Lojban For Beginners—velcli befi la lojban. bei loi co'a cilre

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by Robin Turner and Nick Nicholas

Published 2002

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Preface — lidne prosa

This document is an introductory course on Lojban, consisting of fifteen lessons. It has been authored by Robin Turner and Nick Nicholas, and gives a gentle introduction to the structure of the language. Robin authored lessons 1–8 and 10–11 in 1999; Nick added to the existing lessons, and authored lessons 9 and 12–15, in 2001.

The material covered in this course should be sufficient to allow the learner to understand most of the Lojban they are likely to see in the online Lojban discussion groups, or in the publications of the Logical Language Group. For information on Lojban, please contact the Logical Language Group:

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The document *What is Lojban?* (available online at `http://www.lojban.org/publications/level0.html`) is a general introduction to the language. It should be available from the same place you obtained this document.

Lojban is likely to be very different to the kinds of languages you are familiar with—which certainly include English. If a point of grammar or logic seems inscrutable at first, don't hesitate to move on, and come back to it later. Likewise, some of the exercises are trickier than others (particularly the translation exercises at the end of each lesson.) If you can't work out the answer to a particular question, feel free to skip it—but do look at the answer to the question, as there are often useful hints on Lojban usage in there. The answers to the exercises are at the end of each lesson.

Occasionally we use brackets to clarify the grammatical structure of Lojban in our examples. These brackets are not part of official Lojban orthography, and are included only for paedagogical purposes.

Robin is English (residing in Turkey), and Nick is Greek-Australian (residing in the U.S.A.) So don't be surprised if you see some unfamiliar language usage in this text. We are particularly unrepentant about using Commonwealth spelling.

Our thanks to the Lojbanists who have reviewed these lessons; in particular, Pierre Abbat, John Clifford, John Cowan, Björn Gohla, Arnt Richard Johansen, John Jorgensen, Nora Tansky LeChevalier, Jorge Llambías, Robin Lee Powell, Adam Raizen, Anthony Roach, Tim Smith, Rob Speer, Brion Vibber. Thanks also to Robin Lee Powell for providing the infrastructure for publishing the course in progress, and to Paul Reinerfelt for his help in producing the TeX version of the text.

ni'o le dei seltcidu cu te ctuca be loi co'a cilre bei fo la lojban. gi'e se pagbu lo pamumei .i le go'i cu se finti la'o gy. Robin Turner gy. joi la'o gy. Nick Nicholas gy. goi la nitcion. gi'e frili jai junri'a fo le stura be le bangu .i la robin. finti le 1moi bi'i 8moi .e le 10moi bi'i 11moi pagbu ca la 1999nan .i la nitcion. jmina fi le pu zasti pagbu gi'e finti le 9moi .e le 12moi bi'i 15moi vau ca la 2001nan.

ni'o lei datni poi se cusku le dei te ctuca cu pe'i banzu lenu ka'enri'a le cilre lenu jimpe piso'a loi lojbo poi lakne fa lenu tcidu ke'a vecu'u le jondatnymu'e ke lojbo casnu girzu .a le se prigau be la lojbangirz. .i mu'i tu'a loi tcila pe la lojban. ko te notci fo la lojbangirz. noi se judri zoi gy.

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gy. .i le seltcidu po'u la'e lu la lojban mo. li'u zi'enoi ka'e se cpacu fi le jondatnymu'e tu'i zoi gy. http://www.lojban.org/publications/level0.html gy. cu nalsteci cfari bo skicu le bangu .i ba'a ka'e cpacu le go'i tu'i le jaitu'i cpacu be le dei seltcidu

ni'o la lojban. cu la'a mutce frica le bangu poi slabu do zi'epoi ju'o se cmima le glico .i ko fau lo da'i nu lo nandu pe le gerna .a le logji cu simlu loka to'e ke frili se jimpe co'a lenu tcidu cu zukte lenu rivbi tu'a le nandu gi'e krefu troci tu'a ri baku .i pa'abo su'o cipra jufra cu zmadu su'o cipra jufra leni tcica nandu .i go'i fa ra'u le nunfanva cipra jufra pe le fanmo be ro te ctuca pagbu .i za'o lenu do na pu'i jdice le danfu be lo preti kei ko co'u troci gi'e ku'i catlu le danfu be le cipra jufra .imu'ibo le danfu so'iroi jarco lo plixau se stidi pe lenu pilno la lojban. .i le danfu be le cipra jufra cu diklo le fanmo be ro te ctuca pagbu

ni'o mi so'iroi pilno lo girzu sinxa lerfu mu'i lenu ciksi le gerna stura be la lojban. be'o pe le mi mupli seltcidu .i le girzu sinxa lerfu genai pagbu le se zanru ke lojbo ke nunciska ciste gi se pilno fi le nu po'o ctuca

ni'o la robin. cu glico gi'e xabju le gugdrturkie .ije la nitcion. cu xelso sralo gi'e xabju le merko .i seki'ubo ko na se spaji tu'a loi glibau selpli pe le dei seltcidu zi'epoi na slabu do .i mi ra'u to'e xenru lenu pilno le glico se jitro gugde bo girzu ke valsi lerfu se cuxna ciste

ni'o mi ckire le lojbo poi cipygau fi le kamdrani le dei te ctuca zi'eno'u la. pier.abat. joi la biorn.golys. joi la djan.iorgensen. joi. la .arnt.rikard.iuxansen. goi la tsali ge'u joi la xorxes.jambi,as. joi la djan.kau,n. joi la djan.klifyrd. goi la pycyn. ge'u joi la noras.tanskis.lecevaLIER. joi la rabin.lis.pau,el. joi la .adam.reizen. joi la .antonis.routc. joi la tim.smit. joi la rab.spir. joi la braiyn.viber. .i ckire ji'a la rabin.lis.pau,el. ce'e lenu sabji le jicmu be lenu gubgau le ve ctuca ca'o lenu finti pe'eje la paul.rainerfelt. ce'e lenu sidju lenu cupra le seltcidu peta'i la tex.

Chapter 1. Sounds, names and a few attitudes

The first thing you need to do when you learn a foreign language is to become familiar with the sounds of the language and how they are written, and the same goes for Lojban. Fortunately, Lojban sounds (**phonemes**) are fairly straightforward.

Vowels

There are six vowels in Lojban.

a	as in *father* (not as in *hat*)
e	as in *get*
i	as in *machine* or (Italian) *vino* (not as in *hit*)
o	as in *bold* or *more*—not as in *so* (this should be a 'pure' sound.)
u	as in *cool* (not as in *but*)

These are pretty much the same as vowels in Italian or Spanish. The sixth vowel, y, is called a **schwa** in the language trade, and is pronounced like the first and last *A*'s in *America* (that's English *America*, not Spanish.) It's the sound that comes out when the mouth is completely relaxed.

Two vowels together are pronounced as one sound (**diphthong**). Some examples are:

ai	as in *high*
au	as in *how*
ei	as in *hey*
oi	as in *boy*
ia	like German *Ja*
ie	like *yeah*
iu	like *you*
ua	as in *waah!*, or French *quoi*
ue	as in *question*
uo	as in *quote*
ui	like *we*, or French *oui*

Double vowels are rare. The only examples are ii, which is pronounced like English *ye* (as in "Oh come all ye faithful") or Chinese *yi*, and uu, pronounced like *woo*.

Consonants

Most Lojban consonants are the same as English, but there are some exceptions:

g	always *g* as in *gum*, never *g* as in *gem*
c	*sh*, as in *ship*
j	as in *measure* or French *bonjour*
x	as in German *Bach*, Spanish *Jose* or Arabic *Khaled*

The English sounds *ch* and *j* are written as `tc` and `dj`.

Lojban doesn't use the letters *H, Q* or *W*.

Special Characters

Lojban does not require any punctuation, but some special characters (normally used in punctuation in other languages) affect the way Lojban is pronounced.

The only one of these characters which is obligatory in Lojban is the apostrophe; in fact the apostrophe is regarded as a proper letter of Lojban. An apostrophe separates two vowels, preventing them from being pronounced together (as a **diphthong**); it is itself pronounced like an *h*. For example, ui is normally pronounced *we*, but u'i is *oohee*.

A full stop (period) is a short pause to stop words running into each other. The rules of Lojban make it easier for one word to run into another when the second word begins with a vowel; so any word starting with a vowel conventionally has a full stop placed in front of it.

Commas are rare in Lojban, but can be used to stop two vowels blurring together when you don't want to use an apostrophe (which would put a *h* between them). No Lojban words have commas, but they're sometimes used in writing non-Lojban names, for example pi,ER. (*Pierre*), as opposed to pier. (*P-yerr*), pi.ER. (*Pee; Ehr*), or pi'ER. (*Piherr*).

Capital letters are not normally used in Lojban. We use them in non-Lojban words (like *Pierre*) when the stress of a word is different from the Lojban norm. The norm is to put the stress on the last-but-one syllable; so, for example, kurmikce 'nurse' is kur**MIK**ce, not **KUR**mikce. The name *Juliette* would be written DJUli,et. if pronounced in an English way, but juLIET. if pronounced as in French.

Alphabet

In most language textbooks, you get the alphabet of the language together with its sounds. Letters (`lerfu`) turn out to be even more important than usual in Lojban, so we might as well go through their names quickly.

Consonants are straightforward: the name of a consonant letter is that letter, plus y. So the consonant letters of Lojban, *b, c, d, f, g ...*, are called by., cy., dy., fy., gy.... in Lojban (using the full stop as we've just described.)

Vowels *would* be called .ay, .ey, .iy, but that would be rather difficult to pronounce. Instead, they are handled by following the vowel sound with the word bu, which basically means 'letter'. So the vowels of Lojban are: .abu, .ebu, .ibu, .obu, .ubu, ybu.

The apostrophe is regarded as a proper letter in Lojban, and is called .y'y.. To some people, this sounds like a cough; to other, like *uh-huh* (when it means 'Yes' rather than 'No'.)

Lojban has ways of refering to most letters you can think of; see *The Complete Lojban Language*, Chapter 17 for details. If you have the urge to spell out your name in Lojban and have an *H, Q,* or *W* to deal with, you can use .y'y.bu, ky.bu and vy.bu. So *Schwarzenegger* is spelt in Lojban as:

sy. cy. .y'ybu vybu. .abu ry. zy. .ebu ny. .ebu gy. gy. .ebu ry.

And spelling *that* is a task the equal of anything the Terminator ever did!

Tip: When *h* is at the beginning of a name, you cannot transliterate it with **'**, since that letter needs to occur between two vowels. In that case, you can either use another similar sound, such as x or f, or run the word in with its preceding word, so that the **'** remains between two vowels. Thus, *Jay Hinkelman* can go into Lojban as djeis.xinklmn., djeis.finklmn., or djei'inklmn.

Exercise 1

Spell your name in Lojban (or at least something close enough to it to use the twenty-six letters of English we have learned, and the apostrophe.) No peeking at the back—we don't have the answer to this exercise there!

'Correct' pronunciation

You don't have to be very precise about Lojban pronunciation, because the phonemes are distributed so that it is hard to mistake one sound for another. This means that rather than one 'correct' pronunciation, there is a range of acceptable pronunciation—the general principle is that anything is OK so long as it doesn't sound too much like something else. For example, Lojban r can be pronounced like the *r* in English, Scottish or French.

Two things to be careful of, though, are pronouncing Lojban i and u like Standard British English *hit* and *but* (Northern English *but* is fine!). This is because non-Lojban vowels, particularly these two, are used to separate consonants by people who find them hard to say. For example, if you have problems spitting out the zd in zdani (house), you can say zɪdani—where the ɪ is very short, but the final i has to be long.

Lojban with attitude!

If you tried pronouncing the vowel combinations above, you've already said some Lojban words. Lojban has a class of words called **attitudinal indicators**, which express how the speaker feels about something. The most basic ones consist of two vowels, sometimes with an apostrophe in the middle. Here are some of the most useful ones.

.a'o	hope
.au	desire
.a'u	interest
.ie	agreement
.i'e	approval
.ii	fear (think of "Eeek!")
.iu	love
.oi	complaint
.ua	discovery, "Ah, I get it!"
.ue	surprise
.u'e	wonder, "Wow!"
.ui	happiness
.u'i	amusement
.u'u	repentance, "I'm sorry!"
.uu	pity, sympathy

> **Note:** In English, people have started to avoid the word *pity*, because it has come to have associations of superiority. .uu is just the raw emotion: if you wanted to express pity in this

rather condescending way, you'd probably say .uuga'i—"pity combined with a sense of superiority," or .uuvu'e—"pity combined with a sense of virtue." Then again, you would probably just keep your mouth shut.

You can make any of these into its opposite by adding nai, so .uinai means "I'm unhappy", .aunai is reluctance, .uanai is confusion ("I don't get it","Duh...") and so on. You can also combine them. For example, .iu.uinai would mean "I am unhappily in love." In this way you can even create words to express emotions which your native language doesn't have.

Attitudinal indicators are extremely useful, and it is well worth making an effort to learn the most common ones. One of the biggest problems people have when trying to speak in a foreign language is that, while they've learnt how to buy a kilo of olives or ask the way to the post office, they can't express feelings, because many languages do this in a round-about way (outside group therapy, very few British people would say outright that they were sad, for example!) In Lojban you can be very direct, very briefly (there are ways of 'softening' these emotions, which we'll get to in a later lesson). In fact, these attitudinals are so useful that some Lojbanists use them even when they're writing in English, rather like emoticons (those e-mail symbols like ;-) :-(etc.).

Exercise 2

Using the attitudinal indicators above (including negatives), what might you say in the following situations?

1. You've just realised where you left your keys.
2. Someone treads on your toes.
3. You're watching a boring film.
4. Someone's just told you a funny story.
5. You disagree with someone.
6. Someone's just taken the last cookie in the jar.
7. You really don't like someone.
8. You are served a cold, greasy meal.
9. Your friend has just failed a test.
10. There is a large green beetle crawling towards you.

Lojban Names (cmene)

Watch any film where people don't know each other's language. They start off saying things like "Me Tarzan," which is as good a place to start learning Lojban as any. So here we go.

> mi'e robin.
> I-am-named Robin
> I'm Robin

mi'e is related to mi, which is 'I', 'me' and so on. It's a good example of the apostrophe separating two vowels, and sounds a bit like *me heh*.

I am lucky because my name goes directly into Lojban without any changes. However, there are some rules for Lojban names which mean that some names have to be 'Lojbanised'. This may sound

strange—after all, a name is a name—but in fact all languages do this to some extent. For example, English speakers tend to pronounce *Jose* something like *Hozay*, and *Margaret* in Chinese is *Magelita*. Some sounds just don't exist in some languages, so the first thing you need to do is rewrite the name so that it only contains Lojban sounds, and is spelt in a Lojban way.

> **Note:** The catch here is, what version of the sounds will you be using? For English in particular, British and American vowels can be quite different. The British version of *Robin* is reasonably approximated by robin.; but the American version is closer to rabyn. or rab,n.. And within America and Britain, there is also a good deal of variation. So you should take the transliterations given below with a grain of salt.

Let's take the English name *Susan*. The two *s*'s are pronounced differently—the second one is actually a *z*—and the *a* is not really an *a* sound, it's the 'schwa' we just mentioned. So *Susan* comes out in Lojban as suzyn..

You may have noticed the extra full stop (period) there. This is necessary because if you didn't pause, you might not know where the name ended and the next word began. In addition, if a name *begins* with a vowel, you need a full stop there as well. For example:

.an.	Anne
.axmet.	Ahmet
.eduard.	Edward
.IBraxim. or .IBra'im.	Ibrahim
.odin.	Odin

You can also put a full stop in between a person's first and last names (though it's not compulsory), so *Jim Jones* becomes djim.djonz..

An important rule for Lojbanising names is that the last letter of a cmene (Lojban name) must be a consonant. Again, this is to prevent confusion as to where a name ends, and what is and is not a name (all other Lojban words end in a vowel). We usually use *s* for this; so in Lojban, *Mary* becomes meris. , *Joe* becomes djos. and so on. An alternative is to leave out the last vowel, so *Mary* would become mer. or meir..

A few combinations of letters are illegal in Lojbanised names, because they can be confused with Lojban words: la, lai and doi. So *Alabama* can't be .alabamas. but needs to be .alybamas. , for example.

The final point is stress. As we've seen, Lojban words are stressed on the penultimate syllable, and if a name has different stress, we use capital letters. This means that the English and French names *Robert* come out differently in Lojban: the English name is robyt. in UK English, or rab,rt. in some American dialects, but the French is roBER. .

To give an idea of how all this works, here are some names of famous people in their own language and in Lojban.

English

Margaret Thatcher	magryt.tatcys. (no *th* in Lojban because most people around the world can't say it!)
Mick Jagger	mik.djagys.

French

Napoleon Bonaparte	napole,ON.bonaPART.

Juliette Binoche	juLIET.binOC.

Chinese

Laozi	laudz.
Mao Zedong	maudzyDYN. (Final *ng* is in Lojban conventionally turned into n.)

Turkish

Mustafa Kemal	MUStafas.keMAL.
Erkin Koray	.erkin.korais.

German

Friedrich Nietzsche	fridrix.nitcys.
Clara Schumann	klaras.cuman.

Spanish

Isabel Allende	.izaBEL.aiendes.
Che Guevara	tcegevaras.

Exercise 3

Where are these places?

1. nu,IORK.
2. romas.
3. xavanas.
4. kardif.
5. beidjin.
6. .ANkaras.
7. .ALbekerkis.
8. vankuver.
9. keiptaun.
10. taibeis.
11. bon.
12. delis.
13. nis.
14. .atinas.
15. lidz.
16. xelsinkis.

Exercise 4

Lojbanise the following names

1. John
2. Melissa

3. Amanda

4. Matthew

5. Michael

6. David Bowie

7. Jane Austen

8. William Shakespeare

9. Sigourney Weaver

10. Richard Nixon

11. Istanbul

12. Madrid

13. Tokyo

14. San Salvador

Lojban words as names

By now you should be able to Lojbanise your own name. However, if you prefer, you can translate your name into Lojban (if you know what it means, of course) or adopt a completely new Lojban identity. Native Americans generally translate their name when speaking English, partly because they have meaningful names, and partly because they don't expect the *wasichu* to be able to pronounce words in Lakota, Cherokee or whatever!

All Lojban words (as opposed to cmene) end in a vowel, and although you *can* use them as names as they stand, it's common to leave out the final vowel to make it absolutely clear that this is a name and not something else (Lojban goes for overkill when it comes to possible misunderstanding). So if your name or nickname is *Cat* (Lojban mlatu), you can either add s like a normal cmene to make mlatus., or just chop the end off and call yourself mlat. .

Here are a few examples:

- Fish – finpe – finp.
- Björn (Scandinavian = bear) – cribe – crib.
- Green – crino – crin.
- Mei Li (Chinese = beautiful) – melbi – melb.
- Ayhan (Turkish = Moon Lord) – lunra nobli (= lurnobli) – lurnoblis.

Answers to Exercises

Exercise 2

1. .ua

2. .oi

3. .u'inai

4. .u'i

5. **.ienai**

6. **.oi** , **.i'enai**, or even **.oi.i'enai**

7. **.iunai**

8. Probably **.a'unai.oi**, unless you like cold greasy food, of course.

9. **.uu**

10. Depends on your feelings about beetles. **.ii** if you have a phobia, **.a'unai** if you are merely repelled by it, **.a'u** if you're an entomologist, and so on.

Exercise 3

1. New York: USA

2. Rome: Italy

3. Havana: Cuba

4. Cardiff: Wales (The Welsh for *Cardiff* is *Caerdydd*, which would Lojbanise to something like **kairdyd.**)

5. Beijing: China

6. Ankara: Turkey

7. Albequerque: New Mexico, USA

8. Vancouver: Canada

9. Cape Town: South Africa

10. Taipei: Taiwan (note **b**, not **p**. Although actually, the **b** in Pinyin is pronounced as a **p**... But this isn't meant to be a course on Mandarin!)

11. Bonn: Germany

12. Delhi: India (The Hindi for *Delhi* is *Dillî*, which would give **diliys.** or **dili'is.**)

13. Nice: France

14. Athens: Greece (*Athina* in Greek)

15. Leeds: England

16. Helsinki: Finland

Exercise 4

There are usually alternative spellings for names, either because people pronounce the originals differently, or because the exact sound doesn't exist in Lojban, so you need to choose between two Lojban letters. This doesn't matter, so long as everyone knows who or where you're talking about.

1. **djon.** (or **djan.** with some accents)

2. **melisys.**

3. **.amandys.** (again, depending on your accent, the final **y** may be **a**, the initial **a** may be **y**, and the middle **a** may be **e**.)

4. **matius.**

5. **maikyl.** or **maik,l.** , depending on how you say it.

6. **deivyd.bau,is.** or **bo,is.** (but not **bu,is.**—that's the knife)

7. **djein.ostin.**

8. .uiliam.cekspir.

9. sigornis.uivyr. or sygornis.uivyr.

10. ritcyrd.niksyn.

11. .istanBUL. with English stress, .IStanbul with American, .istanbul. with Turkish. Lojbanists generally prefer to base cmene on local pronunciation, but this is not an absolute rule.

12. maDRID.

13. tokios.

14. san.salvaDOR. (with Spanish stress)

Chapter 2. Relationships and Places

Names and relationships

In Lesson 1 we looked at cmene, Lojban names. cmene are typically understood to label one particular thing. Just as in English, if I say *Mary*, I mean one particular person called Mary at a time, no matter how many people there are in the world called Mary; so in Lojban, meris. can only refer to one person. This means that cmene normally do not stand for classes of things (like *person*, *dog* or *computer*) or for relationships between things (like *loves*, *gives* or *is inside*).

> **Note:** Those of you already advanced in Lojban wisdom will point out that mass names don't name 'one particular thing'. True; but if you know that much Lojban, you also know what the real distinction between a predicate and a name is anyway, so you know where this simplification is coming from. The rest of you, er, carry on.

Relationships are the key to Lojban, and words describing a relationship are said to act as selbri. A selbri is not a *type* of word (like a 'verb' in English); it is something that some types of words can *do*. Various types of word can act as selbri, but cmene, as we've seen, cannot.

The main type of word used as a selbri is a gismu, or root-word. These are the building blocks of Lojban vocabulary. gismu are easy to recognise, because they always have five letters, in the form

CVCCV—e.g. gismu, dunda, sumti

or

CCVCV—e.g. cmene, bridi, klama
(C=consonant; V=vowel).

Exercise 1

Which of the following Lojban words are:

a. gismu

b. cmene (remember, they always end in a consonant)

c. neither?

Note: I've left out the full stops in the cmene—that would make it too easy!

1. lojban

2. dunda

3. praxas

4. mi

5. cukta

6. prenu

7. blanu

8. ka'e

9. dublin

10. selbri

Take your places...

Now we can recognise a gismu, let's see what we can make it do. dunda means 'give', and as a selbri it describes a relationship between a giver, something they give, and someone who receives it—in that order. (Lojban insists on the order so you can tell which is which; but that's a convention of dunda, rather than something intrinsic in the act of giving.)

Let's say we have three people, Maria, Claudia and Julia, for instance. If we say

la mari,as. dunda la .iulias. la klaudias.

we mean that Maria gives Julia to Claudia.

> **Note:** The la you see in front of each cmene is an article, like *a* and *the* in English. Its job is to signal to the listener that the word coming up is a name, and not some other kind of word.

If, on the other hand, we say

la .iulias. dunda la mari,as. la klaudias.

we mean that Maria is who is being given away, and Julia is the one who gives her to Claudia. How do we know this? English uses the word *to* to indicate the receiver, and in some other languages (like Latin or Turkish) the form of the words themselves change. In Lojban, as in logic, we have what is called **place structure**.

Place-structure means that dunda doesn't just mean *give,* it means

x_1 gives x_2 to x_3

where *x* means someone or something. Even if we just say dunda on its own, we still mean that someone gives something to someone; we just aren't interested in (or we already know) who or what.

