (unmodified) pivot (or subject in negative existential constructions), broadening the typological patterns of articles within a particular language as well as crosslinguistically. In many languages, the pivot (i.e. subject) in a negative existential construction or context differs in form from the pivot in an affirmative existential construction, as we can see in negative existential constructions in English for mass nouns.

<table>
<thead>
<tr>
<th>(Affirmative) existential</th>
<th>Negative existential</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) there is water in the bucket</td>
<td>(ii) a. There is no water in the bucket</td>
</tr>
<tr>
<td></td>
<td>(ii) b. There isn’t any water in the bucket</td>
</tr>
</tbody>
</table>

This is an area of great interest to syntax and semantics. It connects to the (very substantial) syntax-semantic literature on negation and NPIs(N(egative) P(olarity) I(tems)). It raises questions about the scope of indefinites under negation, their form(s), and the syntactic distribution of various expressions ³

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http://personale.unimore.it/rubrica/dettaglio/cguardiano
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³ In the future, we intend to develop questions about the form, distribution and interpretation/scopal properties of indefinites objects in negative contexts
Please contact us if you are interested in collaborating some soul properties about scope.
5.2 Expanding the current coding schema.

We build on our existing definitions and classification schema of the 3 properties _1 can be bare, _2 must have an "article", _3 can have an article). These are not sufficient for capturing the known linguistic variation in negative existential contexts, as we detail below. We will:

1. broaden the notion of "article" in _2 and _3 to "article/specialized form" in negative contexts;
2. add an additional property _4 'an article disappears'.
3. illustrate the settings for different languages.
4. And finally, we discuss how to deal with cases in which there are different strategies within the same language that cannot all be captured by the properties. In this case, our guidelines will be to code the strategy for the most neutral/ least marked negative existential strategy (see section 5.5).

5.3 There are two "articles" in French affirmative existentials, but only one in negative existentials.

We will start with (unmodified) indefinite mass nouns.
In French affirmative existential constructions, the pivot of a mass noun has two 'articles' (de ART1, related to Genitive Case, and the definite article (le/la/les ART2), which combine as du, de l', de la, des, sometimes called 'Partitive article').

(6) il y a de l'eau dans le lac
it there has DE LE.water in the lake
'There is water in the lake'

In affirmative existential constructions in French, bare (mass) noun phrases are not allowed. The value for _1 is NO. Since both 'articles' are obligatory, the value for _2 is YES, and for _3 it is NO:

(Values for S02:
Indefinite mass noun in affirmative existential constructions for French:

<table>
<thead>
<tr>
<th>_1 can be bare</th>
<th>_2 must have an art</th>
<th>_3 can have an art</th>
<th>found?</th>
</tr>
</thead>
<tbody>
<tr>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>French</td>
</tr>
</tbody>
</table>

In negative existential constructions, however, the two articles ( de ART1 and the definite article (ART2) behave differently: de (related to "Genitive") is obligatory, but the definite article le/la/les must be absent, i.e. ART2 cannot be present under negation.

(7) il (n’)y a pas d’eau dans le lac
it (NEG).there have NEG DE.water in the lake
there is no water in the lake

(8) *il (n’)y a pas de l’eau dans le lac
it ‘N’.there have NEG DELe.water in the lake
there is no water in the lake
To capture this important property, the properties for negative indefinites must be further refined and expanded. To this effect, we add a fourth property to the list, which captures the fact an article cannot be present or 'disappears' on the pivot in negative existential constructions, and do so for each of the indefinite <mass, sg or pl count N> pivots.

5.4 Indefinite Mass Nouns in negative existential contexts

This yields the following 4 properties for indefinite mass nouns in negative existential contexts, and their values for French:

1. can be bare: NO
2. must have an article: YES (because 'de' is obligatory)
3. can have an article: NO because 'de' is obligatory, (even though le cannot be present)
4. an article 'disappears': YES (in comparison to the affirmative existential, the definite article le disappears (i.e. must be absent)).

Indefinite mass nouns in negative existentials (preliminary coding schema):

<table>
<thead>
<tr>
<th></th>
<th>can be bare</th>
<th>must have an art</th>
<th>can have an art</th>
<th>an article disappears</th>
<th>found?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>French</td>
</tr>
</tbody>
</table>

1. is no, and 2 remains yes, since de must be present in this context. Because de is obligatory, 3 is no (since neither de not le is optional 3). Since 4 lacks an article is 'yes', it must be the case that there are two articles in the affirmative.

Other potential candidates for language like French, where an article goes missing in negative contexts are Bantu languages with so-called 'augments'. Note that currently, we don’t make a distinction as to whether the article disappears obligatorily or optionally.