We can say, then, that dunda has three 'places'. We can think of places as slots which we can, if we want, fill with people, objects, events or whatever. These places are called sumti in Lojban (easy to remember, as it sounds a bit like someone saying *something* and chewing off the end of the word). Again, a sumti is not a *type* of word, it is something a word *does*. The simplest Lojban sentence is a bridi, i.e. a selbri and a bunch of sumti. In other words,

bridi = selbri + sumti

> **Note for logicians and computer programmers:** For selbri, logicians can read 'predicate' or 'relation', and programmers can read 'function'; for sumti, both can read 'argument'.

How many sumti can a selbri describe? The number depends on the place structure of the word we use for the selbri. (There are ways of tagging on extra sumti, which we'll cover in later lessons). A gismu has a set number of places; as we've just seen, dunda has three. The number of places varies from one to a staggering (and rare) five. Here are some examples.

One place

ninmu x_1 is a woman (any female humanoid person, not necessarily adult)

> **Note:** To assume that Lojban works like English in general is a sin Lojbanists are ever on the alert for. It is enough of a community obsession that the Lojban word for it—malglico 'damned English'—routinely turns up in the English of Lojbanists, even when they're not talking about Lojban. In this instance, it is malglico to asume that ninmu refers to an adult.

blabi x_1 is white / very light-coloured

cmila x_1 laughs [not necessarily at someone or something; to include the object of the laughter you would use the lujvo (compound word) mi'afra—x_1 laughs at x_2, a slightly different concept]

Two places

cipni x_1 is a bird/avian/fowl of species x_2

vofli x_1 flies [in air/atmosphere] using lifting/propulsion means x_2

jungo x_1 reflects Chinese [Mandarin, Cantonese, Wu, etc.] culture/nationality/language in aspect x_2

junri x_1 (person) is serious/earnest/has gravity about x_2 (event/state/activity)

Three places

xamgu x_1 is good/beneficial/acceptable for x_2 by standard x_3

[This is *very* Lojbanic—the English word *good* on its own is so vague as to be almost meaningless. It is also slightly malglico to put a person in the x_1 place, which is normally filled by an object, state or event. For 'morally good' you would usually use vrude 'virtuous']

pritu x_1 is to the right of x_2, where x_2 is facing x_3

[Remember all those times you have to ask "Is that my right or your right?" in English]

cliva x_1 leaves x_2 via route x_3

kabri x_1 is a cup/glass/tumbler/mug/vessel/[bowl] containing contents x_2, and of material x_3

Four places

vecnu x_1 [seller] sells/vends x_2 [goods/service/commodity] to buyer x_3 for amount/cost/expense x_4

tivni x_1 [broadcaster] televises programming x_2 via media/channel x_3 to television receiver x_4

bajra x_1 runs on surface x_2 using limbs x_3 with gait x_4

Five places

klama x_1 goes/comes to x_2 from x_3 via x_4 by means x_5

cukta x_1 is a book about subject/theme/story x_2 by author x_3 for audience x_4 preserved in medium x_5

fanva x_1 translates x_2 to language x_3 from language x_4 with translation-result x_5

So for example you can say (trying desperately to match the grammar to what you've been taught so far):

- la mari,as. ninmu
  Maria is a woman.

- la tuitis. cipni la serinus.serinus.kanarias.
  Tweety is a bird of species *Serinus serinus canaria*.

- la .iulias. pritu la mari,as. la klaudias.
  Julia is to the right of Maria, facing Claudia.

- la pybysys. tivni la niksyn.in.tcainas. la kycy,ebutys. la telis.
  PBS (the American Public Broadcasting Service) televises *Nixon in China* (an opera) through KCET (the Los Angeles PBS affiliate) to Telly (a pet name for a particular television) (!).

- la .iulias. klama la .uacintyn. la losandjeles. la cikagos. la .amtrak.
  Julia travels to Washington from Los Angeles via Chicago on Amtrak (the American inter-city train network.)

Determining place structure

If all these places sound a bit daunting, don't worry—you don't have to memorise all of them (in fact nobody does). There are a few cases where it's worth learning the place structure to avoid misunderstanding, but usually you can guess place structures using context and a few rules of thumb.

1. The first place is often the person or thing who *does* something or *is* something (in Lojban there is no grammatical difference between 'doing' and 'being').

2. If someone or something has something done to them, he/she/it is usually in the second place.

3. *to* places (destinations) nearly always come before *from* places (origins).

4. Less-used places come towards the end. These tend to be things like 'by standard', 'by means' or 'made of'.

The general idea is that the places which are most likely to be filled come first. You don't have to use all the available places, and any unfilled places at the end are simply missed out.

Exercise 2

Try to guess the place structure of the following gismu. You probably won't get them all, but you should be able to guess the most important ones. Think of what *needs* to be in the sentence for it to make sense, then add anything you think would be useful. For example, with klama, you need to know who's coming and going, and although you could in theory say "Julie goes," it would be pretty meaningless if you didn't add where she goes to. Where she starts her journey, the route she takes and what transport she uses are progressively less important, so they occupy the third, fourth and fifth places.

1. karce – car
2. nelci – like, is fond of
3. cmene – name
4. sutra – fast, quick
5. crino – green
6. sisti – stop, cease

7. prenu – person

8. cmima – member, belongs to

9. barda – big

10. cusku – say, express

11. tavla – talk, chat

> **Note:** What the place structure for gismu should be is often enough an involved philosophical issue. Place structures were debated exhaustively in the early '90s, and the current place structures (finalised in 1994) are not really open for negotiation any more.

gismu as sumti

So far we've seen how a gismu can express a relationship between two or more cmene, so we can say things like

> la bil. nelci la meilis.
> Bill likes Mei Li

But cmene can only go so far (as the examples above must have proven!) Most things and people in world won't have names—or at least, not any names we are aware of. So if we don't happen to know Mei Li's name, how can we say "Bill likes the woman"? If we say la bil. nelci la ninmu, we mean that Bill likes someone whose name is *Woman*, which is not what we want. What we say, in fact, is

> la bil. nelci le ninmu

What does le mean here? We have translated it into English as 'the', and like *the* and la, it *is* an article; but 'the' isn't quite what it means. The best way to think of it is 'the thing(s) I call'. la + cmene is like a permanent label (Bill is always Bill). le + gismu is more like a temporary label—I have something in mind, and choose to call it 'woman'. Probably she really is a woman, but with le this doesn't have to be so—we could be talking about a transvestite or a stone that looks a bit like a woman. There are other articles which can show that it's a real woman, or a typical woman or whatever, but we'll leave those alone for the time being.

One more word is sometimes necessary when using gismu as sumti—namely, cu. This doesn't carry any meaning, but separates the selbri from whatever comes before it. It's not necessary with cmene, because they can't run over into anything else. For the same reason, you don't need cu after mi (I/me/we), do (you, the person(s) I'm talking to) or any words like this ('pro-sumti', in Lojban jargon). But le ninmu klama does not mean "The woman goes". Two gismu next to each other form a compound selbri (or tanru), which means that ninmu and klama do get run together. The result is that that le ninmu klama means "The woman-type-of goer" (maybe a female traveller). What we say instead, to avoid this, is

> le ninmu *cu* klama

+---+
| **Warning** |
| |
| cu does *not* mean 'is' (as in "The woman is going"). In fact it doesn't |
| mean anything—it's just there to indicate that there's a selbri coming up. |
+---+

Exercise 3

Add cu to the following Lojban sentences where necessary, then work out what they mean. For example, for le klama ninmu to make sense as a sentence, you need to add cu: le klama *cu* ninmu.

1. la klaudias. dunda le cukta la bil.

2. le karce sutra

3. la kamIL. cukta

4. mi fanva la kaMIL. la lojban

5. le prenu sisti

6. le ninmu cliva

7. la .istanbul. barda

8. mi tavla la mari,as.

9. la meiris. pritu la meilis. mi

10. le cipni vofli

11. crino

12. ninmu

Changing Places

We've seen that if we don't need all the places (and we rarely do), then we can miss out the unnecessary ones at the end of the bridi. We can also miss out the first place if it is obvious (just as in Spanish). However, it sometimes happens that we want places at the end, but not all the ones in the middle. There are a number of ways to get round this problem.

One way is to fill the unnecessary places with zo'e, which means 'something not important'. So la suzyn. klama la paris. la berlin. zo'e le karce tells us that Susan goes to Paris from Berlin by car, but we're not interested in the route she takes. In fact zo'e is always implied, even if we don't say it. If someone says klama, what they actually mean is

> zo'e klama zo'e zo'e zo'e zo'e

but it would be pretty silly to say all that.

> **Note:** A bridi containing only a selbri, and no sumti, has a special kind of role in Lojban. Such bridi are called **observatives**, and their job is to make a simple observation that something is there or is going on, without going into the details of who or what is involved. So fagri means just "Fire!", not "My house is on fire" or "The salmon was poached over a gently lapping campfire." Similarly, karce means "Car!", and not "This is a natural gas powered 2001 sedan Hyundai car, featuring fuzzy dice and a 'Free Brobdignag!' bumper sticker".
>
> Observatives are as simple as baby talk—which is no surprise, since that's what they were modelled on. Note that observatives are still normal Lojban selbri; in particular, they don't make any distinction between verb and noun. So klama means not "Go!" (we'll find out how to say *that* next lesson), but "Goes!" or "Goer!"—more idiomatically, "Look! Someone's going!" And there is no real difference between klama "Look! Someone's going!" and karce "Look! A car!"

Most people don't want more than one zo'e in a sentence (though there's nothing to stop you using as many as you like). A more popular way to play around with places is to use the **place tags** fa, fe, fi, fo and fu. These mark a sumti as being associated with a certain place of the selbri, no matter where it comes in the sentence: fa introduces what would normally be the first place, fe the second place, and so on. For example, in

> la suzyn. klama fu le karce
> Susan goes in the car / Susan goes by car

fu marks le karce as the fifth place of klama (the means of transport). Without fu, the sentence would mean "Susan goes to the car."

After a place introduced with a place tag, any trailing places follow it in numbering. So in

> la suzyn. klama fo la .uacintyn. le karce
> Susan goes via Washington by car

la .uacintyn. is the fourth place of klama, and le karce is understood as the place following the fourth place—i.e. the fifth place.

With place tags you can also swap places around. For example,

> fe le cukta cu dunda fi la klaudias.
> The book was given to Claudia.

(The book—le cukta—is the second place of dunda, what is given; Claudia—la klaudias.—is the third place of dunda, the recipient.)

Again, you probably don't want to overdo place tags, or you'll end up counting on your fingers (although they're very popular in Lojban poetry—place tags, that is, not fingers.)

A final way to change places is **conversion**, which actually swaps the places round in the selbri—but we'll leave that for another lesson. There are no rules for which method you use, and you can use them in any way you want, so long as the person you're talking to understands.

Vocabulary

glico	x_1 is English/pertains to English-speaking culture in aspect x_2
rokci	x_1 is a quantity of/is made of/contains rock/stone of type/composition x_2 from location x_3
rupnu	x_1 is measured in major-money-units (dollar/yuan/ruble) as x_2 (quantity), monetary system x_3

Exercise 4

Reorder the sumti with place tags in these Lojban sentences so that no place tags are necessary, and the sumti appear in their expected places. Insert zo'e where necessary. For example: fi la .iulias. cu pritu fa le karce → le karce cu pritu zo'e la .iulias.

1. fo le cukta cu cusku fe le glico fi le prenu

2. fi mi vecnu fa do le karce

3. fu la .Odisis. cu fanva fi le glico fa la fits.djerald.

4. mi vecnu fo le rupnu

5. fi le rokci cu kabri

6. fi la lojban. fo la lojban. tavla fa do

Summary

In this lesson we've covered the following points:

- The basic bridi structure.

- The difference between cmene and gismu, and the articles la and le.

- The place structure of gismu.

- cu to separate selbri from sumti.

- zo'e to fill missing sumti places.

- Changing places with place-tags.

Although there is a lot more to Lojban sentences than this, you now have the basics of Lojban grammar; the rest is just a matter of adding things on to it—different articles, tags, times, numbers and so on.

Answers to exercises

Exercise 1

1.

lojban   cmene

2.

dunda   gismu (give)

3.

praxas.   cmene (Prague—*Praha* in Czech—the capital of the Czech Republic)

4.

mi   Neither: it's a type of cmavo (structure word) called a 'pro-sumti', a word that stands in for a sumti, like an English pronoun stands in for a noun

5.

cukta   gismu (book)

6.

prenu   gismu (person)

7.

blanu   gismu (blue)

8.

ka'e   Neither, it's a **cmavo** or structure word, meaning 'can'

9.

dublin.   **cmene** (the capital of Ireland)

10.

selbri   Neither, it's a **lujvo** or compound word

Exercise 2

1.

karce x_1 is a car/automobile/truck/van [a wheeled motor vehicle] for carrying x_2, propelled by x_3

(A car propelled by natural gas is a different kind of thing to a diesel truck.)

2.

nelci x_1 is fond of/likes/has a taste for x_2 (object/state)

3.

cmene x_1 (quoted word(s)) is a/the name/title/tag of x_2 to/used-by namer/name-user x_3 (person)

(Different people have different names for things.)

4.

sutra x_1 is fast/swift/quick/hastes/rapid at doing/being/bringing about x_2 (event/state)

5.

crino x_1 is green

6.

sisti x_1 ceases/stops/halts activity/process/state x_2 [not necessarily completing it]

7.

prenu x_1 is a person/people (noun) [not necessarily human]

8.

cmima x_1 is a member/element of set x_2; x_1 belongs to group x_2; x_1 is amid/among/amongst group x_2

9.

barda x_1 is big/large in property/dimension(s) x_2 as compared with standard/norm x_3

(Is the Taj Mahal big? Yes, compared to me; no, compared to Jupiter.)

10.

cusku x_1 expresses/says x_2 for audience x_3 via expressive medium x_4

11.

tavla　　　　　　x_1 talks/speaks to x_2 about subject x_3 in language x_4

Note the different place structures of **cusku** and **tavla**. With **cusku** the emphasis is on communication; what is communicated is more important than who it is communicated to. Quotes in e-mails frequently start with "**do cusku di'e**" (**di'e** means 'the following') as the Lojban equivalent of "You wrote". (**ciska** 'write' places more emphasis on the physical act of writing.) With **tavla** the emphasis is rather more on the social act of talking: you can **tavla** about nothing in particular.

Exercise 3

1. la klaudias. dunda le cukta la bil.
   Claudia gives the book(s) to Bill.
2. le karce *cu* sutra
   The car(s) is/are fast.
3. la kamIL. cukta
   Camille is a book.
4. mi fanva la kaMIL. la lojban
   I translate *Camille* into Lojban.
5. le prenu *cu* sisti
   The person(s) stop(s) (whatever it was they were doing)
6. le ninmu *cu* cliva
   The woman/women leave(s)
7. la .istanbul. barda
   Istanbul is big. (An understatement—it has a population of over ten million)
8. mi tavla la mari,as.
   I talk to Maria.
9. la meiris. pritu la meilis. mi
   Mary is on the right of Mei Li, if you're facing me.
10. le cipni *cu* vofli
    The bird(s) flies/fly
11. crino
    It's / they're green.
12. ninmu
    She's a woman / They're women / There's a woman / There are some women

In sentences 1, 3, 4, 7, 8 and 9, **cu** is possible but not necessary. In the last two sentences, **cu** is impossible, since it has to separate the **selbri** from the **sumti** that comes before it, and there are no **sumti** here to separate. Those last two sentences are observatives, as discussed in *Changing Places*.

Note that I have translated these sentences in the present tense (since in English you have to choose a tense) but they could be in any tense; so **le cipni cu vofli** could also mean "The bird flew", for example. We'll look at how Lojban expresses tense in later lessons; just remember that you don't actually *need* it—normally it's obvious whether an action takes place in the past, present or future.

Exercise 4

1. zo'e cusku le glico le prenu le cukta
   Someone expresses the English thing for the person(s) through a book
   The book is a medium for English to people
2. do vecnu le karce mi zo'e
   You sell me the car for some amount

I am sold the car by you (Notice how le karce is assigned x_2, since it follows an x_1 place immediately.)

3. la fits.djerald. fanva zo'e le glico zo'e la .Odisis

   Fitzgerald translates something into English from some language as *The Odyssey*

   The Odyssey is a translation into English by Fitzgerald

4. mi vecnu zo'e zo'e le rupnu

   I sell something to someone for the dollar

   I sell (it) for a dollar

5. zo'e kabri zo'e le rokci

   Something is a cup, containing something, made of stone

   Stone is something cups are made of

6. do tavla zo'e la lojban. la lojban.

   You talk to someone about Lojban in Lojban

   You talk about Lojban in Lojban

> **Note:** As you can see, you can have more than one sumti in front of the selbri. This is unlike English, where you usually have only the subject before the verb. This can happen with or without place tags; for instance, do zo'e la lojban. tavla la lojban. means the same thing as do tavla zo'e la lojban. la lojban.

Chapter 3. Commands, Questions, and Possessives

Commands

So far we've looked at simple **propositions**, sentences that say that something is true. You can, in theory, say anything you want with propositions, but it's pretty inconvenient. For example, if I want you to run, I could say just that:

> I want you to run

but I'd probably just say:

> Run!

How do we do this in Lojban? We can't copy English grammar and just say bajra, since, as we've seen, this means "Look! Someone/something runs". Instead we say

> ko bajra

ko means 'you, the person I'm talking to', but only in commands. (In normal sentences it's do). Normally it comes in the first place of the bridi, since normally you're asking people to do something or be something, not to have something done to them. However, you can put it elsewhere, e.g.

> nelci ko

This means something like "Act so that [someone unspecified] likes you", and sounds pretty odd in English, but you could use it in the sense of "Try to make a good impression." Another example is:

> mi dunda le cifnu ko

or "Act so that I give the baby to you," with the possible meaning "Get up and put your cigarette out—I'm going to pass you the baby."

You can even have ko in two places in a bridi, for example,

> ko kurji ko
> [Act so that] you take care of you

or in other words, "Take care of yourself." In fact, as alluded to in the last exercise of the previous lesson, we can put the selbri anywhere other than the beginning of the sentence. (We can't just put the selbri at the very beginning of the sentence, without fa before the x_1 sumti, because this would imply 'someone/something' for the first place: the selbri would become an observative.) Because of this freedom with sumti position, we can (and do) say

ko ko kurji

Vocabulary

catra	x_1 (agent) kills/slaughters/murders x_2 by action/method x_3
ciska	x_1 inscribes/writes x_2 on display/storage medium x_3 with writing implement x_4; x_1 is a scribe
finti	x_1 invents/creates/composes/authors x_2 for function/purpose x_3 from existing elements/ideas x_4
nelci	x_1 is fond of/likes/has a taste for x_2 (object/state)
nenri	x_1 is in/inside/within x_2; x_1 is on the inside/interior of x_2 [totally within the bounds of x_2]
prami	x_1 loves/feels strong affectionate devotion towards x_2 (object/state)
sutra	x_1 is fast/swift/quick/hastes/rapid at doing/being/bringing about x_2 (event/state)

Exercise 1

Imagine that someone says these things to you. What is it that they want you to do?

1. ko klama mi

2. ko dunda le cukta mi

3. la .izaBEL. nelci ko

4. ko sutra

5. ko ko nelci

Softening the blow...

So far we've looked at simple commands. However, outside the army, we don't normally use these very much—normally we ask people politely. Foreigners in England often make the mistake of thinking that putting *please* in front of a command makes it into a polite request, which it doesn't (in English we usually have to make it into a question e.g. *Could you open the window?*) Fortunately, in Lojban, 'please' really is the magic word. Putting the word .e'o before a sentence with ko changes it into a request; e.g.

.e'o ko dunda le cukta mi

is literally "Please give me the book," but is actually more like "Could you give me the book, please?" (Of course, norms of politeness in English do not necessarily translate into other languages, so it is better in such cases to be safe than sorry.)

Questions

In English, we make a yes/no question by changing the order of the words (e.g. *You are ...* → *Are you ...*) or putting some form of *do* at the beginning (e.g. *Does she smoke?*). This seems perfectly natural to someone whose native language is English (or German), but is actually unnecessarily complicated (as any speaker of Chinese or Turkish will tell you). In Lojban we can turn any proposition into a yes/no question by simply putting xu somewhere in the sentence (usually at the beginning.) Some examples:

xu do nelci la bil.

Do you like Bill?

xu mi klama
Am I coming?

xu crino
Is it green?

There are two ways to answer these questions. Lojban, like some other languages, does not have words that mean 'yes' or 'no'. One way to answer "yes" is to repeat the selbri e.g.

- xu do nelci la bil.

- nelci

We can also use go'i, which repeats the last bridi (without the question)

> **Note:** However, if you say "You like Bill", and *I* then say "You like Bill", I am repeating your words, but not your meaning. To do *that*, I would need to say "I like Bill" instead. It is much more useful for go'i to repeat the meaning than the words of the bridi; so go'i after xu do nelci la bil. means not *do* nelci la bil., but *mi* nelci la bil.. In other words, in an answer to a "Do you?" type of yes/no question, go'i means "Yes (I do)", as you'd expect.

What about negative answers? Any bridi can be made negative by using na. This negates the *whole* of the bridi, so you can put it anywhere you want, with a little extra grammar. But the simplest place to put it grammatically is right before the selbri. So mi cu na nelci la bil. means "It is not true that I like Bill," or in other words, "I don't like Bill."

> **Tip:** By default, na is followed by a selbri. Since cu has the job of indicating that a selbri is coming up, na makes it superfluous. So you can simply say mi na nelci la bil.

As an answer to a question, we do the same thing, so we just say na nelci or na go'i.

> **Logical note:** Negatives are a lot more complicated than they look, in both English and Lojban. Strictly speaking, mi na nelci la bil. is true even if I've never heard of Bill (since it's pretty hard to like someone you know nothing about.) We'll look at some other negatives later, but for the time being na will do fine. Just as in English, if you ask someone if they like Bill, and they reply "No" because they haven't met him, they're being amazingly unhelpful—but not really lying.

English also has a number of *wh-* questions—*who, what* etc. In Lojban we use one word for all of these: ma. This is like an instruction to fill in the missing place. For example:

- do klama ma

- la london.

- "Where are you going?"

- "London."

- ma klama la london.

- la klaudias.

- "Who's going to London?"
- "Claudia."

- mi dunda ma do
- le cukta

- "I give what to you?" (probably meaning "What was it I was supposed to be giving you?")
- "The book."

Finally we have mo. This is like ma, but questions a selbri, not a sumti—it's like English "What does x do?" or "What is x?" (remember, being and doing are the same in Lojban!) More logically, we can see mo as asking someone to describe the relationship between the sumti in the question. For example:

do mo la klaudias.
You ??? Claudia
What are you to Claudia?

The answer depends on the context. Possible answers to this question are:

- nelci: "I like her."
- pendo: "I am her friend"
- prami: "I adore/am in love with her."
- xebni: "I hate her."
- fengu: "I'm angry with her."
- cinba: "I kissed her"

Note that the time is not important here: just as cinba can mean 'kiss', 'kissed', 'will kiss' and so on, mo does not ask a question about any particular time. There *are* ways to specify time in Lojban, but it's not necessary to use them. (Just to satisfy your curiosity though, "I kiss*ed* Claudia" is mi *pu* cinba la klaudias.)

We've said that mo can also be a "What is ..." type of question. The simplest example is ti mo—"What is this?" You could also ask la meilis. mo, which could mean "Who is Mei Li?", "What is Mei Li?", "What is Mei Li doing?" and so on. Again, the answer depends on the context. For example:

- ninmu: "She's a woman."
- jungo: "She's Chinese."
- pulji: "She's a policewoman."
- sanga: "She's a singer" *or* "She's singing."
- melbi: "She's beautiful." (possibly a pun, since this is what *meili* means in Chinese!)

There are ways to be more specific, but these normally involve a ma question; for example la meilis. gasnu ma ("Mei Li does what?").

There are more question words in Lojban, but xu, ma and mo are enough for most of what you might want to ask. Three other important questions, xo ("How many?") ca ma ("When?") and pei ("How do you feel about it?") will come in the lessons on numbers, time and attitudes.

Exercise 2: Lojban general knowledge quiz

Answer the following questions (in Lojban, of course). Most of the answers are very easy; the trick is to understand the question! For example, cynyny. mo "What is CNN?"—tivni "Broadcaster"

1. la brutus. mo la .iulius.

2. ma prami la djuliet.

3. xu la paris. nenri la .iunaited.steits.

4. ma finti la .anas.kaREninas.

5. xu la porc. sutra

6. la lis.xarvis.azuald. catra ma

7. xu la djorj.eliot. ninmu

8. la sakiamunis. mo

9. la cekspir. mo la xamlet.

10. la das.kapiTAL. cukta fi ma

11. xu la xardis. fengu la lorel.

Possessives

The sumti we have seen so far—names, and le + gismu combinations—do an OK job in describing things. They don't do as good a job in narrowing things down. For example, you may be fortunate enough to know two people who own Porsches. Your friends will (normally) have different names, which you can use to tell them apart. But if you're discussing their cars, how do you tell *them* apart?

Or take the following sentence:

> mi nelci le tamne
> I like the cousin

Not as informative a sentence as it might be: the question that you should be hollering at this instant is, "Whose cousin?" Is it my cousin? Your cousin? Frederick II's cousin? When we talk about things and people, we are expected to give enough information, so that the listener knows who or what on Earth we are talking about. In these examples, saying "the Porsche" or "the cousin" is clearly not enough information.

One of the simplest way to narrow things down is by answering the question 'whose?' It doesn't work in all cases, but it will here: "Mary's Porsche", "Fred's Porsche", "Tim's cousin", "my cousin". So, how do we say that in Lojban? Well, there's two ways. Or four. Or seven. Or thirteen. Or more—because this is Lojban, and in Lojban you can be as precise, or as imprecise, as you want to. We'll give you the simple answer first, and then work our way up.

The simplest way of all is to add, after the sumti you're talking about, pe followed by the person (or thing) you associate it with. So:

- la porc. pe la meiris.
  Mary's Porsche

- le tamne pe la tim.
  Tim's cousin

- le nenri pe le karce
  The inside of the car

- le cmima pe la lojbangirz.
  The member of the Logical Language Group

Easy as pie, so far.

You'll notice that the order is in some instances the other way around from English: la porc. pe la meiris. looks more like "the Porsche of Mary". Now, English uses both *'s* and *of* for this kind of association. The choice between the two is complicated, but basically depends on whether the 'possessor' is a person or not—which is why *the Porsche of Mary* sounds odd, as does *English's verbs.*

Lojban doesn't have those restrictions: if you can do something with one sumti, you can do it with any sumti. And you can put Mary in front of her Porsche. One way to do it is to tuck the pe-phrase in between the article and the rest of your sumti: for instance, le pe la tim. tamne. This is literally "The of Tim cousin". But this construction is kind of odd, and since it's not how most languages do things, you won't be surprised that it's not commonly used.

There is a similar way of saying it, though, which *is* quite common. That is to wedge the 'possessor' sumti between the article and the name or gismu, *without* the pe. This gives you le la tim. tamne, which should be instantly recognisable as "Tim's cousin." When the 'possessor' is a single-word sumti, this is the most popular way of expressing things: le mi tamne is how you would normally say "my cousin". So you can now say:

- le la lojbangirz. cmima
  The member of the Logical Language Group

- le la meiris. karce
  Mary's car

- le la toi,otas. nenri
  The inside of the Toyota

- le do cukta
  Your book

> **Tip:** You can't say la la meiris. porc.: strictly speaking, you can't tell when one name starts and another ends, since names can contain multiple pauses. If I said la la meiris. mersedez. benz., did I mean Mary's Mercedez-Benz, or Mary Mercedez's Benz, or Mary Mercedez-Benz's something-else? For the same reason, you can't really say la pe la meiris. porc., either.
>
> For le + gismu as a possessor, things are even worse. The way Lojban grammar works, the sumti you insert between le and a brivla, to indicate a 'possessor', has to be kept fairly simple. For now, in fact, nest only names and single-word sumti inside le + gismu-type sumti; that's what everyone ends up doing anyway.
>
> To see why things can go wrong, consider how you would say le tamne pe le ninmu klama 'the woman traveller's cousin' with this kind of nesting. You could flip it around as le le ninmu klama tamne—but then, how can you tell where the 'possessor' ends and where the 'possessee' begins? That phrase could just as

easily be 'the woman's travelling cousin.' A situation best avoided, in other words. There *is* a way you can make this work, though—which we'll cover in a couple of lessons.

Exercise 3

For each of the following, switch the two sumti around, so that you convert a pe possessive into a nested possessive, and vice versa. Only do this where grammatically allowed. For example, le la .iulias. kabri → le kabri pe la .iulias..

1. le cifnu pe la meiris.

2. le la meiris. cukta

3. le cukta pe mi

4. le cukta pe le ninmu

5. ma pe mi

6. le zo'e karce

7. le la tim. rokci

8. la meiris. pe la tim.

9. le cukta pe ma

10. le cmene pe la roz.

More Possessives

Warning

This is somewhat advanced, and you might want to skip it on a first reading.

What pe is actually doing is saying that there is a relationship between the two sumti. What that relationship is is left as open as possible: we've used the term 'possessor', but the relationship need not involve ownership in Lojban any more than in English. (That also holds when you leave the pe out.) For instance, if I say "Danny's desk" (le gunjubme pe la danis. or le la danis. gunjubme) at an office, I probably don't mean that Danny *owns* the desk (in all likelihood the company does), but simply that he sits there all the time and keeps his stuff there.

You can get more specific if you want—though Lojbanists tend not to. If you want to say there is actual ownership involved, or any other association in which someone is uniquely associated with what you're talking about, you can use po instead of pe. le gunjubme po la danis., for instance, means that this is the desk Danny is uniquely associated with. This can be because he actually paid money for at a store. In that case, like anything he owns, he can sell it, or give it away, in which case it stops being his. Or it may be the desk assigned to him, and him alone, at work; but if the desk (or Danny) is reassigned, the desk stops being his. Moreover, if there is a crisis in office space, and Danny is sharing the desk with Wilfred, then you can't speak of the desk as being either le gunjubme po la danis. or le gunjubme po la .uilfred., because it's unique to the pair of them, not to any one of them. You can still, however, speak of it as le gunjubme pe la danis., which does not insist on uniqueness.

> **Tip:** There is a way to say the desk is unique to the pair of Danny and Wilfred: le gunjubme po la danis. joi la .uilfred. You'll be meeting joi here and there in the coming lessons, but you'll be formally introduced to it in Lesson 11.

Some other examples:

- le cukta po mi
  My book

- le cipni po la meilis.
  Mei Li's bird

- la kokakolys. po do
  Your Coca-Cola

There are some things which you have which are unique to you, but which also never stop being yours, by definition. Your hand, for example, remains your hand, even if you saw it off (apologies for gruesomeness): you'd have to enter the high-stakes world of international organ transplants before you could say that your hand becomes someone else's hand. Your parents also are not something you can give away or transfer (much though you might be tempted to on occasion!) Whatever happens, they remain, by definition, your parents. Many languages distinguish between this kind of having, and the here-today-gone-tomorrow kind of having. Lojban is one such language, and for your parents or your arm, you would say po'e instead of po:

- le rirni po'e la .iulias.
  Julia's parents

- le birka po'e la klaudias.
  Claudia's arm

  Note: As it happens, English is not one of those languages that distinguishes between these two notions (*alienable* and *inalienable possession* are the jargon terms, in case you're ever browsing a grammar of a South Pacific language.) So the distinction hasn't been exploited much to date in Lojban. More generally, the much vaguer association signalled by pe is usually enough to narrow down what exactly you mean, anyway; and for now, most Lojbanists are content to leave it at that. You probably will too.

Oh, and one more thing. We've been answering the question "whose?" through this section, but we haven't said how you *ask* "whose?" You've probably already guessed, though. The word *whose?* just means *who's?*, or *of whom?* And *who?* is ma. So if "Tim's cousin" is le tamne pe la tim. or le la tim. tamne, then we just follow the same fill-in-the-slot approach as we did earlier on, with ma substituting for la tim.: "whose cousin?" is le tamne pe ma or le ma tamne. (You would have already found this out in the preceding exercise—if you were good, of course!)

Exercise 4 (Advanced)

For each of the following, specify whether they involve po, po'e, or just pe.

1. My car

2. My language

3. My genes

4. My jeans

5. My fault

6. My self

7. My present (that I got)

8. My present (that I gave)

Summary

In this chapter, we have seen how to

- give commands in Lojban;

- soften commands with attitudinals;

- ask questions and give answers about sumti;

- ask questions and give answers about selbri;

- express association between two sumti, using pe and nesting;

- express association between two sumti more precisely, as alienable or inalienable possession.

Answers to Exercises

Exercise 1

1. Come to me.

2. Give me the book.

3. Act so that Isabel likes you. (or "Butter up Isabel" perhaps.)

4. Be fast ("Hurry up!")

5. Like yourself. (Note that changing the word order doesn't change the meaning here.)

Exercise 2

1. catra (assuming it's Julius Caesar we're talking about.)

2. la romios. (assuming it's *that* Juliet.)

3. na nenri or na go'i, unless we're talking about Paris, Texas.

4. la tolstois.

5. Trick question. la can name a specific Porsche, not Porsches in general, and a specific Porsche might go fast or not (e.g. it could have just broken down and not go at all.) In general, la porc. means just what I say it means, but as a name it is not used in general to refer to all Porsches, or to the typical Porsche. (Lojban has other ways of doing that.)

6. la KEnedis.

7. ninmu or go'i (Despite the pen-name, George Eliot was a woman.)

8. Not much we can say with the vocabulary we have at the moment other than prenu (maybe emphasising that Sakyamuni—the Buddha—was a person, not a God or somesuch). Other possible answers would be xindo 'Indian', or pavbudjo 'first Buddhist'.

9. finti—not ciska! Lojban separates the business of putting pen to paper from the act of creating a work of art. If Shakespeare had dictated *Hamlet* to Francis Bacon, Bacon would have been the ciska ('writer'), but Shakespeare would have remained the finti ('creator').

10. la karl.marks.

11. **fengu** or **go'i**—we're talking about Laurel and Hardy here.

Exercise 3

1. **le la meiris. cifnu** (Mary's child)

2. **le cukta pe la meiris.** (Mary's book)

3. **le mi cukta** (My book)

4. You can't do this (for now): **le le ninmu cukta** is ambiguous. (The woman's book)

5. You can't do this: there is no article in **ma** for **mi** to follow. The Lojban literally means 'my what?', but it can be used more flexibly. **do nelci ma pe mi**, for example, means "What do you like about me?"

6. **le karce pe zo'e** ([Someone's] car)

7. **le rokci pe la tim.** (Tim's rock)

8. You can't do this: **la la tim. meiris.** would be confusing. (Tim's Mary—for example, his sister, or his partner. Note that, as we discuss in the next section, this is not necessarily a demeaning thing to say: **pe** does not imply ownership, but only association.)

9. **le ma cukta** (Whose book?)

10. **le la roz. cmene** (Rose's name; not 'The name of the rose', which would involve the **gismu** for 'rose', **rozgu**.)

Exercise 4

1. **po**: You own it, so it's uniquely associated with you (by default.)

2. **pe**: You don't own it, and you can change it, so neither kinds of 'possession' apply.

3. **po'e**: Your genetic fingerprint makes your genes inseparably yours.

4. Though you might consider yourself inseparable from your jeans, too, they are of course **po**.

5. **po**: There's no real sense of 'possession' involved here; but this is still a unique association.

6. **po'e**: If there's one thing that's inseparable from you—it's *you*.

7. **po**: I may not have paid any money for it, but a gift is my property nonetheless, so it's uniquely associated with me.

8. **po**: Since I've given the gift away, I do not own it in any real sense. But the gift is *still* uniquely associated with me, since it was me that gave it away.

Chapter 4. Numbers, and a few more articles

One of the first things you learn in a new language is how to count, and this course is no exception. However, in Lojban, numbers include much more than just counting; for example, in Lojban, *some, most* and *too many* are numbers.

Basic numbers

The numbers from one to nine are as follows:

1. pa
2. re
3. ci
4. vo
5. mu
6. xa
7. ze
8. bi
9. so

This leaves zero, which is no (think "yes, we have no bananas"). You may have noticed that the numbers repeat the vowels AEIOU. Since you can't get by without memorising numbers, try to think of mnemonics for the unfamiliar ones. For example, although the sound is different, xa has the *x* of *six*, and I remembered so by thinking of the proverb "A stitch in time saves *nine*," which is about *sew*ing (.oi).

Numbers from 10 onwards are made by putting the digits together, just like you'd say a telephone number. For example:

pano	10
zebi	78
xanoci	603
vomusore	4,592

4,592 has a comma in it (or a full stop in some languages, just to make things confusing). We can't use a comma in Lojban, because that means "separate these two syllables" (as we saw in Lesson 1 with Lojbanised names like zo,is. for *Zoe*). What we say instead is ki'o. We don't *have* to use ki'o, but it can make things clearer. So 4,592 can also be read as vo ki'o musore. ki'o also has the advantage that if the following digits are all zeroes, we don't need to say them, so 3,000 is ci ki'o. You can remember ki'o easily if you think of *kilo*—a thousand. (The similarity is not coincidental.)

Just as we have a word for a comma, we also have one for a decimal point: pi. So 5.3 is mupici. In fact, pi is not always decimal; it's the point for whatever number base you're using. But that's a more advanced topic.

> **Tip:** Don't get this mixed up with the number *pi* (π): 3.14159..., which has its own word in Lojban: pai—oddly enough.

When you want to talk about numbers as sumti—that is to say, as things in and of themselves—you need to put an article in front of them. But that article cannot be la, and for reasons which hopefully will become clear soon, it cannot be le either. In front of numbers, Lojban uses the article li. So li pareci means 'the number one hundred and twenty three'. 'One, two, three', on the other hand, would be li pa li re li ci: each li introduces a brand new number.

Exercise 1

What are the following numbers in Lojban? (don't forget li!)

1. 35
2. 4,802
3. 6,000
4. 7.54
5. 6,891,573.905

Numbers and articles

So far, we've looked at three articles: la, for cmene, le, for sumti, and li for numbers. So li bi is 'the number eight.' Actually, outside mathematics, li is not used very much. What we usually want to say is things like 'three people,' or 'the two women.'

> **Note for mathematicians:** Lojban has a number of words to deal with basic mathematics, and also an incredible number of words to deal with just about any mathematical expression you can think of, in a separate subset of the language (*The Complete Lojban Language*, Chapter 18.) But you can't expect everything in a beginners' course.

We can use numbers either before or after le. For example,

> ci le gerku

means 'three of the dogs', while

> le ci gerku

means 'the three dogs.'

What do we do, though, if we just want to say "three dogs"? For this we need another article, lo. The logic of lo is pretty complicated, but it basically means 'something which really is,' which nine times out of ten is the same as English *a* or *some*. (Translating Lojban grammar into English like this is a mortal sin—damned under the name of malglico; but even so, this is the best thing to do with lo at this stage!)

Note for logicians: lo prenu cu klama expresses the proposition "There exists at least one person, such that that person goes."

By contrast, *the* cannot mean the same thing as lo. In English, *the dog* doesn't mean just 'something which really is a dog', but more like 'something which really is a dog, *and which I already have in mind.*' (That's how "A dog came in. *A* dog was black" and "A dog came in. *The* dog was black" are different.) Lojban sidesteps this problem by using le gerku 'something which I'm going to call a dog'. It's up to the audience to put together what the speaker had in mind when they called it le gerku, just as it is the audience's job in English to work out what dog the speaker had in mind.

So ci lo gerku means 'three of those which really are dogs', or in plain words, 'three dogs'. lo ci gerku, however, means that we are talking about [one or more of] the only three dogs in the world, which is not something you'd really want to say. (Mathematicians and logicians can look up the relevant parts of *The Complete Lojban Language* if they want clarification on this issue—or for that matter on the differences between lo and le.)

Now consider the English sentence *Three men carried a piano*. This sentence has two potential meanings, as does any sentence involving a plural in English. You could be saying that the sentence holds true for each individual of the group. If the men involved are Andy, Barry, and Chris, you might be saying that Andy carried the piano, and Barry carried the piano, and Chris carried the piano. Alternatively, you could be saying that the sentence holds for the group *as a unit*: no one carried the piano individually, but all three men carried it together.

Natural languages typically leave it up to context and plausibility to determine which of the two interpretations holds. But Lojban is a logical language, and so does not tolerate this confusion! le and lo force the individual interpretation. That is, if I say

> ci lo nanmu cu bevri le pipno

I mean that each of the three men (nanmu) carried (bevri) the piano (pipno). And if I say

> ci lo gerku cu batci mi

I just mean that three dogs bite me. Maybe one dog bit me in the morning, one in the afternoon, and one at night, or maybe I mean that I have been bitten by a dog three times in my life. There is nothing to say that the three dogs have anything to do with each other.

But if you want those dogs, or those men, to be considered as a unit, you'd say

> *lu'o* ci lo nanmu cu bevri le pipno
> *lu'o* ci lo gerku cu batci mi

lu'o means 'the mass composed of', and in effect converts a bunch of individuals into a coherent unit. In the case of the dogs, for example, it makes them a pack. If you're a fan of computer strategy games, think of lu'o as like the 'group' command for units (there's also an 'ungroup' command, lu'a). Moreover, since the dogs act as a pack, it is not necessarily true that each of them individually bit you: it is actually enough that one of them bit you, for the pack to have bitten you.

With le things are simpler. While le pano ninmu means 'the ten women', lu'o le pano ninmu means 'the ten women treated as a group or mass'. Let's imagine that ten women I have in mind kiss me on ten separate occasions. (Hey, I do get to write these lessons for my own amusement, after all...) I could then say

le pano ninmu cu cinba mi

in which case I'd consider myself quite fortunate. However, if I say *lu'o* le pano ninmu cu cinba mi, I mean that the ten women kiss me *en masse,* in which case I would consider myself either blessed or harrassed (maybe I'm a rock star or something.) It does not necessarily mean that each and every woman kisses me; simply that I was mobbed by a group of ten women and kissed by one or (probably) more in the process.

lu'o le and lu'o lo are very useful concepts, even without explicit numbers, and there are shorter ways of saying each when no number comes between them: lei and loi respectively. So the three men carrying the piano could be expressed as *loi* nanmu cu bevri le pipno, and the throng of women kissing me (!) as *lei* pano ninmu cu cinba mi.

> **For advanced students only:** Once you have been involved with Lojban for a while, you will notice that you will see loi a lot, and lu'o lo hardly ever. In fact, by default the expression loi nanmu cu bevri le pipno, without a number, implies that all of mankind was somehow involved in carrying the piano. Strictly speaking, that's true (if three men carried the piano, then Man carried the piano.) But it's not really the most specific way of expressing what's going on.
>
> So how do you get the number 'three' back into an expression like loi nanmu cu bevri le pipno? You cannot say loi ci nanmu cu bevri le pipno, because that means that there are only three men that exist in the universe. You cannot say ci loi nanmu cu bevri le pipno, because the three men act as one mass, and not as three masses. As it turns out (by extension of a little-known mechanism documented in *The Complete Lojban Language*, pp. 132–133), the way to do it is loi ci lo nanmu cu bevri le pipno: "The mass of three out of [all] men carries the piano."

Exercise 2

In the following English sentences, are the emphasised nouns *individuals* (prefixed in Lojban with le or lo) or *masses* (prefixed in Lojban with lei or loi)?

1. *The students* listened to the radio.
2. *The students* built a radio.
3. I bought *sugar*.
4. I bought *radios*.
5. *Elephants* live to an old age.
6. *Elephants* have flat ears.
7. *The students* liked talking about elephants.

Proportions

> # Warning
> This section gets into even more tricky logical stuff. Skip it if you're not interested.

If le ci prenu means "the three people," and re le prenu means "two of the people," how do you say "two of the three people"?

You probably got this one pretty easily: re le ci prenu. If, however, we use lo, the meaning changes. We can't say re lo ci prenu to mean two out of *any* three people (i.e. two thirds of the population). This is

because while le ci prenu means the three people that I have in mind, lo ci prenu, by the same logic, means the three people that actually exist—i.e. that there are only three people in the universe. (That's also why, as the astute reader may have noted, you can't say loi *ci* nanmu cu bevri le pipno.) You would therefore only use the number+lo+number formula if you knew the actual numbers rather than just the proportions, e.g.

> re lo ci mensi pe mi cu nelci la rikis.martin.
> Two of my three sisters like Ricky Martin.

This states two facts. First, that I have three sisters (though it is not actually true in my case!) Second, that two of them like Ricky Martin (it doesn't actually state that my third sister *hates* him—she may be indifferent to him, or never have heard of him). If I use le in the same sentence, it isn't actually wrong, but it allows the possibility that I have, say, five sisters, but I'm only talking about three of them! This is one of the few areas where le and lo are *not* like *the* and *a/some*.

But with people in general, rather than a specific group of people I know, I would have to say something in the order of

> vo ki'o nocize ki'o pasovo ki'o rexare lo xa ki'o cipare ki'o pamubi ki'o nosoci remna cu nelci la rikis.martin.
> 4,037,194,262 out of the 6,312,158,093 (existing) humans like Ricky Martin

meaning, I would have to give the real counts for all humans, and for all humans who suffer from that particular affliction. Which obviously is not terribly practical. (The real counts, I mean, not the affliction. Though on second thought...)

One way out of this problem is to use fi'u, which is like the Lojban slash sign. So "two out of every three people" is really "2/3 of people", or refi'uci loi prenu. Of course, this is actually a fraction, and fractions have decimal equivalents; you could also say *pixaxaxa* loi prenu, and not be that far off—even if your use of decimals might have some people laughing in the aisles...

Yes, that's our new friend loi in that sentence. If I had said refi'uci lo prenu, that would have to be understood in the same way as re lo prenu or ci lo prenu (i.e. as a count of individuals), and I would have ended up talking about two thirds of a person. In most cultures, chopping up persons into thirds is not considered acceptable behaviour even for pollsters or advertisers. On the other hand, chopping up *populations* into thirds is perfectly acceptable; and that's what loi prenu is. (A population, I mean, not an acceptable. Though on second thought...)

Here are some more proportions:

- mi tcica pimu lei prenu
  I fooled half of the people (treating the people as a mass, or population)

- mi tcica pafi'ure lei prenu
  I fooled one out of two people (which means exactly the same thing)

- mi tcica pa le re mlatu
  I fooled one out of the two cats (treating the cats as individuals)

- mi se slabu vopano lo pacivore gismu
  I am familiar with 410 out of the 1342 (existing) gismu

Quantities

I've said that words like *most* and *many* are numbers in Lojban, which is pretty logical if you think about it. The following 'numbers' are particularly useful:

no   none (we've already seen this as 'zero')
ro   each / all

du'e   too many
so'a   almost all
so'e   most
so'i   many / a lot of
so'o   several
so'u   few

su'e   at most
su'o   at least

Some examples:

- no le ninmu cu nelci la bil.
  None of the women like Bill.

- no lo ninmu cu nelci la bil.
  No women like Bill.

  (because lo ninmu potentially includes all women that exist)

- coi rodo
  Hi, everyone

- mi nelci ro lo mlatu
  I like all cats.

- mi na nelci ro lo gerku
  It's not true that I like all dogs.

  (This is *not* the same as "I don't like any dogs", which would be mi nelci no lo gerku. There are other ways of saying this, but we haven't got enough grammar under our belt yet.)

- so'i lo merko cu nelci la nirvanas.
  Many Americans like Nirvana

  (The group, not the mystical state. Although on second thought...)