5.4.1 Broadening the notion of "article" in negative contexts: English NPIs and the negative determiner no:

Under 2 and 3, we include not just de (or genitive case which in some languages count as an "article"), but also negative determiners like English no, "special" articles like any in English, or other special indefinite forms, (reduplicated or not), often called Negative Polarity items, (NPI).

It will be important to give as many glossed examples in the database as necessary.

4A language with no article in the affirmative, will automatically be NO for 4
5when it alternates with a different form like accusative for example
There seems to be some speaker variation on the acceptability of (10) c. The set value could go either way depending on the native speaker linguist. As a first step, this should be indicated in a comment that accompanies the example. In the future it may lead to having different varieties of "English".

(11) Negative existential properties:

Property S05_2 and S05_3:
A (mass/sg count/plural count) noun in a negative existential context must/can have an article/ specialized form: Yes/No

Table for Indefinite Mass Nouns in negative existential constructions (final schema)

<table>
<thead>
<tr>
<th>_1 can be bare</th>
<th>_2 must have a art/specialized form</th>
<th>_3 can have an art/specialized form</th>
<th>_4 an art disappears</th>
<th>found?</th>
</tr>
</thead>
<tbody>
<tr>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>French</td>
</tr>
<tr>
<td>no?</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>English</td>
</tr>
</tbody>
</table>

5.4.2 French and Italian

French and Italian differ in that in Italian a mass noun in the negative existential construction can either be bare, or have the partitive article (di + definite article)\(^7\). i.e. the two articles alternate with the bare form, one article cannot disappear. This means that Italian will have a YES value for _1, for _3, and a NO value for _4.

This means that we determine the value for _4 w.r.t the forms in _2 and _3. Since the two articles must be both present _4 will be NO in Italian. In French, since the definite article is excluded in this context, _4 will be YES.

Table for Indefinite Mass Nouns in negative existential constructions (continued)

<table>
<thead>
<tr>
<th>_1 can be bare</th>
<th>_2 must have a art/specialized form</th>
<th>_3 can have an art/specialized form</th>
<th>_4 an art disappears</th>
<th>found?</th>
</tr>
</thead>
<tbody>
<tr>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>French</td>
</tr>
<tr>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>Italian</td>
</tr>
<tr>
<td>no?</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>English</td>
</tr>
</tbody>
</table>

5.4.3 Expanding the typology: more languages

Here we incorporate examples from a few more languages of the form indefinite mass nouns as subjects/pivots in negative existential contexts, and show how they should be classified. The same needs to be done independently for singular and plural count Ns. We briefly return to singular count nouns in section 5.5.

\(^6\) NB: we must code lacks an article w.r.t. the affirmative, as we can see from Croatian below.

\(^7\) In a affirmative existential construction in Italian, the mass noun must be bare, and the partitive article is excluded (differing from French in this respect).
5.4.4 Croatian: "Genitive of negation" (Slavic)

We start with the affirmative existential construction in Croatian. At first blush, Croatian does not really seem to have a special affirmative existential construction\(^8\).

\[(12)\] frizideru in.fridge je is voda water.nom
there is water in the fridge
\# not: the water is in the fridge

\[(13)\] Voda je frizideru
water.NOM is in fridge
the water is in the fridge not: there is water in the fridge
\textbf{comment}: in this order the (mass noun) subject is interpreted as definite

However, since word order encodes the difference in interpretation, we treat ?? as an instance of a special existential construction, and test all properties of existential subjects in this order/context. \textbf{Note that the pivot carries nominative case}.

\textbf{Negative existentials and the "genitive of negation"}. Croatian does have a special form for negative existential predicates, consisting of a contraction of negation 'ne' and 'imati' 'have':

\[(14)\] Nema vode u frizideru
not.have water.GEN in fridge
there is no water in the fridge

In negative existential contexts, the indefinite pivot must be genitive (and cannot be nominative). Since genitive contrasts with nominative in the affirmative construction, the genitive case is treated as an "article" (just like Romance de/di), according to our definitions for "articles".

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|}
\hline
_1 can be bare | _2 must have a art/specialized form | _3 can have an art/specialized form | _4 an article disappears | found? \\
\hline
no & yes & no & yes & French \\
yes & no & yes & no & Italian \\
n?/yes? & yes & no & no & English \\
no & yes & no & no & Croatian \\
\hline
\end{tabular}
\end{table}

Croatian differs from French for the values of _4. Since Croatian does not have an article in the affirmative, the value for property _4 "an article disappears" is no, because the language simply doesn’t have an 'article' that can disappear. (nominative will not qualify as an article, because the nominative form in the affirmative does not distinguish between definite and indefinite interpretations.) It is important to make sure that the value for _4 is based on a comparison with the \textit{presence} of an article in the affirmative form.