  > **Note:** Yes, names are ambiguous in Lojban, because they're used Humpty-Dumpty style: they
  > mean what the *speaker* means.

- so'u lo jungo cu nelci la nirvanas.
  Few Chinese people like Nirvana.

- su'e mu le muno prenu cu cmila
  No more than five out of the fifty people laugh(ed)

(Let's say a comedian told a bad joke).

- su'o pa lo prenu cu prami do
  At least one person loves you.

This last sentence is logically the same as lo prenu cu prami do, which means "there exists at least one person such that that person loves you," but it makes the meaning clearer and more emphatic. In fact, all articles in Lojban have such default numbers associated with them; lo by default means su'o pa lo ro "at least one out of all...".

Vocabulary

batci	x_1 bites/pinches x_2 on/at specific locus x_3 with x_4
cifnu	x_1 is an infant/baby [helpless through youth/incomplete development] of species x_2
cinba	x_1 (agent) kisses/busses x_2 at locus x_3
citka	x_1 eats/ingests/consumes (transitive verb) x_2
gerku	x_1 is a dog/canine/[bitch] of species/breed x_2
melbi	x_1 is beautiful/pleasant to x_2 in aspect x_3 (ka) by aesthetic standard x_4
mlatu	x_1 is a cat/[puss/pussy/kitten] [feline animal] of species/breed x_2; (adjective:) x_1 is feline
nanmu	x_1 is a man/men; x_1 is a male humanoid person [not necessarily adult]
rectu	x_1 is a quantity of/contains meat/flesh from source/animal x_2

Exercise 3

Translate the following sentences.

1. All babies are beautiful.

2. The pack of three cats bite the dog.

3. What a surprise! Mei Li loves two men. (use an attitudinal indicator)

4. Most men love at least one woman.

5. It is not true that all men love at least one woman.

6. The group of four women kiss Ricky Martin.

7. It's a shame that no-one likes Bill. (use an attitudinal indicator)

8. Rosemary's baby bites two people (separately).

9. One in three women like David Bowie.

10. No more than 15% of Buddhists eat meat. ('Buddhist' is budjo, as you may remember from Lesson 3).

11. Nine out of ten cats like 'Whiskas.' (use a cmene)

Number Questions

All question words in Lojban are requests to fill in an unknown value: ma asks for an unknown sumti, and mo for an unknown selbri. In Lojban xo is the question word for numbers. So, remembering the sentence re lo mi ci mensi cu nelci la rikis.martin., how would I answer the following question?

xo le mensi cu nelci la rikis.martin.

The answer, of course, is re. (But not all questions that can be answered with a number have to take xo, as we'll see in the next lesson).

> **Tip:** xo is also used in mathematics, as in
>
> > li ci su'i vo du li xo
> > 3 + 4 = ?

A few more examples:

- xo le botpi cu kunti
  How many of the bottles are empty?

- xo lo prenu cu klama ti
  How many people come here?

- do viska xo lo sonci
  How many soldiers do you see?

> **Note:** It is not actually necessary to include the lo after xo. In fact, it isn't necessary after any number—for example ci lo gerku could be simply ci gerku, if you prefer. However, some Lojbanists prefer to keep the lo for the sake of clarity.

A final question

Lojban has no difference between singular and plural: *the dog* and *the dogs* can both be le gerku. But suppose you wanted to make a distinction between the two; how would you do it?

Summary

In addition to numbers (and their associated questions), this lesson has entered the dangerous waters of Lojban articles. Lojban articles may seem difficult at first, but they are perfectly logical. In fact it's probably *because* they are logical that people have problems with them to start off with—you have to learn to think in a slightly different way. For the curious, here are the main articles and article-like words:

la	that named
le	that described
lo	that which really is
li	the number

(lu is not an article, it's a quotation mark!)

la'e	the referent of (not really an article, as it takes a full sumti or pro-sumti, as in la'edi'u, what the last sentence refers to, as opposed to di'u, the actual words of the last sentence.)
le'e	the stereotypical

lo'e	the typical

lai	the mass named
lei	the mass described
loi	the mass which really is

la'i	the set named
le'i	the set described
lo'i	the set which really is

(Sets turn out to be pretty useful in Lojban, as we'll see towards the end of this course.)

We also looked briefly at lu'o, which turns a set into a mass, and lu'a, which turns a mass into a set of individuals ('group' and 'ungroup'). Strictly speaking, these aren't articles, though.

If all this looks terribly complicated, don't be discouraged! As you can see, these articles are all really variants on la, le and lo, which are normally all you will need. My personal advice (not official Lojban policy!) is *when in doubt, use le*. This is because the only time le is completely wrong is with a cmene (which needs la, of course). If you use le where another article would be more appropriate, you may not express yourself as clearly as you wanted, but at least you will not be talking ungrammatical nonsense, like you would if you said *der Frau* in German, or *the two womans* in English.

Answers to Exercises

Exercise 1

1. 35: li cimu

2. 4,802: li vobinore *or* li vo ki'o binore (the spaces are optional)

3. 6,000: li xa ki'o or li xanonono

4. 7.54: li ze pimuvo (again, the space is optional)

5. 6,891,573.905: li xa ki'o bisopa ki'o muzeci pisonomu (if that looks long, try writing it as a word in English!)

Exercise 2

1. Individual. The students might have been in a group while listening to the radio, but listening to the radio is something a person is capable of doing on their own.

2. Mass. The students worked together to make the radio, so you cannot say of any one student that they made the radio on their own.

3. Mass. In fact, *sugar* is a mass noun even in English, because it is very hard to think of it as individual entities. (Even when we do say "three sugars" in English, we're thinking of teaspoons, or kinds of sugar, not individual grains; so in fact, we're talking about two or more distinct *masses* of sugar.) That's why *sugar* does not normally take an article in English.

4. Individual. Radios are easy to think of as individual units. But Lojban does allow you to treat the radios you've purchased as a mass, if that's useful to you (particularly if you're buying in bulk.)

5. Mass. The statement is not necessarily true of individual elephants, but it is true of elephants *as a whole*. (To stress that elephants *normally* live to an old age, you would have to attribute long life, not to the mass of elephants, but to the *typical* elephant: lo'e xanto, rather than loi xanto.)

6. Individual. All elephants by definition (as it were) have flat ears; so the claim is true of each individual elephant. Once again, however, it makes perfect sense in Lojban to make that claim of the mass of elephants, as well.

7. Individual. Talking may be a group activity, but liking is something you do individually, and the students are being described as likers first, and as talkers second.

Exercise 3

1. ro lo cifnu cu melbi

2. lei ci mlatu cu batci le gerku (or: lu'o ci le mlatu cu batci le gerku. If you have lu'o le ci mlatu cu batci le gerku, you're implying that the three cats are the only three cats you have in mind, whereas lu'o ci le mlatu leaves it open that there are other cats around.)

3. .ue la meilis. prami re lo nanmu

4. so'e lo nanmu cu prami su'o pa lo ninmu

5. ro lo nanmu na prami su'o pa lo ninmu

6. lu'o vo lo ninmu cu cinba la rikis.martin. (Give yourself a pat on the back if you got that one right! If you said loi vo lo ninmu, give yourself a whole backrub! Though you may need help with that...)

7. .uinai [*or* .uu] no lo prenu cu prami la bil. *or* su'o pa lo prenu na prami la bil. (Lojban na is somewhat odd to English-speakers, since it behaves exactly like logical "it is not the case"; the sentence literally means "It is not the case that at least one person likes Bill" (i.e. "It is not the case that *even* one person likes Bill.") But the interaction of negation and quantifiers is beyond the scope of these lessons; for more, see *The Complete Lojban Language*, Chapter 16.9.)

8. le la ROZmeris. cifnu cu batci re lo prenu (or: le cifnu pe la ROZmeris. ...)

9. pafi'uci loi ninmu cu nelci la deivyd.bo,is. (or: pafi'uci lu'o lo ninmu cu nelci la deivyd.bo,is.)

10. su'e pipamu loi budjo cu citka lo rectu (or: su'e pipamu lu'o lo budjo cu citka lo rectu)

11. sofi'upano loi mlatu cu nelci la .uiskas. (a Commonwealth slogan for a brand of cat food) (or: sofi'upano lu'o lo mlatu cu nelci la .uiskas.)

A final question

'The dog' would be le pa gerku. Normally, we wouldn't bother with the pa though, unless we wanted to make it quite clear that we only have one dog in mind. 'The dogs' would be le su'o re gerku (or lei su'o re gerku, if we're thinking of them as a group)—'the at least two dogs'. However, it is hard to think of many situations where you would need to say this. Like some other languages (e.g. Chinese), Lojban normally leaves number up to context. You guessed it— you've just spent all this time learning to say how many people, dogs etc. there are, and piso'e of the time, you don't need to! But, like many features of Lojban, it can be very useful when you want it, so please don't feel tricked.

Oh, what does piso'e mean? That, I will leave as an exercise to the reader...

Chapter 5. Times, days, dates (and abstractions)

What is the time?

One way to ask the question "What is the time?" is ma tcika ti. We know that ma is the sumti question word ('what'), so tcika must be a selbri meaning 'is the time'. The place structure of tcika is

> x_1 (hours, minutes, seconds) is the time of state/event x_2 on day/date x_3, at location x_4, by calendar x_5

So in Lojban, times do not exist in the abstract: times are always the times *of* something. So we ask what the time is of ti, meaning 'this event/thing', or, in other words 'now'.

> **Note:** Well, we don't really; stay tuned for next lesson, where we'll fill this in a little more.

A full answer would obviously be very long-winded, but remembering the Lojban convention that you miss out all the places after the last one you really need, a typical exchange would be:

- ma tcika ti

- li papa

- What's the time?

- Eleven

Note the li, since we are talking about a number here. li papa is short for li papa cu tcika ti—"the number eleven is the time of this (event)".

If we want to be a bit more precise, we need to use pi'e. This introduces fractional parts of numbers like pi, but unlike pi it doesn't need to indicate decimal fractions in a number. In fact, the kind of fractional part it does indicate can vary within the same number. In normal counting, pi is a decimal point, in hexadecimal it's a hexadecimal point and so on, but the kind of fraction it indicates never changes its value. But pi'e doesn't have that restriction; so we can use it to separate hours from minutes (which are sixtieths of hours), or, as we will see below, days from hours (which are twenty-fourths of days). pi'e, in other words, means 'part', not 'decimal point'. So an alternative answer to the question could be

> li papa pi'e mu
> 11:05 (Five past eleven)
> (The number eleven, and five parts)

or if you want to be particularly precise,

> li papa pi'e mu pi'e pabi
> Five minutes and eighteen seconds past eleven

(The number eleven, and five parts, and eighteen parts of parts)

Let's imagine, though, that the time is not five past eleven, but five *to* eleven. We can say li pano pi'e mumu (10:55), but we can also say li papa pi'e ni'u mu, where ni'u is the Lojban minus sign (for negative numbers, not for subtraction)—what we are saying is '11:–5'.

For 'half past eleven' you can also use pi and say li papa pimu '11.5'. I don't particularly like this method, but it is perfectly good Lojban. If we are using numbers for times, it is normal to use the 24-hour system, so 6 PM is li pabi (18:00).

If you want to use twelve-hour time instead, you need some way of distinguishing between AM and PM. The conventional way in Lojban is to use cmene for hours (so we can add supplementary information like that later on, as part of the cmene.) So 'four o'clock' is la vocac., 'five o'clock' is la mucac. and so on (from cacra 'hour'). For 11 and 12 we need extra numbers. Fortunately Lojban has these and more; the number system actually goes up to 16 (hexadecimal), so we have the extra numbers

dau	10
fei	11
gai	12
jau	13
rei	14
vai	15

Obviously for anything other than talking about computer programming, the numbers 13–15 are useless, but we can use 10–12 for hours. 'Ten o'clock' under this scheme is la daucac., 'eleven o'clock' is la feicac., and 'twelve o'clock' is la gaicac. . For 'morning' and 'evening' we can then add lir. and lec., meaning 'early' and 'late' (from clira and lerci). So la mucac. lir. is five in the morning.

As you can see, things start to get a little messy with the 12-hour system (how do you say 9:22 AM?), so the 24-hour system is preferred by popular acclamation.

Exercise 1

What are the following times in Lojban?

1. Nine o'clock

2. Eleven o'clock in the morning

3. Two in the afternoon

4. A quarter to twelve

5. Midnight

6. 9:25

7. 12:15

8. 14:30

9. 17:03

10. 20:00:03

11. 21:54:16.71

Times and Events

If we want to give the time of an event, rather than just tell the time, we need to fill in some more places. The second place of tcika is 'state/event': people don't have times—events have times. So we need some way to show that the sumti in this position is a state or an event, and not a thing. But

> la daucac. tcika le mi klama

won't work; it does not mean "Ten o'clock is the time that I go" (or come!), but "Ten o'clock is the time of my goer," which is meaningless.

We get round this problem with the word nu, which means—you guessed it—'state/event'. This is called an **abstraction descriptor** (or **abstractor** for short), other common descriptors being ka (quality or property), ni (amount) and so on (for a complete list, see *The Complete Lojban Language*, p. 269). What nu does here is allow us to put a whole bridi into a selbri place, and by extension (if we put an article in front of it) a sumti place. The sequence goes a little like this:

la robin. salci

> Robin celebrates

la jbonunsalci cu *nu* la robin. salci

> Logfest is an event such that Robin celebrates—Logfest is Robin's celebration/celebrating

mi nelci le *nu* la robin salci.

> I like the event such that Robin celebrates—I like Robin's celebration/Robin celebrating

When used to introduce a sumti, nu is usually written together with the article (le or lo), but is actually a separate word. So what we want is

> la daucac. tcika le*nu* mi klama

(note that there is no cu here, since la daucac. is a cmene)

Exercise 2

What do these Lojban sentences mean?

1. li pamu pi'e reno tcika lenu mi dunda le cukta do

2. li ze tcika lenu tivni la SEsamis.strit.

3. li pa tcika lenu mi ciska

4. la klaudias. nelci lenu zo'e vecnu loi kabri la .iulias.

5. la tim. nelci lenu li paso tcika lenu la meiris. cliva

Times and Events, Improved: Conversion

If "Ten o'clock is the time that I go" sounds backwards, there are two ways you can switch it round. One is using se, which swaps the first and second places of any bridi.

> le nu mi klama cu *se* tcika la daucac.

means exactly the same thing as la daucac. tcika lenu mi klama. se coincidentally is pretty much the same as Spanish *se*, but is actually part of a series along with te, ve and xe, which switch around the first and third, first and fourth, and first and fifth places of a selbri. (This kind of swapping is known as **conversion**.) te, ve and xe aren't used so much in sentences as se, but are often used in making lujvo (compound words), as we'll see later in the course.

This conversion business, of course, doesn't apply just to sentences with abstractions in them, but to any bridi. You may want to change things around for different emphasis (people tend to mention the more important things in a sentence first), or as above, to work around the complexity of Lojban grammar (cu is a very powerful tool.) So the following pairs mean the same thing:

- mi viska do
  I see you

  do se viska mi
  You are seen by me

- le nanmu cu klama lo barja
  The man goes to a bar

  lo barja cu se klama le nanmu
  A bar is gone to by the man

- la spot. mlatu la .abisinian.
  Spot is a feline of the breed Abyssinian

  la .abisinian. se mlatu la spot.
  Abyssinian is the breed of cat Spot is

- lenu mi cilre fi la lojban. cu xamgu mi
  My learning Lojban is good for me

  mi se xamgu lenu mi cilre fi la lojban
  I am benefitted by my learning Lojban

Exercise 3

Rearrange these Lojban sentences so that the main selbri in each sentence is converted to having se. Don't forget to use cu if you need to! For example, mi viska do → do se viska mi

1. mi prami la meilis.

2. le mlatu cu catra le jipci

3. la mari,as. vecnu le mlatu

4. la mari,as. dunda la .iulias. la klaudias.

5. la mari,as. vecnu zo'e la tim.

6. la fits.djerald. fanva fi le glico

7. klama la bast,n. fu le karce

8. li ze tcika lenu tivni la SEsamis.strit. (Leave the bridi with tivni alone.)

9. la klaudias. nelci lenu zo'e vecnu loi kabri la .iulias. (Convert the bridi with vecnu as well as the bridi with nelci.)

10. la tim. nelci lenu li paso tcika lenu la meiris. cliva (Convert all three selbri.)

Times and Events, Improved #2: sumti tcita

With conversion and se, you have a new and powerful tool to use in your Lojban. But you might still find lenu mi klama cu se tcika la daucac. too long and clumsy. In that case, get ready for more Lojban tricks.

It would be really nice if klama had a place for the time of going/coming, but it doesn't. (After all, you wouldn't really want to have to learn a *six*-place selbri!) To get round this problem of missing places in selbri, Lojban has a series of cmavo (structure words) which add extra places to the selbri. The one we want here is ti'u, meaning 'occurring at the time of day...'. So we can now say

> mi klama ti'u la daucac.
> I am going at 10:00

klama now expresses a relationship between six things: a goer, a destination, a source, a route, a vehicle, *and* a time at which this all takes place.

So why, you may ask, didn't I just say that in the first place? I could have done, but then you wouldn't have found out about nu and se! There is more to this lesson than meets the eye.

> **Note:** Different types of cmavo belong to different classes (se cmavo or selma'o). For example, all articles (apart from those specific to cmene, like la) belong to the same class, and all of them can appear in the same place in a sentence. This selma'o is called LE, after the most widely used cmavo in the class, le. Likewise, the cmavo that introduce new sumti into a bridi belong to the class BAI—so named from bai, the cmavo meaning 'forced by'. (This type of cmavo is also called sumti tcita 'sumti labels'.) We will be seeing more of these cmavo in the lessons ahead.

Days and Months

The days of the week are also cmene built from numbers, this time adding djed., from djedi, meaning 'day'. There is at present some disagreement about which day should be day one, though. The original convention was to follow the Judaeo-Christian convention of taking Sunday as the first day, giving

Sunday	la *pa*djed.
Monday	la *re*djed.
Tuesday	la *ci*djed.

... and so on. (Conveniently for one of your authors, this matches Greek for Monday through to Thursday.) However, in a Logical Language Group meeting in 1992 it was agreed that Monday be day 1, and Sunday be either 7 (la zedjed.) or zero (la nodjed.) according to taste (much to at least one of your author's inconvenience.) Eventually, though, people will use whichever system they prefer until one becomes universally accepted.

This may sound chaotic, but I have gone into this point as a good example of how in Lojban a large part of the language is "left to usage"—meaning that ultimately the language depends on the way people choose to use it in practice. People are also free to work out alternative conventions for cultures which do not use a seven-day week, possibly adding to the name to make it clear; e.g. la padjedjung. could be the first day of the Chinese ten-day week. (Remember, jungo means 'Chinese'.)

Note: For these lessons, of course, we do have to teach *something*—and that 'something' will be that Monday is Day 1. That, of course, is already getting in the way of usage, but it's unavoidable.

Tip: You will also see days in full lujvo form (meaning in practice one extra consonant after the number), looking like this:

no(n)djed. or nondei	0-day
pa(v)djed. or pavdei	1-day
re(l)djed. or reldei	2-day
ci(b)djed. or cibdei	3-day
vo(n)djed. or vondei	4-day
mu(m)djed. or mumdei	5-day
xa(v)djed. or xavdei	6-day
ze(l)djed. or zeldei	7-day (= 0-day)

Months also use numbered cmene, adding mast. (from masti 'month'), so January is la pamast. and so on. Again, since there are twelve months, we use the extra numbers, so October is la daumast. .

Note: You will also see months in full lujvo form—the catch being that hexadecimal digits have not been assigned rafsi (combining forms.) So:

pa(v)mast. or pavma'i

    1-month

re(l)mast. or relma'i

    2-month

ci(b)mast. or cibma'i

    3-month

vo(n)mast. or vonma'i

    4-month

mu(my)mast. or mumyma'i

    5-month

xa(v)mast. or xavma'i

    6-month

ze(l)mast. or zelma'i

    7-month

bi(v)mast. or bivma'i

    8-month

so(z)mast. or sozma'i

    9-month

daumast. or pavnonmast. or pavnonma'i

    10-month

> feimast. or pavypavmast. or pavypavma'i
>
>> 11-month
>
> gaimast. or pavrelmast. or pavrelma'i
>
>> 12-month

Just in case you're interested, the words for seasons are:

vensa	Spring
crisa	Summer
critu	Autumn
dunra	Winter

(For full definitions of these words, see the gismu list.) If the seasons where you live don't match this pattern, then you can easily create new words. For example, the rainy season or monsoon could be carvycitsi (from carvi, rain, and citsi, season) or simply la carv. . Here are some I made up for fun to give a better idea of the weather in the UK:

la lekcarv.	'the cold rain'—Spring
la mliglacarv.	'the warm (mildly-hot) rain'—Summer
la bifcarv.	'the windy rain'—Autumn
la dujycarv.	'the freezing rain'—Winter

Joking aside, this shows two features of word-building in Lojban: making cmene by losing the final vowel (which we saw in Lesson 1) and creating lujvo, or compound words. (For the same reason, you'll also see pavdjed., relmast., ...) You actually need a pretty good knowledge of Lojban to make up lujvo on the spot, but we'll learn how to make some simple lujvo later on in this course.

Exercise 4

What are these days and months in Lojban?

1. Saturday

2. Thursday

3. March

4. August

5. November

6. December

Dates

The gismu for dates is detri:

> x_1 is the date (day, week, month, year) of state/event x_2, at location x_3, by calendar x_4

Phew! Like tcika, though, most places of detri can be left out. The location is only important if we're talking about radically different timezones, or different planets, and the calendar is normally assumed to be the standard Western one—if you want to use, for example, the Arabic or Chinese calendars, you

can put le xrabo or le jungo in the fourth place. (As always, context is important—in a discussion of Islamic history we would probably assume that the Arabic calendar was being used.)

The tricky bit is the number in x_1. Normally we don't want to specify the day, week, month *and* year! To prevent confusion, the following conventions are used:

- If there is only one number, it is the *day* e.g. li pano is 'the 10th'.

- If there are two numbers, they are the *day and month* e.g. li pano pi'e pare is 10/12, or 'the 10th of December'.

- If there are three numbers, they are day, month, year (*not* month, day, year, as in the American convention) e.g. li repa pi'e ze pi'e pasoxaso is 21/7/69—the date of the first moon landing.

We can therefore say

> li repa pi'e ze pi'e pasoxaso cu detri lenu lo remna cu klama le lunra
> 21/7/1969 is-the-date-of the-event a human goes (to) the moon

Now, just as with tcika, we often want to put the event first—after all, in most languages we would normally say "My birthday is on the fifteenth of August" rather than "The fifteenth of August is the date of my birthday." We can manage this change by using place tags, e.g.

> fe lenu mi jbena [kei] cu detri fa li pamu pi'e bi
> the-event I am-born is-dated 15/8

but it is easier to use se, like this:

> lenu mi jbena cu *se* detri li pamu pi'e bi
> the-event I am-born is-dated 15/8

In both cases, putting the lenu phrase before the cu is convenient—and a well-established Lojban trick of the trade: cu is powerful enough to close off any structure in front of it, including lenu mi jbena.

As you have probably guessed, there is also a sumti tcita for 'dated': de'i, which works like ti'u (notice how sumti tcita tend to be similar to the selbri they suggest). So the other way I can tell you my birthday is:

> mi jbena de'i li pamu pi'e bi

Question. If only one number is used with detri, it is the day. So how do we say what year an event happened without giving the day and month as well?

The gismu for 'year', nanca cannot be used instead of detri, since it has the place-structure

> x_1 is x_2 years in duration, by standard x_3

i.e. it gives the length of an event in years, not the year when an event happened. One way out is to use a cmene for the year, so the year I (Robin) am writing this would be la pasososonanc. (And the year I (Nick) am writing this would be la renonopananc..)

> **Tip:** You will also see year names ending in nan: la renonopanan.

Tip: More recently there has been a proposal to make single numbers refer by default to year rather than day; the controversy on this has not settled down yet.

Vocabulary

cnino	x_1 is new/unfamiliar/novel to observer x_2 in feature x_3 (ka) by standard x_4; x_1 is a novelty
dable'a	conquer, sieze ('war-take')
facki	x_1 discovers/finds out x_2 (du'u) about subject/object x_3; x_1 finds (fi) x_3 (object)
gugde	x_1 is the country of peoples x_2 with land/territory x_3; (people/territory relationship)
fraso	x_1 reflects French/Gallic culture/nationality/language in aspect x_2
guntrusi'o	Communist ('work-govern-idea')
jecyga'ibai	revolution ('government-change-force')
joi	Joins two sumti together as a mass. We'll have more to say about this later.
selpeicku	manifesto ('thought-book')

Exercise 5—history quiz

Give the dates to answer these questions, using cmene for the years. If you don't happen to know them, that's OK—they're given at the bottom of the exercise.

1. lenu la kolombus. facki lo cnino gugde cu se detri ma

2. la mexmet. dable'a la konstantiNUpolis. de'i ma

3. lenu fraso jecyga'ibai cu se detri ma

4. la marks. joi la .engels. finti le guntrusi'o selpeicku ku de'i ma

5. la muxamed. klama la medinas. de'i ma

(1492; 1453; 1789; 1848; 622)

Summary

Apart from times and dates, this lesson has covered some important points of Lojban grammar.

- Some simple lujvo.

- The abstractor for states and events, nu, and its terminator, kei.

- Conversion—swapping round places—with se.

- The sumti tcita: ti'u ('with time') and de'i ('with date').

Vocabulary

barja	x_1 is a tavern/bar/pub serving x_2 to audience/patrons x_3
birje	x_1 is made of/contains/is a amount of beer/ale/brew brewed from x_2
botpi	x_1 is a bottle/jar/urn/flask/closable container for x_2, made of material x_3 with lid x_4
briju	x_1 is an office/bureau/work-place of worker x_2 at location x_3
cpedu	x_1 requests/asks/petitions/solicits for x_2 of/from x_3 in manner/form x_4
denpa	x_1 awaits/waits/pauses for/until x_2 at state x_3 before starting/continuing x_4 (activity/process)
djica	x_1 desires/wants/wishes x_2 (event/state) for purpose x_3
dotco	x_1 reflects German/Germanic culture/nationality/language in aspect x_2
jimpe	x_1 understands/comprehends fact/truth x_2 (du'u) about subject x_3; x_1 understands (fi) x_3

lerci	x_1 (event) is late by standard x_2
nandu	x_1 is difficult/hard/challenging for x_2 under conditions x_3; x_1 challenges (non-agentive) x_2
penmi	x_1 meets/encounters x_2 at/in location x_3
pinxe	x_1 (agent) drinks/imbibes beverage/drink/liquid refreshment x_2 from/out-of container/source x_3
sruma	x_1 assumes/supposes that x_2 (du'u) is true about subject x_3
tcita	x_1 is a label/tag of x_2 showing information x_3 (as in **sumti tcita**)
viska	x_1 sees/views/perceives visually x_2 under conditions x_3
xebni	x_1 hates/despises x_2 (object/abstraction); x_1 is full of hate for x_2; x_2 is odious to x_1
zvati	x_1 (object/event) is at/attending/present at x_2 (event/location)

Exercise 6

Translate the following from Lojban:

Note: In the following, there are some instances of nu which would properly be expressed using du'u instead. Since you don't know what du'u is yet, use nu for now, but stay tuned for Lesson 7.

Note: You'll notice that every new sentence begins with .i. That is in fact the default for Lojban, which does not rely on punctuation or intonation for its grammatical structure: .i is used consistently to separate one sentence in running text from the next.

1. .i la jan. cu zvati le barja (Though you might not be able to tell, this is in fact Zhang. Remember from Lesson 1 that final ng in names is changed to n.)

2. .i la jan. denpa lenu la suzyn. zvati le barja

3. .i la jan. cpedu fi le dunda fe re birje

4. .i lenu pinxe loi dotco birje cu se nelci la jan.

5. .i .uu la suzyn. loi dotco birje cu xebni

6. .i la jan. djica lenu li reno pi mu tcika lenu la suzyn. klama

7. .i li repa tcika lenu la jan. djuno lenu la suzyn. na klama

8. .i pinxe pici le pa birje

9. .i la jan. cliva le barja

Exercise 7 (Advanced)

Translate into Lojban (but only if you're feeling intrepid!):

1. Susan goes to the bar at 22:00 from the office.

2. Susan assumes that Zhang knows that Susan is late. (Hint: actually even harder than it looks. Look carefully at the definition of the **gismu** for 'late'.)

3. Susan sees one of the two bottles.

4. It is not difficult for Susan to understand that Zhang left. (Hint: try it as "To understand that Zhang left is not difficult for Susan.")

5. At 22:15, Susan wants to meet Jyoti at 22:45.

Answers to Exercises

Exercise 1

1. la socac. or li so

2. la feicac. lir.

3. la recac. lec.

4. li papa pi'e ni'u pamu or li pare pi'e vomu. (You can also use the hexadecimal digits, if you like, though this will probably be less common: li gai pi'e ni'u pamu, li fei pi'e vomu.)

5. la nocac. *or* la gaicac. lir. (if you follow the convention that midnight is 12 AM)

6. li so pi'e remu

7. li pare pi'e pamu

8. li pavo pi'e cino *or* li pavopimu

9. li paze pi'e ci

10. li reno pi'e no pi'e ci

11. li repa pi'e muvo pi'e paxa pi zepa (The last component is just an ordinary decimal point.)

Exercise 2

1. 15:20 is the time that I gave the book to you.

2. 7:00 is the time that [someone] broadcasts *Sesame Street*; 7:00 is the time that *Sesame Street* is broadcast.

3. 1:00 is the time that I write [something]

4. Claudia likes that [someone] sells cups to Julia; Claudia likes Julia buying cups.

5. Tim likes that 19:00 is the time that Mary leaves; Tim likes it that Mary leaves at 19:00.

Exercise 3

1. la meilis. se prami mi ("Mei Li is loved by me.")

2. le jipci cu se catra le mlatu ("The bird is killed by the cat.")

3. le mlatu cu se vecnu la mari,as. ("The cat is sold by Maria." You now need cu, to prevent mlatu and se vecnu running together into the one tanru.)

4. la .iulias. se dunda la mari,as. la klaudias. ("Julia is given by Maria to Claudia." As the third place, la klaudias. is unaffected by the conversion, and stays where it is.)

5. zo'e se vecnu la mari,as. la tim. ("Something is sold by Maria to Tim." The same holds for the third place here as in the previous sentence.)

6. [zo'e] se fanva la fits.djerald. le glico ("[Something] is translated by Fitzgerald into English." The original sentence has an empty x_2 place; so there is nothing there to swap with x_1. But of course, when a sumti is left out, you can assume its value to be zo'e—which you can still leave out even after conversion. And now that there is an explicit x_2 place there, you don't need fi any more to introduce the x_3 place.)

7. la bast,n. se klama fu le karce ("Boston is gone to by car.")

8. lenu tivni la SEsamis.strit. cu se tcika li ze ("The broadcasting of *Sesame Street* is at the time 7:00." The cu is actually necessary, here, even though it follows a cmene; can you work out why?)

9. lenu loi kabri cu se vecnu zo'e la .iulias. cu se nelci la klaudias. ("That cups are sold by someone to Julia is liked by Claudia; cups being sold to Julia is something Claudia likes.".)

10. lenu lenu se cliva la meiris. [cu] se tcika li paso cu se nelci la tim. ("The fact that [something] being left by Mary is at the time 19:00 is liked by Tim; [the place] being left by Mary at 19:00 is something Tim likes." Yes, I know it's horrible.)

Exercise 4

1. la xadjed. or la xavdjed. or la xavdei

2. la vodjed. or la vondjed. or la vondei

3. la cimast. or la cibmast. or la cibma'i

4. la bimast. or la bivmast. or la bivma'i

5. la feimast. or la pavypavmast. or la pavypavma'i

6. la gaimast. or la pavrelmast. or la pavrelma'i

Exercise 5

1. la pavosorenanc.

2. la pavomucinanc.

3. la pazebisonanc.

4. la pabivobinanc.

5. la xarerenanc. (or la pananc., if you're using the Muslim calendar)

Exercise 6

1. Zhang is at the bar.

2. Zhang waits for Susan to be at the bar.

3. Zhang asks the giver for two beers (and no, that's not necessarily what you'd call a waiter, but that is nonetheless a legitimate if laconic description of what waiters do. Lojban grammar tends to be pedantic, but Lojban descriptions can be rather sparse.)

4. Drinking German beer is liked by Zhang

5. Alas, Susan hates German beer.

6. Zhang wants 20:30 to be the time Susan will come. (Zhang is using the fraction pimu, unlike me.)

7. 21:00 is the time Zhang knows that Susan is not coming

8. Look! He's drinking 0.3 of one beer. (Any bridi with its x_1 missing is considered an observative.)

9. Zhang leaves the bar.

Exercise 7

1. .i la suzyn. klama le barja ti'u li rere le briju (Because the time of day has its own sumti tcita already, it doesn't really matter where in the sentence you place it. So .i la suzyn. ti'u li rere klama le barja le briju means exactly the same thing.)

2. .i la suzyn. sruma {lenu la jan. djuno {lenu lerci fa {lenu la suzyn. klama}}} (Lojban insists on distinguishing between events and entities; you can't say that someone is late in Lojban, but only that someone's *action* is late. There are ways in Lojban for working around this, but they are considered 'advanced Lojban' (see Lesson 15.)

   And yes, that's a rather deeply nested sentence. Lojban tends, for better or worse, to make things more explicit, and thus more complex, than is usual for natural languages. The normal word order version is even worse: .i la suzyn. sruma {lenu la jan. djuno {lenu {lenu la suzyn. klama} cu lerci}}.)

3. .i la suzyn. viska pa le re botpi

4. .i {lenu jimpe {lenu la jan. cliva}} na nandu la suzyn.

5. ti'u li rere pi'e pamu la suzyn. djica {lenu penmi la djiotis. ti'u li rere pi'e vomu} (Extra credit if you worked through that one!)

   Note: As noted in the Introduction, those brackets are there for clarification only; you won't normally see them in Lojban text. The whole point of having a syntactically unambiguous language, after all, is that you shouldn't have to use brackets in the first place!

Chapter 6. Time and Space—basic Lojban 'tenses'

Terminators

Before we go on any further, we've left a little unfinished business from the previous lesson. This opens up a whole new set of issues, which is why we've held it over for this lesson.

Remember that when we speak of dates in Lojban, we also need to specify the place on the globe where the date was calculated. The instant Neil Armstrong made that small step for (a) man, for instance, it wasn't the 21st of July everywhere on Earth. In Tokyo, it was closer to the 22nd. So if we want to point out that it was the 21st, *Houston time*, we need to specify the x_3 place of detri. That means we can simply say:

> li repa pi'e ze pi'e pasoxaso cu detri lenu lo remna cu klama le lunra la xustyn.

right?

Actually, no. Look at that sentence again. How would we say that the 21st was the day Armstrong went to the moon *[going] from Houston*? You guessed it—

> li repa pi'e ze pi'e pasoxaso cu detri lenu lo remna cu klama le lunra la xustyn.

So now (Houston), we have a problem. Which selbri does la xustyn. belong to in this sentence? klama, or detri?

This kind of ambiguity is nothing new to natural languages, which tend to resolve problems like these with tricks like well-positioned pauses in speech, and punctuation in writing. (Consider for instance the English sentence *21/7/69 was the date a man went to the moon, from Houston.* With that comma, you can only read that as "according to Houston.")

The trick Lojban uses instead, however, turns out to be one of its major 'selling points'. Lojban uses words called **terminators**. No, they aren't killer androids with difficult-to-spell surnames, but little words used to indicate when groups of words, such as phrases, end. You can think of them like the brackets used in mathematics, and they serve pretty much the same purpose. So in Lojban, whenever a structure begins whose length is not known in advance, a terminator goes at the end of the structure. This is what makes Lojban syntactically unambiguous:

- Every time an article like le or loi starts a sumti, ku ends it.
- Every time a string of numbers starts, boi ends it.
- Every time a series of sumti follows a selbri, vau ends it.
- And every time nu starts an abstraction—a bridi nested inside another bridi—kei ends it.

This means that our sentence about the moon landing is fully elaborated like this (putting in some braces to make things clearer, and sneaking in the terminator lo'o corresponding to li):

> [{li [repa pi'e ze pi'e pasoxaso boi] lo'o} cu detri [le{nu [{lo remna ku} cu klama {le lunra ku} vau] kei} ku] la xustyn. vau]

The kei goes before la xustyn. . This means that as a sumti, la xustyn. cannot belong to klama: kei has cordoned off the places of klama from the rest of the sentence (and the places of detri.) So la xustyn. can only be a sumti of the main selbri, detri.

The reader may well be wondering at this point how come they've never seen one of these terminators before. The reason is that Lojban is still meant to be spoken by humans, and keeping track of every single structure used in a sentence is more work than is reasonable to expect of any human. So when the sequence of words has an unambiguous structure, the terminators can be dropped out.

For example, if we see cu in a sentence, we know that what is coming up is a selbri; so the sumti before it must now be over. So we can drop the ku. (In fact, that's why cu exists in the first place: the beginning of a verb is a much more important structural break in natural languages than the end of a noun.) If a new sentence is beginning—as signalled by perhaps the most distinctively Lojbanic word, the 'audible punctuation' .i—then there can be no more sumti from the old sentence; so we drop the vau. In fact, it is only in situations of potential ambiguity, like the sentence we've been looking at, that you'll get terminators appearing in normal Lojban usage at all. So our two possible interpretations of the sentence with Neil Armstrong would normally appear as:

li repa pi'e ze pi'e pasoxaso cu detri {lenu lo remna cu *klama* le lunra *la xustyn.*} (date for going to the moon *from* Houston)

li repa pi'e ze pi'e pasoxaso cu *detri* {lenu lo remna cu klama le lunra kei} *la xustyn.* (date for going to the moon *according to* Houston)

Note: Remember those pesky possessive constructions from Lesson 3, when you couldn't flip le tamne pe le ninmu klama the other way around, because it was ambiguous? All you need is ku to resolve that ambiguity: le le ninmu klama ku tamne means 'the woman traveller's cousin', and le le ninmu ku klama tamne means 'the woman's traveller cousin.'

Still, most Lojbanists think the flip-around is not worth the hassle of inserting that bothersome ku, so you rarely see it used when the 'possessor' sumti is not a one-word sumti.

Vocabulary

cadzu	x_1 walks/strides/paces on surface x_2 using limbs x_3
skicu	x_1 tells about/describes x_2 (object/event/state) to audience x_3 with description x_4 (property)
xabju	x_1 dwells/lives/resides/abides at/inhabits/is a resident of location/habitat/nest/home/abode x_2
zutse	x_1 sits [assumes sitting position] on surface x_2

Exercise 1

What do the following Lojban sentences mean when the highlighted terminators are present, and what do they mean when they are absent?

1. mi skicu li re *boi* re lo pendo

2. li pa pi'e cino tcika lenu mi prami *kei* la mumdjed.

3. le nanmu cu zgana le mlatu *vau*

4. le mamta pe le cifnu *ku* litru

5. mi cpedu lenu la mari,as. tavla *kei* la klaudias.

Tenses

By this time, you may be wondering what has happened to all the tenses. After all, a large part of learning a language is learning tenses, and figuring out which one you ought to be using. English, for example, has about a dozen tenses (depending on what you count as a tense) and some languages have more. Use the wrong one and you're, well, wrong. In addition, there are a load of words and phrases like *before*, *in a while*, *some time ago* and so on.

Lojban deals with time quite differently. Like some other languages (e.g. Chinese), tense is not compulsory. All the bridi we've looked at so far have had no particular time attached to them, and this is perfectly acceptable; in fact it is *normal*. Saying mi klama ti de'i la padjed. is good Lojban, even if out of context we don't know if it means I'm coming here next Monday, or I came here last Monday. In most cases, sentences don't happen out of context, and the context is usually enough to tell us if we're talking about the past, present or future. Putting a past tense in just because the same sentence in English would be in the past tense can be rather malglico.

Time with sumti

There are times, though, when you want to say things about time, and Lojban has more than enough cmavo for this. Let's say that Zhang left the bar at 10 o'clock and Susan arrived at 11 (thus missing her date). The most precise way is to use times, as in the last lesson:

> la jan. cliva le barja ti'u la jaucac. .i la la suzyn. klama le barja ti'u la feicac.

> **Tip:** As mentioned just above, .i is used in Lojban to separate sentences from each other. You can think of it as a spoken version of the full stop (period) at the end of a sentence.

However, if the actual times are not important, we can say:

> ba lenu la jan. cliva kei la suzyn. klama le barja
> After Zhang left, Susan came into the bar.

or:

> pu lenu la suzyn. klama le barja kei la jan. cliva
> Before Susan came into the bar, Zhang left.

which translates more naturally as:

> When Susan came into the bar, Zhang had already left.

(This, by the way, is another case of context meaning you don't have to put everything in—we haven't said that the place Zhang leaves is the bar, we just understand it from the context.)

What are these ba's, pu's and kei's? Well, the kei's you hopefully remember from the section above: they close off the phrase opened by the nu. As you probably guessed, ba is 'after' (from the gismu for 'future' or 'later', balvi) and pu is 'before' (from the gismu for 'past' or 'earlier', purci).

Whenever we use ba and pu like this, we are situating the time of one event relative to the time of another. The time we will most frequently want to use as a reference point is the speaker's here-and-now. If we want to situate the event in the main bridi relative to the here-and-now, we can leave out the

sumti, and just use the tense cmavo on its own. So if we want to say that Susan came to the bar some time after right now, and not after Zhang's leaving, we can say:

> baku la suzyn. klama le barja

baku here is not a city in Azerbaijan; it means 'afterwards' or 'later'. The ku is necessary to separate ba from la suzyn. (you can also say it as two separate words, ba ku—it makes no difference). Similarly, "Zhang left earlier (than now)" would be:

> puku la jan. cliva

> **Note:** What's actually going on is that ba starts a sumti, and ku ends the sumti—but the sumti itself has been left out, like we said. So ba ku means ba … ku: 'after [something].' If we didn't have the ku in place, the ba would swallow up any sumti following it. So ba la jan. cliva means not "afterwards Zhang left", but "after Zhang, (she) left."

Let's imagine that Susan is not so unlucky, and arrives just as Zhang is leaving. We can then say:

> ca lenu la jan. cliva le barja kei la suzyn. klama le barja
> At the moment when Zhang was leaving the bar, Susan came to the bar.

ca also comes from a gismu, in this case cabna, which means 'simultaneous with', so another way to say the same thing would be

> lenu la jan. cliva le barja cu cabna lenu la suzyn. klama le barja
> The event of Zhang leaving the bar is simultaneous with the event of Susan coming to the bar.

> **Note:** There is a difference between ku and kei in these sentences: ku separates the ca from the rest of the sentence, while kei terminates an event. We could have said ca lenu la jan. cliva le barja ku kei ku instead: the first ku matches *le* barja, the kei matches *nu* la jan. cliva le barja, and the second ku matches *le*nu la jan. cliva le barja. Because the syntax is unambiguous, we could even have said lenu la jan. cliva le barja ku ku— though we might be thought slightly cuckoo to say it like that.)

If you leave out the sumti following ca, the resulting phrase caku is interpreted as 'simultaneous with the speaker's here-and-now'. If something is simultaneous with the here-and-now, then of course that means it is happening now; so caku itself just means 'now':

> caku la suzyn. klama le barja
> Now, Susan goes to the bar.

> **Tip:** By the way, caku ma tcika would be a more usual way to say "What time is it?"

We now have three 'time words': pu (before), ca (at, while) and ba (after). We can modify these with another three, zi, za and zu (series of cmavo often take an -i, -a, -u pattern, if they don't follow the AEIOU sequence). These mean a short, medium and long time distance. So puzi is 'a short time ago,' puza is 'a while ago' and puzu is 'a long time ago'. How long 'long' is depends on what we're talking about—if the subject is archaeology, puzu could be thousands of years; if you've missed your train it could be a matter of minutes.

Let's say this time the unlucky Susan missed Zhang by only a few minutes. We could then say:

bazi lenu la jan. cliva kei la suzyn. klama le barja

And if you're in the unfortunate position of having to tell Susan that she's just missed Zhang, you would say:

puziku la jan. cliva le barja

Vocabulary

badri	x_1 is sad/depressed/dejected/[unhappy/feels sorrow/grief] about x_2 (abstraction)
gleki	x_1 is happy/gay/merry/glad/gleeful about x_2 (event/state)
ku'i	but, however (This is an attitudinal, just like .uu and .ei)
kumfa	x_1 is a room of/in structure x_2 surrounded by partitions/walls/ceiling/floor x_3 (mass/jo'u)
tcidu	x_1 [agent] reads x_2 [text] from surface/document/reading material x_3; x_1 is a reader

Exercise 2

Translate the following. Don't forget your nu's and kei's!

1. Juliette went to Paris a while ago.

2. A long time ago, I read *Camille*.

3. Ivan just left the room.

4. Yoshiko kissed Jorge just after Pierre came into the room.

5. Tracy was sad just a minute ago. But Mike is happy now.

Time and selbri

What we've looked at so far is similar to (but not quite the same as) English words like *before*, *after* and so on. However, we can use exactly the same cmavo with selbri to give effects which are similar (but not identical) to English tenses. Actually this is easier, but I left it till later to avoid the danger of malglico!

Basically, any time cmavo (or sequence of cmavo) can go before a selbri and put the whole bridi into that time. This is precisely the same thing the time cmavo would be doing if followed immediately by ku, with an empty sumti in between. So

la jan. pu cliva le barja

and

puku la jan. cliva le barja

both mean "Zhang before the here-and-now leaves the bar," or "Zhang left the bar." We can do the same thing with zi/za/zu, so la jan. puza cliva le barja, just like puzaku la jan. cliva le barja, means "Zhang left the bar a while ago."

Tip: By the way, ma ca tcika would be an even more usual way to say "What time is it?"

Another group of cmavo which can be used here is ze'i/ze'a/ze'u. Just as zi/ze/zu indicate a short, medium or long time from the present (or whatever other time we happen to be talking about), these cmavo indicate short, medium or long durations for the action or state we are talking about. So mi ze'u

bajra means "I run for a long time." (Not "I am a bar for a long time"—that's barja! Lojban does tend to keep you on your toes like that.) Again, we can put these together, so mi puzaze'u bajra means "A while ago, I ran for a long time." A few more examples ...

- .oi.uinai le mi zdani puzi se lindi
  Oh no! My house has just been struck by lightning! (Every language course has to have a few of these ridiculously artificial examples!)

  > **Note:** If you have a tense before the selbri you don't need cu—le zdani cannot run into puzi to form a single sumti.

- la bil. ze'u pinxe loi birje
  Bill drinks beer for a long time.

  > **Tip:** Remember: you don't drink something which is *a* beer, but rather something which is *some* beer. As discussed way back in Lesson 4, that means a mass rather than an individual—though as it happens lo birje also makes sense, as 'a (fixed) quantity of beer'.

- mi bazize'a xabju la djakartas.
  Pretty soon I'm going to live in Jakarta for a while.

- lo la natos. vinji baze'u gunta la BE,ograd.
  NATO aircraft will attack Belgrade for a long time.

  > **Note:** This does not mean that NATO is not attacking Belgrade now (it is at the time I [Robin] am writing this). In Lojban, if we say that something is true at a particular time, it *doesn't* mean that it is *not* true at any other time. There are ways to say that NATO will *continue* to attack, but that comes later. (Sorry, I know I keep saying that things will come later, but you wouldn't really want to have to learn everything at once—it would be like an English course teaching *will go* and *will have been going* in the same lesson).