\(^8\)Data kindly provided by Daniela Culinović
5.4.5 Mandarin Chinese

(15) Mandarin

hu
li
mei-you
shui
lake inside NEG.PERF-have water
There was no water in the lake.

Table for Indefinite Mass Nouns in negative existential constructions (continued)

<table>
<thead>
<tr>
<th>1 can be bare</th>
<th>2 must have an art/specialized form</th>
<th>3 can have an art/specialized form</th>
<th>4 an art disappears</th>
<th>found?</th>
</tr>
</thead>
<tbody>
<tr>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>French</td>
</tr>
<tr>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>Italian</td>
</tr>
<tr>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>English</td>
</tr>
<tr>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>Croatian</td>
</tr>
<tr>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>Mandarin</td>
</tr>
</tbody>
</table>

5.4.6 Gungbe

(Data provided by Enoch Aboh. )

Il y a pas d’eau dans le lac

Sinh má tò tò lɔ mè
Eau NEG être-LOC étendue.d’eau DET P

Il y a pas d’enfants dans la maison.

Vi má tò xwè gbé
Enfant NEG être-LOC maison P

Il y a pas de médecin au village

Dɔtɔ má tò tò lɔ mè
Médecin NEG être-LOC village DET P

Property _4 is NO for Gungbe, because there is no article in the affirmative, i.e. there is simply no article that can disappear. Thus, Mandarin and Gungbe represent the same values for negative mass nouns in existential constructions.

Table for Indefinite Mass Nouns in negative existential constructions
### Table for Indefinite Mass Nouns in negative existential constructions

<table>
<thead>
<tr>
<th>_1 can be bare</th>
<th>_2 must have a art/specialized form</th>
<th>_3 can have an art/specialized form</th>
<th>_4 an art disappears</th>
<th>found?</th>
</tr>
</thead>
<tbody>
<tr>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>French</td>
</tr>
<tr>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>Italian</td>
</tr>
<tr>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>?no</td>
<td>English</td>
</tr>
<tr>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>Croatian</td>
</tr>
<tr>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>Mandarin</td>
</tr>
<tr>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>Gungbe</td>
</tr>
<tr>
<td>etc</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

We see that Samoan and French come out in the same way, though by the definite article _le_, _la_, _les_ disappearing in French, but in Samoan by the general article _I_ alternating with _s Ie/ s.e_ for mass nouns and singular count nouns. For plural count nouns, the D is zero, and the NPI Det is _ni_. Examples and comments should allow deducing this distributional difference. How to analyze this difference is ultimately a question for linguists, not a question of generating the cross linguistic patterns, which is the general purpose of these properties.

---

9Data from Mosel and Hovdhaugen, 1992 *Samoan Reference Grammar* and a 2 quarter UCLA field methods class on Samoan (2006/2007).

10The existential predicate appears to be composed of a locative ‘case’ _i_ and _ai_ (‘there’), the negative existential is composed of the negation _le_ and _ai_ ‘there’.
5.4.8 Impossible languages

The way our properties are formulated define intrinsically impossible languages. For example (at least for each strategy within a language, see the discussion in 5.5):

\[\begin{align*}
(18) & \quad \text{a. } _1 \text{ "can be bare" and } _2 \text{ "must have an article" cannot have the same values} \\
& \quad \text{b. } _2 \text{ "must have an article", and } _3 \text{ "can have an article" cannot have the same values}
\end{align*}\]

This is indicated in red under the double line in the table below.

**Table for Indefinite Mass Nouns in negative existential constructions**

<table>
<thead>
<tr>
<th></th>
<th>_1 can be bare</th>
<th>_2 must have a art/specialized form</th>
<th>_3 can have an art/specialized form</th>
<th>_4 an art disappears</th>
<th>found?</th>
</tr>
</thead>
<tbody>
<tr>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>French</td>
</tr>
<tr>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>Italian</td>
</tr>
<tr>
<td>no?</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>English</td>
</tr>
<tr>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>Croatian</td>
</tr>
<tr>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>yes (?)</td>
<td>Mandarin</td>
</tr>
<tr>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>Samoan</td>
</tr>
</tbody>
</table>

5.5 Singular Count nouns: negative existential contexts: indefinite articles, the numeral "one", and NPIs

French (unmodified) indefinite pivots in affirmative existentials require the indefinite article "un" (which is homophonous with the numeral one). In "neutral" negative existential constructions de appears (19) b): de is incompatible with un, as shown in (19) c.

\[\begin{align*}
(19) & \quad \text{a. } \text{Il y a un médecin au village} \\
& \quad \text{There is a doctor in the village} \\
& \quad \text{b. } \text{Il n'y a pas de médecin au village} \\
& \quad \text{There is not DE doctor in the village} \\
& \quad \text{c. } \text{*Il n'y a pas d'un médecin au village} \\
& \quad \text{There is not DE ONE doctor in the village}
\end{align*}\]

On the basis of these examples, we should set the values for singular indefinite count nouns in negative existential constructions as follows: _1 is NO (since the count noun cannot be bare), _2 is YES (since an article i.e. de is obligatory), and _4 as YES, since un disappears.)