A complete explanation of time cmavo can be found in Chapter 10 of *The Complete Lojban Language*.

Exercise 3

Translate the following, placing the tense words before the selbri.

1. I will work for a short while.
2. I will work very soon.
3. I was working for a medium amount of time, a long time ago.
4. I work some time around right now.
5. Right now, I've been working for some time.

Space

This is where things start getting strange. In Lojban, space can be a 'tense' just as much as time. This is because there is no difference in Lojban between what traditional grammar calls 'prepositions' and tenses. As we've seen, English, like many languages, treats a word like *earlier* and the past tense ending *-ed* as two totally separate things, while in Lojban they're the same: they both locate an event in time. Space words like *in* or *near* are prepositions in English, and can never be tenses; but in Lojban we treat

them just like time words: they locate events in space. If you prefer, you can also say that Lojban treats time as a dimension, as is (conventionally) done in Einstein's physics.

Remember the word ti? This is part of a series ti, ta, tu, meaning roughly 'this', 'that' and 'that over there.' If we're talking about places rather than things, we say vi, va, vu, meaning roughly 'here', 'there' and 'yonder' or 'way over there'. Again, this is determined by the thing you're talking about. If you're telling a doctor where you feel pain, ti might be the end of your toe, while if you're talking about astronomy, ti could be the solar system. We can therefore say

> viku mi gunka
> Here, I work.

or, more naturally, "I work here."

We've seen that puku means 'before the here-and-now'. Similarly, viku means 'in the immediate vicinity of the here-and-now', i.e. 'here'. If we don't want to make the location relative to the speaker, but relative to something else, we can fill in the empty sumti value, in the same way, to say what the event is in the immediate vicinity of. This, of course, makes vi, va, vu acts as sumti tcita, just like de'i and ti'u: they add new sumti to the bridi. For example

> vi la paris. mi gunka
> In Paris, I work.

> vu le mi zdani mi gunka
> A long way from my home, I work

> va lenu la KEnedis. se catra kei mi gunka
> A medium distance from where Kennedy was killed, I work

> **Note:** If kei in the last sentence wasn't there, mi would be a sumti of catra rather than gunka, so the listener might start interpreting the sentence as "A medium distance from where Kennedy was killed by me ..."

If we want to emphasise that something is at exactly the same location as something else (something which holds true not as often as you might think), you would use bu'u 'coinciding with':

> mi sanli bu'u lenu la KEnedis. se catra
> I'm standing in the very spot where Kennedy was killed (i.e. I've made a visit to the Texas Book Depository—or if you prefer, the Grassy Knoll...)

Just like the time cmavo, place cmavo can be attatched to selbri. For example, instead of saying viku mi gunka, you can say mi vi gunka—"I here-work." Again, this sounds odd in English, but one of the purposes of Lojban is to encourage you to say things in different ways, which may lead to being able to say different things. Lojban expands the mind (warning: unproven Lojban propaganda!).

If we combine place vi etc. with words like ri'u, they become more productive. ri'u is a place cmavo meaning 'to the right of', so ri'u vi ku is 'in the immediate vicinity of *the right of* the here-and-now'. What you're doing is, you're still saying where something is happening relative to you, but now you are saying in what direction to look for it. For example:

> la bil. sanli ri'u vi ku
> la bil. ri'u vi sanli

Bill stands just to the right.

And just like vi and bu'u, you can use these cmavo with an explicit sumti, to say where things are happening relative to something else:

> la bil. sanli ri'u vi la meiris.
> Bill stands just to the right of Mary.

There is a whole class of cmavo that work like ri'u, and they are called FAhA-type cmavo, so named after a (somewhat non-representative) member of their class, fa'a (in the direction of). These include to'o (away from), zu'a (to the left of), ne'a (next to), ne'i (within) and so on. (Again, all the space cmavo are explained in Chapter 10 of *The Complete Lojban Language*).

> **Note:** FAhA cmavo indicate direction, but not *motion toward* that direction. There is a separate cmavo for that; see Lesson 7.

We can also combine time and space. For example, mi vipuzu gunka means "I here-past-long-time-distance work", or "I used to work here a long time ago." A common expression with ku is puzuvuku, meaning 'long ago and far away'—a standard way to begin a fairy tale or legend!

Getting back to daily speech, these time and space cmavo are very useful for questions. ca ma is 'simultaneous with what?', or in other words, 'when?' (a simpler alternative to ti'u or di'e). Similarly, vi ma means 'at the location of what?', or 'where?'

Exercise 4

Translate the following.

1. zdani do vi ma

2. la bil. puzavi zutse

3. le cipni puzine'ava vofli

4. la tcarlz.daruin. puva xabju

5. mi ba tavla ne'i le barja

More negativity

We have already seen na used to turn bridi into negative statements, of the type "it is not true that." And we saw that this sometimes leads to slightly unexpected effects compared to English *not*. For instance, in Lesson 4 we saw that mi na nelci ro gerku means "it is not true that I like all dogs" (or "I don't like *all* dogs"). It does not mean "I don't like any dogs."

na says not only that the sumti aren't connected by that particular selbri, but that they aren't necessarily connected by any selbri at all. So

> mi na tavla la suzyn.
> It is not true that I talk to Susan.

is just as valid a thing to say if Susan is a rock formation in the Pamir Mountains, as it is if she is a human being I know. Often, however, we need our negation to be a little less powerful. In particular, it

is useful to be able to say, not that the whole bridi is false, but only the selbri. This means that there *is* some relationship between the sumti—but this selbri isn't it.

The word used to negate just the selbri, and not the entire bridi, is na'e. So if we say mi na nelci ro gerku, that could be true even if I have no feelings at all about the canine species. But with

> mi *na'e* nelci ro gerku
> I other-than-like all dogs

on the other hand, there is something that can be said about me and all dogs; but it's not that I like them. It isn't necessarily that I hate them: I might write poems about them, or prescribe medicine for them, or imitate them in polite company. But like them, I don't.

If you do want to say you feel the opposite of 'like' for all dogs, you can say

> mi to'e nelci ro gerku
> I un-like (= dislike) all dogs.

to'e turns a selbri into its opposite: to'e nelci is pretty much the same thing as xebni 'hate'. And if you're indifferent, you can say

> mi no'e nelci ro gerku
> I am neutral-as-to-liking all dogs.

no'e indicates that you're neutral on the scale the selbri indicates.

Like time and space, Lojban places negation on a kind of scale, from lesser to greater extent. This 'shades of grey' approach pervades the language; you will see it time and again in the grammar. It makes for an interesting contrast with the theoretical basis for the language, classical logic—which is very much a 'black and white' domain.

Exercise 5

Now that you have three new negative words, let's see if you can use them. Give Lojban equivalents for the following English words, given their Lojban 'opposites' and the cmavo we've just learned.

1. disinterested (cinri: interested)
2. uninterested (cinri: interested)
3. bored (cinri: interested)
4. unborn (jbena: born)
5. uncover (gairgau: cover)
6. undead (morsi: dead)
7. non-Lojban (lojbo: Lojban(ic))
8. un-Lojbanic (lojbo: Lojban(ic))
9. plain (melbi: beautiful)
10. imaginary (fatci: factual, real)

Summary

In this lesson we have covered the following:

1. The uses and usefulness of terminators.

2. Time cmavo: pu, ca, and ba.

3. Time intervals: zi, za and zu.

4. Duration: ze'i, ze'a and ze'u.

5. Location: vi, va, vu and bu'u.

6. Direction: fa'a, to'o, zu'a (and so on).

7. Negation: na'e, no'e and to'e.

There are many more cmavo to describe time and space (and a couple more for negation, for that matter), but they are only there if you need them. In fact, unless you want to be specific about time or space, you don't even need the ones in this lesson. Remember the golden rule of Lojban grammar: *If you don't need it, don't use it!* Lojban grammar is your servant, not your master.

Vocabulary

bevri	x_1 carries/hauls/bears/transports cargo x_2 to x_3 from x_4 over path x_5; x_1 is a carrier/[porter]
culno	x_1 is full/completely filled with x_2
kunti	x_1 [container] is empty/vacant of x_2 [material]; x_1 is hollow
lebna	x_1 takes/gets/gains/obtains/seizes/[removes] x_2 (object/property) from x_3 (possessor)
pendo	x_1 is/acts as a friend of/to x_2 (experiencer); x_2 befriends x_1
vanju	x_1 is made of/contains/is a quantity of wine from fruit/grapes x_2
zgana	x_1 observes/[notices]/watches/beholds x_2 using senses/means x_3 under conditions x_4

Exercise 6

Translation exercises are not your master, either, but they are your business! Translate from Lojban; assume the story is happening in the here-and-now:

1. .i baza lenu la jan. cliva kei la suzyn. sanli ne'i vi le barja

2. .i caziku la suzyn. denpa lenu baziku la jan. viska la suzyn.

3. .i la suzyn. viska re lo kabri

4. .i go'i pa lo pu culno .i go'i pa lo ca culno

5. .i le puzi culno ca kunti ba lenu la jan. pinxe loi birje kei .i'enai vau .ua

6. .i lenu pinxe loi dotco birje kei ku na se nelci ro lo prenu

7. .i la suzyn. ze'i tavla le bevri

8. ".i ko lebna ta .i ko dunda lo cnino vanju botpi mi"

9. ".i .ei na dotco"

Exercise 7

Translate into Lojban these (hopefully much less brain-squelching than the previous lesson's) sentences:

1. A long time ago, Susan briefly lived at Zhang's.

2. Now Susan lives some way away from Zhang.

3. When Susan goes to the house, she goes a little to the left of the bar.

4. Every Thursday Susan goes to the bar, not far from the office.

5. At the bar Susan meets Susan's long-time friends.

6. Susan notices that the beer is German by seeing the bottle label. (Hint: look carefully at the place structure of **zgana**.)

7. Susan sits away from the German beer.

Answers to exercises

Exercise 1

1. *With terminator:* I described the number two to two friends. *Without terminator:* I described the number twenty-two to a friend.

2. *With terminator:* 1:30 was the time when I loved, on Friday. (**la mumdjed.** is the x_3 of **tcika**) *Without terminator:* 1:30 was the time when I loved Friday. (**la mumdjed.** is the x_2 of **prami**)

3. *With terminator:* The man observes the cat. *Without terminator:* The man observes the cat. (Yep, trick question. For an isolated sentence, the presence or absence of **vau** seldom makes any difference.)

4. *With terminator:* The mother of the infant travels. (Since **ku** indicates the **sumti** is over, the **selbri** can now begin.) *Without terminator:* The mother of the infant traveller.

5. *With terminator:* I request of Claudia that Maria speaks. (Claudia is the x_3 of **cpedu**, the person to whom a request is made.) *Without terminator:* I request that Maria speaks to Claudia.

Exercise 2

1. puzaku la juLIET. klama la paris.

2. puzuku mi tcidu la kaMIL.

3. puziku la .iVAN. cliva le kumfa

4. bazi lenu la pi,ER. klama le kumfa kei la .iocikos. cinba la xorxes.

5. puziku la treisis. badri .i ku'i caku la maik. gleki

Exercise 3

1. mi baze'i gunka

2. mi bazi gunka

3. mi puzuze'a gunka

4. mi caza gunka (That was a tricky one...)

5. mi cazize'a gunka (You could also argue for mi puzize'a gunka. What's actually being conveyed by *I've been working* is something we'll be looking at more closely in Lesson 12.)

Exercise 4

1. Where is your house? (Literally "[something] is the house of you at what?")

2. Bill was sitting here a while ago.

3. The bird was just flying some distance by me. (Literally "the bird flew a short time ago located next to here at a medium distance." This is *not* saying anything about the direction in which the bird was flying: FAhA on its own identifies location, not motion.)

4. Charles Darwin lived near here. (Note that we don't need **zu** to specify that he lived near here a long time ago: we assume that the person we're talking to knows who Darwin was, and therfore knows that he lived over a century ago. In fact, you could even miss out the **pu**, but I left it in to avoid confusion—maybe my friend thinks I'm talking about a different person with the same name, or that I'm somehow speaking metaphorically about the spirit of Darwin.)

5. I will speak in the bar. (As you will have surmised, you don't need to follow FAhA words with **cmavo** like **vi**.)

Exercise 5

1. disinterested: **no'e cinri**

2. uninterested: **na'e cinri** (The distinction between *disinterested* and *uninterested* in English in slowly dying out—which makes the word a pedant's delight!)

3. bored: **to'e cinri**

4. unborn: **na'e jbena** (**no'e jbena** would be someone in a twilight-zone between being born and not being born—perhaps the baby at the moment it emerges from the womb. **to'e jbena** is the opposite of being born; what that may mean, up to and including crawling back into the womb, or dying, is pretty much up to you. The English expression is actually more like 'not yet born', and we will find out how to say this in a few lessons' time.)

5. uncover: **to'e gairgau** (**na'e gairgau** means simply 'not to cover', and **no'e gairgau** 'to leave ajar'.)

6. undead: **no'e morsi** (**na'e morsi** is someone alive, not a zombie. But don't worry too much about the phenomenology of the occult; just be comfortable in the knowledge that Lojban allows you to make these distinctions, if you want to.)

7. non-Lojban: **na'e lojbo** (**na'e** is frequently glossed as 'other than'; this example may show you why.)

8. un-Lojbanic: **to'e lojbo** (There is often something subjective about how things are opposites to each other; using an expression like this, you may well be asked to explain exactly how something can be the opposite of Lojban.)

9. plain: **no'e melbi** (**to'e melbi** would be 'ugly', of course.)

10. imaginary: **na'e facti** (You can quibble about whether it's not more like **to'e facti** or **no'e facti**. That's why it's just as well 'imaginary' has its own **gismu**: **xanri**.)

Exercise 6

1. A while after Zhang left, Susan is standing in the bar.

2. Right now, Susan expects that Zhang will soon afterwards see Susan.

3. Susan sees two cups.

4. [She sees] one previously full one. [She sees] one currently full one.

(It's amazing what can be tucked away in exercises. Yes, **sumti** can have tenses in Lojban. There's no reason they can't: though there's an article in front of the **gismu** in **le kabri**, that **gismu** is still a **selbri**, and so it still expresses a relationship. This means that **sumti** have all the characteristics of **selbri**: they have **sumti** of their own (as we'll see

later on); durations; locations; and tenses. This is an important way Lojban is different from many (though not all) natural languages: it has no essential grammatical difference between its 'nouns' and 'verbs'.)

5. The one full just a little time ago is now empty (aha!) after Zhang drank the beer (pah!).

(There's some mischief with terminators and attitudinals here. Attitudinals apply to the structure that precedes them. If they follow a sumti, they apply to that sumti. If they follow a selbri, they apply to that selbri. If they are at the start of a bridi, on the other hand, they apply to the whole bridi.

Now, .i'enai 'disapproval; Pah!' follows kei, so it applies to the phrase closed off by that kei: that is, lenu la jan. pinxe loi birje kei. But .ua follows vau, so it applies to the whole phrase closed off by vau: namely, the entire bridi, le puzi culno ca kunti ba lenu la jan. pinxe loi birje.)

6. Drinking German beer is not liked by all people. (The terminators are the normal implied terminators for that particular structure. Of course, it's much easier to say .i lenu pinxe loi dotco birje na se nelci ro lo prenu, without the kei ku; the na acts like cu, to block off the selbri from its preceding sumti.)

7. Susan briefly talks to the carrier. (See? A better word for *waiter* already. Notice, too, that you can specify a duration without specifying a tense.)

8. "Take that away. Give me a new wine bottle."

9. "It should not be German."

Exercise 7

1. .i puzuku la suzyn. ze'i xabju le la jan. zdani (You can't just say xabju la jan.—you have to fill in the blank of "Zhang's ___.")

2. .i la suzyn. ca xabju va la jan.

3. ca lenu la suzyn. klama le zdani kei la suzyn. klama zu'a vizi le barja (We don't really have a way for saying *she*—as you're probably painfully aware of by now. Take heart—relief is coming in the next lesson!

Note that Susan's route is away from the bar, but not explicitly moving to or from it; so we don't have to indicate motion along with direction. Not that we can right now, anyway.)

4. .i ca ro la vodjed. la suzyn. klama le barja va le briju

5. vi le barja la suzyn. penmi le la suzyn. ze'u pendo (Remember, sumti take tenses and durations, too.)

6. .i la suzyn. zgana lenu le birje cu dotco kei lenu viska le botpi tcita (or: le tcita pe le botpi, or le le botpi ku tcita—you can feel really smug if you came up with that!)

7. .i la suzyn. zutse to'o le dotco birje

Chapter 7. Getting Personal: Pro-sumti and more abstractions

Referring back

So far we've been referring to everybody by name, which can get very repetitive if you want to tell a story, or even string two sentences together (as you will have seen in the last few exercises.) Consider the following:

> la suzyn. klama le barja .i la suzyn ze'a pinxe loi vanju .i la suzyn. zgana lo nanmu .i le nanmu cu melbi .i le nanmu cu zgana la suzyn.
> Susan goes to the bar. Susan drinks some wine for a while. Susan notices [sees, observes] a man. The man is beautiful. The man notices Susan.

> **Note:** Notice the use of melbi—in English we usually describe men as 'handsome' rather than 'beautiful', but this rather sexist distinction doesn't apply in Lojban. However, if you really wanted a Lojban word for 'handsome' (beautiful–kind-of–man) you could say melnau (melbi + nanmu).

It is pretty tedious to have to keep repeating *Susan* and *man*. English gets round this problem by using **pronouns**, like *she* or *he*. This works OK in this case, because we have one female and one male in the story so far, but it can get confusing when more characters enter the scene. (It's even more confusing with languages that only have one word for *he*, *she* and *it*, like Turkish or spoken Chinese.) Lojban, for its part, has *pro-sumti*, which are like pronouns—sort of.

In fact, we've already met some pro-sumti: mi and do, and the ti/ta/tu group; but we still don't have *he/she/it*, which are a bit more complicated. One way of dealing with this is a group of cmavo which refer back to something we've just said. In fact we have met one of these in a different context: go'i. Just as go'i on its own repeats the previous bridi, *le* go'i repeats the first sumti of the previous bridi. (In this, it is behaving no differently to any other selbri with an article in front of it: le + selbri refers to the x_1 of that selbri.) So we can rewrite the first three sentences as

> la suzyn. klama le barja .i le go'i ze'a pinxe loi vanju .i le go'i cu zgana lo nanmu

The system breaks down here, though, since nanmu is not in the first, but the second place of the previous bridi. English doesn't bother with precision here—*he* just means 'some male person mentioned earlier.' This works in the example here, because there is only one man in the story, but what about

> Bill saw Rick. He hit him.

Did Bill hit Rick, or did Rick hit Bill? We don't know. Lojban does have other tricks up its sleeve, and as you might just have already guessed, le se go'i will do the trick. But counting sumti from the preceding bridi isn't really a general solution.

Coming back to the man Susan saw, we can refer to him as ri, which means 'the most recent sumti.' So we can say

> .i le go'i cu zgana lo nanmu .i ri melbi

ri is one of a series, ri/ra/ru, meaning 'the most recent/fairly recent/distant sumti'; but as far as I've noticed, ra and ru aren't very popular in Lojbanistan at the moment. (Put it down to ideological reasons: they are deliberately vague, like their natural language counterparts, so they are regarded as somehow 'un-Lojbanic'.) ri, on the other hand, is used a lot, since it's very common for the last thing in one sentence to be the subject of the next sentence.

> **Tip:** sumti are counted from their beginnings. So in a sentence like
>
> > lenu lo nanmu cu dotco kei cu se djuno ri
>
> ri refers to lo nanmu and not lenu lo nanmu cu dotco: the start of lo nanmu is closer to ri than the start of lenu lo nanmu cu dotco.

> **Tip:** ri cannot refer to a sumti if it is already smack in the middle of that sumti. For example, in
>
> > la suzyn. pinxe le ri vanju
>
> ri obviously refers to la suzyn., and not to le vanju.

Another pro-sumti is da, which means 'someone/something.' You may remember zo'e, which means also means 'someone/something,' but with zo'e the something is unimportant—it's just a way of filling a sumti place. da, on the other hand, is important: it introduces something or someone we are directly talking about.

> **Note for logicians:** da is the 'existential *x*', as in "There exists some *x* such that *x* is ..."

Coming back to our story, we could start by saying da klama le barja—"Someone came to the bar." Unlike the other pro-sumti we've been looking at, da does not point back to a sumti we've necessarily already seen. It *does*, however, point back to the same thing as any other da in any sentences conjoined with logical connectives, or more informally anywhere in the same paragraph. (No, we haven't done Lojban logical connectives or paragraphs yet... Just keep this in mind for future reference.) So if I say da nanmu .i da klama le barja, you can typically assume I'm referring to the same man in both sentences.

Because they are all tied up with predicate logic, da and its companions de and di are used a lot for talking *about* language—you see them frequently on the Lojban e-mail list, for example. By the way, there are no do and du in this series, because these already have other meanings: 'you' and 'is the same thing as.'

Exercise 1

The two highlighted sumti in each of the following Lojban sentences refer to the same thing or person. For each, check whether the pro-sumti you have learned—lego'i, ri, ra—can replace the second sumti.

1. .i *la suzyn.* nelci loi vanju .i *la suzyn.* na nelci loi birje

2. .i la suzyn. viska *lo nanmu* .i *le nanmu* cu dotco

3. .i *la suzyn.* nelci lenu *la suzyn.* klama le barja

4. .i *la suzyn.* nelci le *la suzyn.* pendo

5. .i lenu *la suzyn.* badri cu nandu .i *la suzyn.* gleki

6. .i *lenu la suzyn. badri* cu nandu .i *lenu la suzyn. badri* na se zgana

Assigning pro-sumti

If we're telling a story in English, the meaning of, say, *she* keeps changing. At the moment, it means 'Susan', but if Susan's friend Jyoti walks into the bar, *she* could very well mean start meaning 'Jyoti'. In Lojban, we can keep on using le go'i, ri and their relatives, but there is an easier way of dealing with a larger cast of characters.

What we do is assign pro-sumti as and when we need them, using the cmavo *goi* (which is like the Latin word *sive*, or the English *also known as (aka)*). The sumti assigned by goi are a series called KOhA, consisting of ko'a, ko'e, ko'i ... you get the idea?

> **Note for lawyers (and frustrated non-lawyers):** The equivalent in legal documents of goi is "henceforth referred to as," and ko'a is something like "the party of the first part." Lojban has in fact been proposed as the ideal language for law, where precision is of utmost importance. It would also allow non-lawyers to understand legal documents, which would be something of a miracle.

OK, let's go back to Susan's story. We start by saying

> la suzyn. *goi ko'a* klama le barja

This means that from now on, every time we use ko'a, we mean 'Susan'. The man she sees can then be ko'e, so we say

> .i ko'a zgana lo nanmu goi ko'e

Now every time we use ko'e, it means that particular man, so the full story so far reads:

> la suzyn. goi ko'a klama le barja .i ko'a ze'a pinxe loi vanju .i ko'a zgana lo nanmu goi ko'e .i ko'e melbi
> .i caku ko'e zgana ko'a

(Note how the cus have disappeared: ko'a, like mi, doesn't need them, since it can't join with a selbri to form a new selbri).

Assigning ko'e to lo nanmu is actually better than starting the next sentence with le nanmu. This is because le nanmu simply means "the thing I have in mind which I call 'man'," which is not exactly the same as "the man" (it could, in theory, be something totally different). Some Lojbanists might even say that using le like this is a bit malglico. (Or at least malrarbau 'damned natural languages': lots of languages have definite articles, and Lojban le is no definite article.)

> **Tip:** If you combine ko'a/e/i/o/u with ri/ra/ru, *don't* count ko'a-type pro-sumti when you're counting back. For example
>
> > la suzyn. rinsa ko'e .i ri cisma
>
> doesn't mean that ko'e (the man, in this context) smiles, but that *Susan* smiles. Why? Because it is pointless to have a replacing word (**anaphor**), like ri, replace another replacing word, like ko'e. If you wanted the x_1 of cisma to be ko'e, you would have simply said .i ko'e cisma, not .i ri cisma. It works out simpler to keep ri/ra/ru in reserve for more important things.

Let's continue by introducing Susan's friend Jyoti (if people are wondering where I get all these unusual names from, Jyoti is an old Gujarati friend of mine). We continue ....

> la djiotis. goi ko'i mo'ine'i klama .i ko'i rinsa ko'e
> Jyoti (henceforth #3), goes into. #3 greets #2.
> Jyoti comes in and says hello to the guy.

mo'ine'i is another space 'tense'. mo'i indicates movement; ne'i means 'inside' (from the gismu, nenri). So mo'ine'i corresponds to the English preposition *into* (while ne'i on its own corresponds to *inside* or *in*.) The way Lojban grammar works, mo'ine'i on its own is treated as mo'ine'i ku: a sumti tcita with an omitted sumti. (Remember caku, which is exactly the same. Just as baku means 'afterwards' (relative to the here-and-now), mo'ine'i [ku] means something like 'in(to)wards'—but is nowhere near as weird in Lojban as it is in English.)

mo'i is extremely useful, as it allows you to distinguish between location and motion. For example, *I ran behind the bar* in English is properly speaking ambiguous: are you running while behind the bar, or are you running with your final destination behind the bar? Lojban does not allow that ambiguity: mi bajra ti'a le barja means the former, while mi bajra *mo'i* ti'a le barja means the latter. In the example given above, ne'i klama would mean not that Jyoti comes in (from outside), but that she is going from somewhere to somewhere else, while inside. This kind of ambiguity may pass unnoticed by native English speakers, but speakers of languages which are more precise about direction find it extremely vague (Turkish, for example, has at least three words to translate 'here').

Vocabulary

catlu	x_1 looks at/examines/views/inspects/regards/watches/gazes at x_2 [compare with zgani]
.e	and (individuals, as opposed to joi.) Stay tuned for a proper explanation of these words in a couple of lessons.
rinsa	x_1 (agent) greets/hails/[welcomes/says hello to]/responds to arrival of x_2 in manner x_3 (action)
xanka	x_1 is nervous/anxious about x_2 (abstraction) under conditions x_3

Exercise 2

Translate the following. Assume the same values for ko'a/e/i that we have been using so far (i.e. ko'a is Susan, and so on).

1. .i ko'a ca rinsa ko'i

2. .i ko'a .e ko'i xanka cmila

3. .i caku le go'i cu catlu ko'e

4. .i ko'e cadzu mo'i zu'a ko'i

5. .i ko'e djica lenu djuno fi le ko'a cmene

Acronyms

Now there are plenty of KOhA sumti to go around. In fact, if you've run out of words by getting to ko'u, you can start over again with fo'a, fo'e ... fo'u. There is a problem, though: you have to remember (a) which sumti was assigned to which KOhA word, and (b) to assign the sumti in the first place. There's nothing to say that this will not become commonplace in future Lojban usage. Right now,

however, there is a feeling that this is a little too calculated to work spontaneously. And Lojban cannot readily use the little hints natural languages pepper their grammar with (like gender and number), to keep track of who is who.

As a result, yet another strategy has been introduced to refer back to sumti. This strategy dates back from 'Institute' Loglan, before Lojban arose in its modern form. (Yes, Lojban has a history and a prehistory. No, we don't really have the time to go into them here.) The strategy involves acronyms. Simply put, if you see a Lojban letter being used as a sumti, you take it as referring to the last sumti whose selbri starts with that letter. So in

> la suzyn. cusku lu coi li'u lo nanmu .i ny. cisma
> Susan says "Hello" to a man. The man smiles

ny. stands for nanmu. There is no need to explicitly assign ny. with goi; but you can, and indeed if you assign it to a sumti which doesn't start with that letter, then that assignment will be the one that counts ("A certain Lojbanist, let's call him *N*, dislikes KOhA cmavo..."). Some Lojbanists dislike this usage because it, too, seems a little calculated (and initials and acronyms have decidedly non-literary associations in most natural languages!) Only time will tell which of the two usages will become more commonplace.

Direct quotations

You may have noticed two other new words in the previous Lojban sentence. lu and li'u are like 'quote' and 'unquote'—they put something someone says into a sumti. li'u is one of the few terminators that can almost never be missed out, since that would make everything else that follows part of the quotation. You can also nest quotations, e.g.

> la ranjit. pu cusku lu la djiotis. pu cusku lu coi li'u mi li'u
> Ranjeet said "Jyoti said 'Hello' to me."

which is similar to

> la ranjit. pu cusku lu la djiotis. pu rinsa mi li'u
> Ranjeet said "Jyoti greeted me."

Being a logical language, Lojban is very careful to distinguish between words for things, and the things themselves. So you can't speak about the *phrase* le munje 'the universe' in the same way you speak about the universe itself. To give a silly example, the phrase le munje is small, but the universe itself is not. To distinguish between the two in Lojban, you need to use quotation:

> lu le munje li'u cu cmalu
> 'The universe' is small
> le munje na cmalu
> The universe is not small

Tip: lu... li'u is intended to quote grammatical pieces of Lojban—ideally, entire sentences, rather than individual words. For smaller chunks of Lojban, which do not necessary make sense in isolation, the proper quotation words are instead lo'u... le'u, the 'error quotes'. For example, ro le mi pendo cu klama makes sense in Lojban as a sentence, and can be enclosed in lu... li'u. But if you want to say what goes

before pendo in the sentence, ro le mi does not make that much sense on its own. So you would quote that sentence fragment, not as lu ro le mi li'u, but as lo'u ro le mi le'u.

Vocabulary

fengu	x_1 is angry/mad at x_2 for x_3 (action/state/property)

Exercise 3

Translate the following. Continue to assume the same values for ko'a/e/i that we have been using so far.

> **Note:** doi is used to show who you're talking to (without doi, the cmene might become the first sumti of the bridi). It's a bit like English *O* (as in "O ye of little faith") or the Latin vocative (as in *Et tu, Brute.*)

1. .i ko'e cusku lu doi djiotis. ma cmene le do pendo li'u

2. .i ko'i cusku lu lu suzyn. li'u li'u

3. .i ko'e cusku lu .ui ro lo do pendo cu pendo mi li'u

4. .i ko'i fengu cusku lu djica ma li'u ko'i

Indirect quotations

A phrase like "Ranjeet said 'Jyoti said "Hello" to me.'" can also be expressed in a rather more subtle way:

> la ranjit. pu cusku le sedu'u la djiotis. pu rinsa ry.
> Ranjeet past-express the-predicate Jyoti past-greet R
> Ranjeet said that Jyoti greeted him.

What is this sedu'u? Well, to explain that, we have to go via du'u.

du'u is a tricky but very useful cmavo meaning, in logical terms, 'the proposition.' What this means in ordinary language is something like "the notion that *x* is true." Sorry, that wasn't really ordinary language. The closest equivalent in English is *that*, as in "Ranjeet knows *that* ...", or "Ranjeet thinks *that* ...". Here's an example of du'u used on its own:

> la suzyn. na djuno le du'u la jan. cinynei ra
> Susan doesn't know that Zhang fancies ('sexually-likes') her.

du'u belongs to selma'o (= se cmavo) NU, just like nu itself. This means you can use it grammatically wherever you use nu. In fact, du'u and nu are the two major kinds of **abstractions** in Lojban. Lojban can distinguish between abstractions pretty finely, but the main distinction is between things that can happen (**events**), which take nu, and things you can know (**facts**), which take du'u. The gismu definition usually tells you which abstraction type is normal for the word.

> **Note:** By the way, most of the instances of nu in the final exercises of Lesson 5 and 6 should have been du'u. Sorry about the over-simplification—and please don't repeat it in your own Lojban from now on!

OK, but why is what Ranjeet said introduced with sedu'u rather than du'u? Basically, because Lojban is a stickler for details. What you know or remember or believe is a fact: something you hold inside your brain. What you *say*, however, is not something you hold inside your brain; instead, it is sounds which

mean what you hold inside your brain. The distinction is subtle, but it is the kind of distinction Lojban insists on. (That's why it's a logical language, after all.) When you want to refer to something you say rather than something you think, Lojban uses sedu'u rather than du'u.

Note: The se in sedu'u is what you think it is. I'll explain what it's doing there next lesson.

Note: A jargon word you will occasionally see in talk about Lojban is **reification**. Don't be scared off: this piece of jargon actually helps! Reification is Latin for taking something, and turning it into an object, a thing. It's what it turns out both du'u and sedu'u do. These words take what was an event, an occurrence in the physical world, and turns it into a single object, a thing, which you can think, which you can discover, or which you can use in logic. (Or, in the case of sedu'u, which you can say.)

So Lojban has different words for *that...*, depending on what sort of thing is meant.

- If *that* introduces something that happened, use nu. (Events can be subdivided more finely yet, but for now let's not complicate matters even more than necessary.)

- If *that* introduces something that you think, use du'u.

- If *that* introduces something that you say, use sedu'u

- —unless it is a literal quote, in which case you use lu … li'u.

Tip: This insistence on detail—which can get even more involved for NU cmavo—is quite useful; but it seems to contradict what the previous lesson claimed, that Lojban grammar is your servant, not your master. It *is* an error to say nu when you mean du'u—though you will find it is a rather frequent error. But Lojban does allow you to embed bridi inside other bridi as abstractions, *without* specifying whether they are events, facts, utterances, qualities, or whatever. The magic cmavo to use in that case is su'u. So you can correctly say all three of:

- mi nelci lesu'u mi dotco

- mi djuno lesu'u mi dotco

- mi cusku lesu'u mi dotco

Admittedly, su'u has not been much used to date; it is a fairly late addition to the language (as is du'u!), and people haven't got used to it yet. But if you can't be bothered specifying what kind of abstraction you're using, that's the word to use.

Exercise 4

Which of nu, du'u or sedu'u would you use to translate *that* in the folowing sentences?

1. I claimed *that* Lojban is easy.

2. I am frustrated *that* Lojban is easy.

3. I agree *that* Lojban is easy.

4. It is confusing *that* Lojban is easy.

5. It was decided *that* Lojban should be easy.

Some more personal pro-sumti

We've already seen two personal pro-sumti, mi and do, meaning 'I' (or 'me') and 'you'. However, *you* in English can mean four different things:

1. The one person I'm talking to.

2. A number of people I'm talking to.

3. The person or people I'm talking to and some other person or people.

4. Anyone (as in "Money can't buy *you* love.")

Lojban gets round the confusion between (1) and (2) by using numbers. The most common way to express (2) is rodo, 'all of you' (or Southern U.S. *Y'all*) and, as we've seen, coi rodo is "Hello all"—a common way to start an e-mail to a list. You can also use specific numbers: redo would mean 'two of you' or 'you two' (for example, I start e-mails to my parents with coi redo.)

> **Tip:** To say "*the* two of you", Lojban does actually let you say le re do. But you need the numeral to be there already, in order to put an article in front of a pro-sumti: you can't say le do to mean 'you'.

You can also use numbers with ko, e.g. ro ko klama ti "All of you, get over here."

Case (3) is expressed by do'o 'you and someone else'. Case (4) is completely different: it's normally expressed by roda 'all *x*' or, more specifically ro le prenu 'all persons', but often you can just miss it out altogether.

English *we* is almost as confusing, as it can mean the speaker and the listener(s), the speaker and some other people, or the speaker and the listener and some other people. Not surprisingly, Lojban has four distinct pro-sumti for *we*:

mi'o	you and I (but no-one else)
mi'a	I and another/others (but not you)
ma'a	you and I and another/others

(Once again, Lojban follows the lead of languages other than English in differentiating between these different kinds of *we*.)

The fourth pro-sumti? Oddly enough, it's mi! Lojban makes no distinction bewteen singular and plural; so if several people are speaking all together, mi (which refers to the one or more speakers) is perfectly correct for *we*. In practice, you'll usually get mi used like that when one person is presuming to speak (or more often, to write) on behalf of others.

Some examples:

> mi prami do
> I love you.

> mi'a penmi do ti'u la cicac.
> We'll meet you at three o'clock.

> ma'a remna

We are all human.

mi djica lenu do cliva
We want you to go away.

Exercise 5

Is *we/us* in the following mi'o, mi'a, ma'a, or mi?

1. *We* need to start seeing other people.

2. *We* the people hold these truths to be self-evident.

3. *We* decided to expel you from the association.

4. You can't talk to *us* that way!

5. *We*'re in a fine mess, all of us, aren't we?

6. They told *us* we should get married, and you said "OK."

7. They told *us* we should get married, and he said "OK."

Summary

In this chapter, we have covered the following topics:

- How to refer back to previous sumti, using the previous bridi (le go'i), counting sumti (ri, ra, ru), assigning pro-sumti (ko'a-ko'u, fo'a-fo'u), and using acronyms (Lojban letters).

- How to refer to existential x ('something, someone') (da, de, di).

- Referring to motion in Lojban (mo'i).

- How to give direct quotations (lu … li'u).

- How to give indirect quotations (se du'u).

- How to refer to facts (du'u) as distinct from events (nu).

- Lojban's complement of first and second person pro-sumti (do'o, mi'o, mi'a, ma'a).

Vocabulary

bebna	x_1 is foolish/silly in event/action/property [folly] (ka) x_2; x_1 is a boob
burna	x_1 is embarrassed/disconcerted/flustered/ill-at-ease about/under conditions x_2 (abstraction)
cinri	x_1 (abstraction) interests/is interesting to x_2; x_2 is interested in x_1
dansydi'u	disco [dansu (dance) + dinju (building)]
.e'u	'I suggest' (attitudinal)
mutce	x_1 is much/extreme in property x_2 (ka), towards x_3 extreme/direction; x_1 is, in x_2, very x_3
ni'a	down, below (space 'tense')
ninpe'i	meet for the first time [cnino (new) + penmi (meet)]
pe'i	'I think' (opinion attitudinal)
penmi	x_1 meets/encounters x_2 at/in location x_3
simlu	x_1 seems/appears to have property(ies) x_2 to observer x_3 under conditions x_4
simxu	x_1 (set) has members who mutually/reciprocally x_2
.y.	'er' (hesitation)

Exercise 6

The story is now on in earnest! For each of the highlighted pro-**sumti**, say who or what they mean. (Oh, and translate the sentences, too.)

> **Note:** ka is like nu, but while nu describes a state or event, **ka** describes a property or quality.
>
> **soi vo'a** means 'and vice versa'. **simxu** does pretty much the same thing, as a **gismu**. We'll be looking at both next lesson.

1. .i ko'a burna

2. .i ko'a catlu le la cardoNES. kabri

3. .i lenu zgana *ra* cu simlu leka cinri ko'a

4. .i ko'e cinba ko'i soi vo'a

5. .i ko'i cusku lu pe'i *redo* puzi simxu ninpe'i li'u

6. .i le vanju pe ni'a cu simlu leka mutce cinri

7. .i ko'a sutra pinxe *le go'i*

8. .i ko'e cusku lu .y. na *go'i*

9. .i *mi* puze'a na penmi *ti* soi vo'a li'u

10. .i baziku ko'a cmila

11. .i ko'a cusku lu .u'i redo bebna

12. .i .e'u *ma'a* klama lo dansydi'u

Vocabulary

bilga	x_1 is bound/obliged to/has the duty to do/be x_2 in/by standard/agreement x_3; x_1 must do x_2
cismyfra	x_1 reacts/responds/answers by smiling to stimulus x_2 under conditions x_3 [cisma (smile) + frati (react)]
dunku	x_1 is anguished/distressed/emotionally wrought/stressed by x_2
gusta	x_1 is a restaurant/cafe/diner serving type-of-food x_2 to audience x_3
jinvi	x_1 thinks/opines x_2 [opinion] (du'u) is true about subject/issue x_3 on grounds x_4
kansa	x_1 is with/accompanies/is a companion of x_2, in state/condition/enterprise x_3 (event/state)
morji	x_1 remembers/recalls/recollects fact(s)/memory x_2 (du'u) about subject x_3
preti	x_1 (quoted text) is a question/query about subject x_2 by questioner x_3 to audience x_4
spuda	x_1 answers/replies to/responds to person/object/event/situation/stimulus x_2 with response x_3
xumske	chemistry [xukmi (chemical) + saske (science)]

Exercise 7

Translate into Lojban. Use Lojban letters (acronyms) for the characters to refer to each other. Do not use li'u to close quotations opened with lu at the end of each sentence, but only when the speaker actually stops speaking.

1. Jyoti asked Susan, "Where's Zhang?" (Hint: just use **preti**.)

2. Susan answered "He said that he would wait for me to come." (Hint: just use **spuda**, and skip x_2.)

3. Jyoti said, "I'm not that worried about him leaving. I think that he'll meet us at the disco." (Use a **gismu** instead of an attitudinal for 'I think.')

4. "He has to read for a while."

5. "He's forgotten a lot of chemistry in the summer." (Hint: he's actually forgotten many things about chemistry.)

6. "We're going to a restaurant before going to the disco."

7. "Do you want to accompany us?"

8. "Sure," said Susan, as she smiled at Ranjeet. (Hint: *as = at the same time as*.)

Answers to Exercises

Exercise 1

1. le go'i: Yes. ri: No. (ri would be loi vanju.) ra: Yes.

2. le go'i: No. ri: Yes. ra: No. (Strictly speaking, if ri is not used in a sentence, ra can refer to the immediately preceding sumti; but that would be needlessly misleading.)

3. le go'i: No. (go'i refers back to the previous sentence—which is why it can answer a yes/no-question—and not to a bridi in the same sentence.) ri: Yes. ra: No.

4. le go'i: No. (Once again, there's no previous sentence for it to refer to.) ri: Yes. (ri counts only completed sumti, and le ri pendo is not yet complete when you count back from ri to the le immediately in front of it.) ra: No.

5. le go'i: No. (The x_1 of the preceding sentence is not la suzyn. but lenu la suzyn. badri.) ri: Yes. (See discussion.) ra: No.

6. le go'i: Yes. ri: No. ra: Yes. (lenu la suzyn. badri is the second sumti counting backwards from the start of the sentence.)

Exercise 2

1. Susan greets Jyoti.

2. They laugh nervously.

3. Now, they look at the man. (le go'i means that the people doing the laughing are the same as the people doing the looking—both of them.)

4. He walks towards the left of Jyoti. (Without the mo'i, this would mean "He walks *at* the left of Jyoti".)

5. He wants to know (about) her name. (That's Susan's name, not Jyoti's—though in English you'd assume Jyoti, since she is the most recently named female. Pro-sumti like ko'a aren't affected by what candidate referent has been mentioned most recently: they have a unique referent that stays constant.)

In order to get this into understandable English, we've had to change some of the pro-sumti back into names. We could also make the translation sound more natural by changing the word order a bit more, and maybe putting the whole thing into the past tense.

Exercise 3

1. He says "Jyoti, what is the name of your friend?" (This is actually the simplest way of saying "Who's your friend?"; le do pendo cu mo is closer to "What's your friend?", as in "What does your friend do?" or "What is your friend like?")

2. She says "'Susan.'" (Note the characteristic, Lewis-Carrollesque Lojban pedantry here. Susan, the young woman with an irrational fear of German alcoholic beverages, is not Susan's name. The *word* 'Susan' is Susan's name. So Jyoti cannot answer la suzyn., meaning la suzyn. cu cmene le mi pendo, but lu suzyn. li'u, meaning lu suzyn. li'u cu cmene le mi pendo. Since we're putting everything Jyoti says inside our own quotes, this makes her answer be lu lu suzyn. li'u li'u.)

3. He says "Delighted—any friend of yours is a friend of mine." (Remember, Lojban **selbri** can be used in both **bridi** and **sumti**: **pendo** means both 'a friend', with an article in front of it, and 'is a friend', as an independent **selbri**.)

4. Jyoti says to herself angrily "What does he want?" (Because it is in direct quotation, the question is Jyoti's, not the narrator's, obviously: this does not mean "What was it that Jyoti said to herself he wanted?")

Exercise 4

1. **sedu'u**, in the usual usage of *claim* as 'make a statement'. Lojban gives **du'u** for **xusra** 'assert, claim', but that points to the more logic-specific sense of 'claim that something is true'.

2. **nu**. It is events in the world, rather than concepts, which usually provoke emotional responses. If **du'u** represents something you hold in your brain, then **nu**, not **du'u**, is necessary after 'frustrated': your emotional response is too much of a reflex action for your perception to have the time to become something you hold in your brain!

3. **du'u**: agreement is a response you have to a concept; this concept has not necessarily been put in words, nor are you necessarily putting it in words yourself.

4. **nu**. Confusion is an emotional response, just like frustration, and primarily involves events in the world, rather than rational facts. (If they're confusing, of course, they're probably not all that rational in the first place.)

5. **du'u**: decisions are things you hold in your brain, *before* you either put them into words, or into action.

Exercise 5

1. **mi'o**

2. **mi** (Classic case of someone speaking on behalf of the many, by the way.)

3. **mi'a**, although this could be **mi** if the expeller is speaking institutionally, on behalf of the association.

4. **mi'a**

5. **ma'a**

6. **mi'o**

7. **mi'a**

Exercise 6

pro-sumti	
ra	**le la cardoNES. kabri** (It can't be **lenu zgana ri kei**, because the **lenu-sumti** isn't finished yet—and that interpretation would be as weirdly self-referential as any Escher drawing. Not that Lojban isn't perfectly capable of such mischief!
	But we couldn't refer back to **le la cardoNES. kabri** with **ri**, either: the way **sumti** are counted by their beginnings, the immediately previous **sumti** is not **le la cardoNES. kabri**—it's the **la cardoNES.** *inside* the phrase **le la cardoNES. kabri**! This kind of annoyance may give you a hint about why **ri** is not as popular as you might think...)
redo	**la suzyn. .e la ranjit.**: "You two."
le go'i	**le vanju**
go'i	**la suzyn. ce la ranjit. puzi simxu ninpe'i.** Don't worry about how you said "Susan *and* Ranjeet"—it's not like we've covered **ce** anyway! (For the record, it makes a set out of Susan and Ranjeet, since a set is what **simxu** looks for. See Lesson 14.)
	go'i here refers back not to the previous sentence in the story, but to the previous sentence *in the conversation*. Obviously Ranjeet wouldn't be referring back to sentences written by the narrator. He's not meant to realise he's fictional, after all.
mi	**la ranjit.** (Just checking if you're awake...)

ti	la suzyn. (By elimination; but strictly speaking ti could be anyone or anything Ranjeet happens to be pointing to.)
ma'a	la suzyn. .e la ranjit. .e la djiotis.

Translation

1. Susan felt embarrassed.

2. She looked at the chardonnay glass. (As specified in Lesson 3, le la cardoNES. kabri does not mean that the Chardonnay owns the glass—merely that it is associated with it: it corresponds to le kabri pe la cardoNES.)

3. She seems to find observing it very interesting. (In Lojban, things and people aren't interesting by themselves; only their properties or activities can be interesting. There is a workaround, which is something like "*some property about the glass I won't bother specifying* is interesting." We'll cover this towards the end of the course.)

4. Ranjeet and Jyoti kissed each other. (Literally, "Ranjeet kissed Jyoti and vice versa.")

5. "I think you two have just [mutually] met," she said. (In Lojban, you can't say "two people meet". You can only say "Person A meets person B", and, optionally, "vice versa"—soi vo'a. But you can use simxu 'mutually' to get the two sumti involved into the one sumti place.)

   Note: Seasoned Lojbanists will have noticed that this sentence is not strictly correct, and that it would have been rather better as lu'i redo puzi ninpe'i simxu, or lu'i redo puzi simxu leka ce'u ninpe'i ce'u. Seasoned Lojbanists will also cut me some slack for not trying to introduce everything at once...

6. The wine below seemed to be incredibly interesting. (Literally, "The wine associated with below...". Strictly speaking, this does not mean the wine below Susan, but the wine below the speaker; but we won't insist on that point for now.)