Indefinite singular count nouns in negative existentials:
This takes care of "neutral" (or least marked) negative existential constructions: but there are other strategies as well. It is sufficient for our purposes for the setting of this property to consider the most natural or "neutral" negative existential constructions in case of conflicts.

5.5.1 More than one strategy: When 'un' does not disappear, and more about the possible appearance of 'aucun'

The problem is that languages may have more than one strategy in negative existentials. In French, the indefinite article _un_ can appear as well, particularly when it is stressed i.e. _FR 'UN'_. Note that in these cases, _de_ cannot appear, and a special interpretation (_pas un seul_ 'not a single') arises:

(20) a. Il n'y a pas _UN_ médecin au village
   There is not ONE doctor in the village
b. There isn't (even) a (single) doctor in the village

The same applies to English _one/a_ , when it interpreted as "(not) a single". Stressed _UN_ and _ONE_ are indistinguishable from numerals, and seem to be interpreted close to _not (a single) one_. This raises complex questions about the relation of the unstressed indefinite article _un_ and the numeral _one_: are these different categories or not?

For our purposes here, we put the question of how to resolve this problem here aside. In case of conflict it is sufficient to consider what happens in neutral negative existentials. Adding examples and comments to the database when such cases arise, will be useful for further development

We clarify the problem further by examining how we would set _4_ for indefinite count nouns on the basis of the examples and interpretation with (20-a) under negation. We add a special line for the properties of French w.r.t. to _un_, and note the problem w.r.t. the non-neutral status here.

(i_ideally we should code the inventory of the different forms in French in the database, as we do in the table below._

<table>
<thead>
<tr>
<th></th>
<th>1 can be bare</th>
<th>2 must have a</th>
<th>3 can have an</th>
<th>4 an art disappears</th>
<th>found?</th>
</tr>
</thead>
<tbody>
<tr>
<td>de</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>yes 'un' disappears</td>
<td>French</td>
</tr>
<tr>
<td>un</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>?no/?yes</td>
<td>?yes</td>
</tr>
</tbody>
</table>

(21) Il n'y a aucun médecin au village
There is AUC.UN doctor in the village

NB: _pas_ must be absent

On the basis of this example, we can add another line for _aucun_, which clearly is build on _un_, _une_, hence is NO for _4_. Thus, different strategies may (but do not have to) lead to different codings. This is why we restrict the coding for the moment to the
least marked strategy. Examples for the other strategies can always be added, and commented on.

<table>
<thead>
<tr>
<th></th>
<th>_1 can be bare</th>
<th>_2 must have an art/specialized form</th>
<th>_3 can have an art/specialized form</th>
<th>_4 an art disappears</th>
<th>found?</th>
</tr>
</thead>
<tbody>
<tr>
<td>de</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>yes/un</td>
<td>FR</td>
</tr>
<tr>
<td>un</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>?no/?yes</td>
<td>FR</td>
</tr>
<tr>
<td>aucun</td>
<td>no</td>
<td>yes (aucun)</td>
<td>no</td>
<td>'special reading?'</td>
<td>FR</td>
</tr>
<tr>
<td>NP</td>
<td>no</td>
<td>yes (aucun)</td>
<td>no</td>
<td>'un is part of aucun'</td>
<td>FR</td>
</tr>
</tbody>
</table>

Important: with these indefinite counts nouns *de, un, or aucun* in negative existentials the (unmodified) indefinite count noun pivot must be interpreted under the scope of negation (i.e. the meaning can be paraphrased with *it is not the case that there is a doctor in the village, i.e. there are no doctors in the village*). These sentences cannot be interpreted with 'one' or 'un' scoping above the negation. This can be concluded from the fact that these sentences cannot mean: *there is a single doctor who is not in the village* which would be true if all other village doctors were actually in the village.

We return to the (possible) form(s) and interpretation of indefinite count noun objects under negation in the near future.

This document discusses how to develop a coding schema, and how to formulate the queries so as to capture the variation found in natural languages. The next step is to gather the data from individual languages to code this variability in a systematic fashion: it will be important to give examples. The search function (cross) will allow extracting all patterns in the database for these 4 properties, and save and download the results.