7. She drank it quickly.

8. "Errr, no," said Ranjeet.

9. "We've never met [each other]." (Literally "I've never met this person, and vice versa," which sounds even more awkward.)

10. A little later, Susan laughed.

11. "Come on, you're both being silly," she said.

12. "Let's go to the disco."

Exercise 7

You now know enough Lojban that your translations can vary to some extent. Don't be too concerned about matching these translations to the letter.

1. .i lu jy. zvati ma li'u preti fi la djiotis. la suzyn. *or* .i lu jy. zvati ma li'u preti zo'e la djiotis. la suzyn.

2. .i la suzyn. spuda fi lu jy. cusku lesedu'u jy. denpa lenu mi klama li'u (And no, it's unlikely that Susan would refer to herself as sy.!)

3. .i la djiotis. cusku lu mi no'e dunku lenu jy. cliva .i mi jinvi ledu'u jy. penmi ma'a vi le dansydi'u (We translate *us* as ma'a rather than mi'o, because presumably it refers to Ranjeet as well as Jyoti and Susan.)

4. .i jy. bilga lenu ze'a tcidu

5. .i jy. to'e morji so'e da le xumske ca le crisa (You could also say so'e lo fatci instead of so'e da.)

6. .i mi'a klama lo gusta pu lenu klama le dansydi'u

7. .i xu do djica lenu do kansa mi'a li'u (We put li'u here, because this is where Jyoti's quotation ends.)

8. .i la suzyn. cusku lu go'i li'u ca lenu sy. cismyfra la ranjit. (or: ra cismyfra or ko'a cismyfra. Not ri cismyfra, though: ri here is lu go'i li'u! Infuriating but true...)

Chapter 8. Swapping things round: conversion and simple lujvo

selbri conversions

Conversion is swapping the places of a bridi around. We have already encountered one case of conversion: the cmavo, se, which changes round the first and second places of a bridi. For example

> la djiotis. cinba la ranjit.
> Jyoti kisses Ranjeet.

is the same as

> la ranjit. se cinba la djiotis.
> Ranjeet is kissed by Jyoti.

se is part of a series of cmavo which go, in alphabetical order, se, te, ve, xe. Like a lot of these series, the first one is used a lot more than the others, but sometimes the others are useful.

Just as se changes round the first and second places, te changes round the first and third places, ve, the first and fourth, and xe, the first and fifth.

> ti bakfu loi tirse grana loi skori
> This is-a-bundle-of iron rods held together with string.

> loi skori cu te bakfu loi tirse grana ti
> String holds the bundle of iron rods together (literally, "with string are bundled iron rods.")

The ti has now moved to a less conspicuous place in the sentence, and so can now be dropped out without being missed. In fact place conversion is often used when we want to get rid of places like this.

-
> mi'a tugni do zo'e le dinske
> mi'a tugni do fo le dinske
> We agree with you [that something is true] about economics.

> le dinske cu ve tugni
> As regards economics [we] agree [with you].

-
> le prenu cu klama zo'e zo'e zo'e lo trene
> le prenu cu klama fu lo trene
> The person goes somewhere, from somewhere, via somewhere, by train.

> lo trene cu xe klama

[Someone] goes by train. (literally "By a train is gone")

A train is a vehicle.

As I've said, the more extreme conversions like ve and xe are rarely used, partly because most gismu only have two or three places, and partly because even with four- or five-place gismu, the less-used places are what come towards the end.

Vocabulary

gugde	x_1 is the country of peoples x_2 with land/territory x_3; (people/territory relationship)
jamna	x_1 (person/mass) wars against x_2 over territory/matter x_3; x_1 is at war with x_2
jdini	x_1 is money/currency issued by x_2; (adjective:) x_1 is financial/monetary/pecuniary/fiscal
xatra	x_1 is a letter/missive/[note] to intended audience x_2 from author/originator x_3 with content x_4
xlura	x_1 (agent) influences/lures/tempts x_2 into action/state x_3 by influence/threat/lure x_4

Exercise 1

Convert the following sentences so that the highlighted sumti comes first. Miss out any unimportant places.

1. zo'e fengu *lenu jamna*

2. ti xatra mi *la jan.*

3. zo'e xlura mi lenu cliva le gugde kei *loi jdini*

4. lo prenu cu tavla zo'e zo'e *la lojban.*

5. lo prenu cu dunda le cukta *mi*

sumti conversions

Another thing we can do is to use conversion cmavo to make sumti. We saw how Lojban articles turn selbri into sumti, so that, for example, lo mlatu means "something(s) which could fit in the first place of mlatu"—in other words, lo changes 'is-a-cat' to 'a cat'. The same is true for le mlatu except that, as we've seen, it is something which the *speaker* has in mind as occupying x_1 of mlatu—in other words, 'the cat.'

This works fine if the only place we want to access and turn into a sumti is x_1; but with other gismu we may want to make sumti out of other places. Let's look at the last example from the previous exercise:

lo prenu cu dunda le cukta mi

lo prenu can also be le dunda 'the giver'; but what about the sumti describing mi and le cukta? Well, you probably guessed. The answer you gave to the exercise was (I hope)

mi te dunda le cukta

This means that mi can be le te dunda 'the recipient'. In the same way, le cukta can be le se dunda 'the gift' or 'the thing given'. So if we want to make a really obvious sentence, we can say

le dunda cu dunda le se dunda le te dunda

The giver gives the given-thing to the person-to-whom-it-is-given

The donor gives the gift to the recipient.

Note: 'gift' here is anything given without payment or exchange—it doesn't need to have the 'special present' associations of the English word.)

These conversions apply not only to gismu, but to any word acting as a selbri. Remember go'i, for example, which stands in for the preceding sentence's bridi. Just as we did with dunda, we can construct a bridi like

le go'i cu go'i le se go'i le te go'i le ve go'i le xe go'i

On its own, this sentence doesn't mean terribly much; it just repeats the previous sentence. But the trick is, this version of the sentence repeats the previous sentence, *with its sumti* appearing explicitly. This is how we can refer back to sumti in the previous sentence in general. For example,

.i la suzyn. zgana lo nanmu goi ko'a .i ko'a melbi

can also be expressed as

.i la suzyn. zgana lo nanmu .i *le se go'i* cu melbi

That's because le se go'i refers to the second place (x_2) of the preceding bridi, which is lo nanmu. (There are even ways to refer back to sumti introduced by sumti tcita; but that's an advanced topic.)

Even some abstraction cmavo can be modified by se. For example, du'u, which can be used to form a selbri, has two sumti: x_1, the thought described, and x_2, the words used to express it:

le la jan. se pensi cu {du'u ri nelci la suzyn. kei} lu do dirba mi li'u
Zhang's thing-thought (= what Zhang thought) is {the thought that he likes Susan}, put into the words "You are dear to me."

That's why le se du'u refers to words rather than thoughts.

Exercise 2

Come up with sumti for the following concepts, using the following gismu:

ciska
cmene
cpedu
fanva
klama
penmi
skicu
spuda

1. the destination

2. the route

3. the namer

4. the translation

5. the translator

6. the request

7. the meeting place

8. the writing implement

9. the description

10. the response

lujvo

We've already seen quite a few lujvo, or compound words, in the exercises; but we haven't actually made any of our own yet. Lojban has strict rules for making lujvo; you can't just crunch words together like English *brunch* or *edutainment*, because this might result in a word which sounds like something else, falls apart or makes intelligent computers repeat "Does not compute" in a tinny voice and blow up in a cloud of blue smoke. However, one safe way of making acceptable lujvo is by using the conversion cmavo we've just looked at.

se dunda, as we've seen, means 'is given (by someone, to someone)'. We can turn this into a lujvo simply adding l to the se, to give seldunda. The new word comes complete with its own place-structure—which is, of course, the same as that of se dunda:

x_1 is a gift from x_2 to x_3

If we want to say 'the gift', le seldunda is not really an improvement on le se dunda. However, most gismu have short combining forms (rafsi). These are never used on their own, only in lujvo. As it happens, dunda has two short forms: dud and du'a. We can't use dud, because that would give us a word ending in a consonant, and, as we know, only cmene can end in a consonant. (Some cmene do in fact use them for that reason.) The only candidate, then, is du'a, so 'the gift' is le seldu'a. (sel*du'a* has exactly the same place structure as sel*dunda*.)

The same is true for the other conversion cmavo, though their corresponding rafsi don't all follow the same pattern:

se	sel-
te	*ter*-
ve	vel-
xe	xel-

So 'the recipient' is le terdu'a.

> **Note:** You might wonder whether stela 'lock' was really important enough to have wrested the rafsi tel- away from te—given that xel-, after all, was successfully wrested away from xelso 'Greek'. The answer is, probably not; but after the Great rafsi Reallocation of 1993, it's really too late to do anything about it now. Consider it an endearing quirk of the language...

In this way you can expand on the gismu list dramatically, to give equivalents of common English words which are not included and, more interestingly, words which don't have equivalents in English. A lot of these are words you would probably never want to say, like terna'e 'x_1 is the rule/logic by which proposition x_2 contradicts/denies/refutes/negates proposition x_3.' However, you sometimes find

interesting and/or useful words which don't exist as single words in English. Here are a few of my own creations:

lo tertcu	a purpose/activity for which something is needed (from nitcu 'need')
lo ternu'e	a person to whom a promise is made (from nupre 'promise')
lo selvu'e	a moral standard (from vrude 'be virtuous')
lo selte'a	a scary thing (from terpa 'fear')
lo selcta	something/someone that is looked at (from catlu 'look, examine')
lo selta'i	something which wears you out (from tatpi 'be tired/fatigued')
lo veltu'i	an area of agreement (from tugni 'agree with')
lo selzi'e	something you are free to do (from zifre 'be free')
lo selxei	an object of hate (from xebni 'hate')
lo selpa'i	an object of devotion (from prami 'love, be devoted to')

Warning

This method will always give you an acceptable lujvo—except in one case. Lojban does not allow double consonants, because they are difficult to pronounce, and can be heard incorrectly as one consonant. This means that we can't have lujvo like vellu'i ('cleansing agent', from the x_4 of lumci 'wash'). The way out of this problem is to put y between the two ls, giving us velylu'i.

In fact, if you see y in a Lojban word, it cannot be a gismu or a cmavo (with two exceptions we've already seen: .y. 'er...' and letters of the alphabet like .y'y. and dy.) Such a word can only be either a lujvo or a name (cmene). y was purposefully avoided in 'normal' Lojban words.

Negative lujvo

Just as se has the combining form sel, the negative na'e has the combining form nal, and we can use this to make lujvo in exactly the same way.

> **Note:** na has its own rafsi, nar; but na'e is more useful in creating new words. na'e in a selbri still indicates an existing kind of relationship, which you would want to describe with a single lujvo; while na could mean anything, including non-existence—making it too broad a concept for most uses.

For example, jdice means 'decide' and has the short combining form jdi. naljdi therefore means 'not decide' or 'be indecisive'. Some other examples:

lo naljmi	one who does not understand (from jimpe 'understand')
lo naljvi	a non-competitor (from jivna 'compete')
lo nalkri	a non-believer/skeptic (from krici 'believe')
lo nalyla'e	an unlikely event (from lakne 'be likely')
lo nalre'a	a non-human (from remna 'be human')

We can see that nal is like the English *non-*, but we need to remember that *non-* sometimes has other meanings or associations that nal does not have. lo naljvi is simply someone who is not taking part in a competition, not a 'non-contender' in the sense of someone who competes but doesn't stand a chance of winning. Similarly lo nalre'a is someone who is not a member of the species *homo sapiens* (e.g. a chimpanzee or Klingon), and cannot be applied to someone who is inhumane or perceived as subhuman in some way.

We can also use nal with sel and its relatives; for example,

lo naltertcu	not a purpose/activity for which something is needed; something which has no requirements (from nitcu 'x$_1$ needs/requires/is dependent on/[wants] necessity x$_2$ for purpose/action/stage of process x$_3$')
lo nalveltu'i	an area of disagreement; a controversial issue (from tugni 'x$_1$ [person] agrees with person(s)/position/side x$_2$ that x$_3$ (du'u) is true about matter x$_4$')
lo nalselzi'e	something you are not free to do (from zifre 'x$_1$ is free/at liberty to do/be x$_2$ (event/state) under conditions x$_3$')
lo nalselsanji	something you are unaware of (from sanji 'x$_1$ is conscious/aware of x$_2$ (object/abstract); x$_1$ discerns/recognizes x$_2$ (object/abstract)'; this gismu has no suitable short combining form)
lo nalselse'i	someone who lacks a self/ego; an enlightened person according to Hindu/Buddhist philosophy (from sevzi 'x$_1$ is a self/ego/id/identity-image of x$_2$')

As you'll have guessed, the companions of na'e, namely to'e and no'e, have rafsi of their own: tol- and nor-, respectively. So 'disinterested', 'uninterested' and 'bored' in Lojban are norselci'i, nalselci'i and tolselci'i.

lujvo can be much more interesting than this; interesting enough, in fact, that we won't be covering them any further here. You can make lujvo out of pretty much any tanru you can devise; this is the main way to introduce 'new words' into Lojban. But to make the lujvo you come up with work, you need some background knowledge:

- how to make sure rafsi in a word stick together unambiguously in Lojban grammar (*The Complete Lojban Language*, Chapter 4.5–4.6, 4.10–4.12.)

- how to make sure the gismu inside your tanru group together properly (*The Complete Lojban Language*, Chapter 5.)

- how to derive the place structure of the lujvo from the place structures of the gismu that make it up (*The Complete Lojban Language*, Chapter 12.)

It's worth your while to look into these issues if you'll be using the language seriously, and especially if you'll be writing in it. (lujvo are easier to deal with while writing than while speaking, because you have the time to reflect on how you'll be creating your new word.) At this stage, though, you don't need to go into all that just yet.

Exercise 3

If you have access to a gismu list, use it to look up gismu and make lujvo meaning the following, using short combining forms where possible and nal- where necessary.

1. a television

2. a subject of conversation

3. someone who is deceived or cheated

4. an immoral or amoral (not virtuous) person

5. a railroad

6. an insignificant event

7. something unseen

8. something about which you have no feelings/emotions

Reflexives and reciprocals

Let's now look at a slightly embellished version of the plot-advancing example sentence from Lesson 7, involving Zhang and Susan:

> la suzyn. na djuno fi vo'a fe le du'u la jan. cinynei sy.
> Susan doesn't know about herself that Zhang fancies ('sexually-likes') her.

We have snuck into the sentence a new pro-sumti: vo'a. This means 'the first sumti of this bridi', and like the others, comes in a series—vo'e refers to the second sumti, vo'i to the third and so on. In practice, vo'a is used quite a lot, while the others are rarer; but that could be because people still tend to think in terms of natural languages, where only the equivalent of vo'a is usual. Those equivalents are **reflexives**—words like *herself*, *itself*, and so on; and vo'a is very handy for expressing them. As people start thinking more in Lojban, the others could get used more.

Here are some more straightforward examples of its use:

> la meilis. pensi vo'a
> Mei Li thinks about herself.

> le gerku cu batci vo'a
> The dog bites itself.

You can also say

> mi nelci vo'a
> I like myself.

but this is the same as mi nelci mi, which is simpler.

Now for something clever—which will also look slightly familiar.

> la suzyn. zgana la djiotis. soi vo'a vo'e
> Susan notices Jyoti and vice versa.
> Susan and Jyoti notice each other.

soi is a cmavo meaning something like "you can change these sumti round and the bridi will still be true." If there is only one sumti after the soi, the other one is taken to be the one immediately *before* soi. So we can say the same thing more briefly as la suzyn. zgana la djiotis. soi vo'a, or even just ko'a zgana ko'i soi vo'a. That is why you were able to use soi vo'a as 'and vice versa' in the previous lesson's exercises.

> **Note:** vo'a is fixed in what it refers back to and, unlike ri, can point back to ko'a—though you can also repeat ko'a if you prefer.

Tip: There is a gismu that does the same job, simxu: "x_1 (set) has members who mutually/reciprocally x_2."
You saw a sneak preview of this, too, in the previous lesson. It is mostly used in compound selbri (tanru), and from there, in lujvo (sim-, -si'u). We haven't covered enough grammar to use it properly yet, but you'll be seeing it again towards the end of the lessons.

Summary

This lesson has introduced the following:

- Converting sentences (swapping round sumti) using se and its relatives;

- Making sumti from places other than x_1 by the same method;

- Making lujvo using sel-, vel- etc. and short combining forms (rafsi);

- Making negative lujvo using nal-.

- Expressing reflexives and reciprocals using vo'a and soi.

Vocabulary

berti	x_1 is to the north/northern side [right-hand-rule pole] of x_2 according to frame of reference x_3
cinta	x_1 [material] is a paint of pigment/active substance x_2, in a base of x_3
cpina	x_1 is pungent/piquant/peppery/spicy/irritating to sense x_2
ctebi	x_1 is a/the lip [body-part]/rim of orifice x_2 of body x_3; (adjective:) x_1 is labial
fanza	x_1 (event) annoys/irritates/bothers/distracts x_2
jarbu	x_1 is a suburban area of city/metropolis x_2
jmina	x_1 adds/combines x_2 to/with x_3, with result x_4; x_1 augments x_2 by amount x_3
jukpa	x_1 cooks/prepares food-for-eating x_2 by recipe/method x_3 (process)
kisto	x_1 reflects Pakistani/Pashto culture/nationality/language in aspect x_2
klaji	x_1 is a street/avenue/lane/drive/cul-de-sac/way/alley/[road] at x_2 accessing x_3
minra	x_1 reflects/mirrors/echoes x_2 [object/radiation] to observer/point x_3 as x_4; x_2 bounces on x_1
nitcu	x_1 needs/requires/is dependent on/[wants] necessity x_2 for purpose/action/stage of process x_3
snanu	x_1 is to the south/southern side of x_2 according to frame of reference x_3

Exercise 4

Translate from Lojban; some of the places used here are contorted into quite non-English forms, but try and be as idiomatic as possible.

1. .i le la djiotis. karce cu xe klama le gusta fu la djiotis .e la ranjit .e la suzyn.

2. .i la suzyn. catlu le vo'a ve minra

3. .i le go'i cu jmina fi le vo'a ctebi cinta

4. .i ca lenu go'i kei la suzyn. te minra la ranjit. soi vo'a

5. .i la suzyn. te preti fo la djiotis. fi lu .i ma te klaji fi ti li'u

6. .i la ranjit. cusku lu .i le kisto jarbu

7. .i le vu se jukpa cu mutce cpina li'u

8. .i la djiotis. se fanza cusku lu .i ma'a doi ranjit. klama lo berti lo snanu soi vo'e vo'i

9. .i pe'i le ve klama pe le gusta na te djuno fi do li'u

Answers to Exercises

Exercise 1

1. lenu jamna cu se fengu

2. la jan. te xatra [mi ti] (Whether or not you include the mi and ti depends on whether they are important in this context—probably they are obvious and can be missed out.)

3. loi jdini cu ve xlura mi lenu cliva le gugde ("Money is an inducement for me to emigrate.")

4. la lojban. ve tavla fo lo prenu ("There is a conversation in Lojban." We don't need lo prenu, though, since we can assume that it is people chatting in Lojban and not, say, chimpanzees.)

5. mi te dunda le cukta lo prenu

Exercise 2

1. le se klama

2. le ve klama

3. le te cmene

4. le xe fanva

5. le fanva (Hope you weren't fooled!)

6. le ve cpedu (le se cpedu is what you ask for, not your request)

7. le te penmi

8. le ve ciska

9. le ve skicu

10. le te spuda

Exercise 3

1. lo veltivni

2. lo terta'a

3. lo seltcica

4. lo nalvu'e

5. lo teryre'e

6. lo nalvai

7. lo nalselvi'a

8. lo naltercni

Exercise 4

1. Jyoti's car is the means by which Jyoti, Ranjeet and Susan get to the restaurant.

2. Susan looks at her reflection. (This is the more Lojbanic version of "looks at herself in the mirror." There are other ways to say this, but we haven't covered the requisite grammar yet.)

3. She puts on more lipstick. (Literally, "She adds to her lip paint.)"

4. When this is happening, Susan and Ranjeet see each other's reflection.

5. Susan asks Jyoti, "Where does this street go to?"

6. Ranjeet says, "The Pakistani suburb."

7. "The cuisine there is very spicy."

8. Jyoti irritatedly says, "We, Ranjeet, have been going from south to north and back" (i.e. from south to north and from north to south. This is probably one of the few times you'll see **soi vo'e** instead of **soi vo'a**.)

9. "I think the way of (= to) the restaurant is unknown to you."

Chapter 9. Let me qualify that: internal sumti and relative clauses

Internal sumti

The business of a selbri (as you hopefully remember from Lesson 2) is to point out a relationship between one or more things (its sumti.) So when you say dunda, you mean that there's a giver, a receiver, and a gift involved. When you say klama, you mean that there's a traveller, a destination, an origin, a route, and a means of transportation involved. When you say mensi, you mean that there's someone who is a sister, and someone that she's a sister of. And so on.

Now, when we put an article in front of a selbri, we turn it into a sumti. But the selbri within a sumti remains a selbri: it still indicates that there's a relationship between some sumti of its own. If you say le dunda, you still mean that there is something the 'donor' is giving, and someone they are giving it to. If you say lo xe klama, you still mean that there is someone going in the 'vehicle', somewhere they are going to, somewhere they are coming from, and some route they are taking. And as we've already hinted, it is meaningless just to say le mensi, just as we don't say *the sister* in English: a sister is always a sister *of* someone.

Previously, we have used pe to attach sumti to other sumti, in order to narrow things down. But that doesn't necessarily mean that what follows pe is a sumti of what comes before it. So if I describe my sister as le mensi pe mi 'my sister', for example, that might be the same as saying zo'e (= my sister) mensi mi. But if I say le jdini pe mi 'my money', I certainly do not mean zo'e jdini mi—that I am the mint which issued the money! Obviously pe won't do as a general solution to filling in the selbri you might need.

If you have a selbri contained inside a sumti, the way to give it a sumti of its own (an **internal** sumti) is to add it in with be. You'll remember (we hope!) that, when a selbri gets an article, its meaning is the x_1 place of that selbri. By default, be fills in the x_2 place of the sumti. So:

> la renas. mensi mi
> Rena is my sister
> le mensi be mi
> My sister

> la renas. te dunda le cukta
> Rena is given the book
> le te dunda be le cukta
> The recipient of the book

> la renas. klama la sidnis.
> Rena is going to Sydney
> le klama be la sidnis.

The one going to Sydney

As you can see, be can translate—often but not always—to English *of*. In fact, it covers surprisingly many of the functions of *of*. And because it is tied to a specific place of the sumti, its relation to the main sumti is unambiguous (another one of Lojban's 'selling points'!)

Exercise 1

What do these sumti mean in English?

1. le vecnu be le cukta

2. le cliva be la sanfransiskos.

3. le xe klama be la sanfransiskos.

4. le se xabju be la renas.

5. le detri be lenu mi cliva

6. le pendo be le penmi be la ranjit.

More internal sumti

If you want to add a sumti to a place other than x_2, you can use a FA tag. So:

> la renas. klama fi la melbn.
> Rena is going from Melbourne
> le klama be fi la melbn.
> The one going from Melbourne

> ti xatra fo lei dinske
> This is a letter about economics
> le xatra be fo lei dinske
> The letter about economics

If you want to be really thorough, you can add more than one sumti to the selbri in your sumti. The extra sumti are added in with bei, not be. This (like many things in Lojban) is to avoid ambiguity: if we just used be again, the new sumti would be considered a sumti of the sumti you just added, rather than the original sumti!

OK, that wasn't terribly clear. Let me illustrate:

> la renas. klama {le jarbu be la melbn.}
> Rena is going to a suburb of Melbourne
> le klama {be le jarbu be la melbn.}
> The one going to a suburb of Melbourne

> la renas. klama {le jarbu} {la melbn.}
> Rena is going to a suburb, from Melbourne
> le klama {be le jarbu} {bei la melbn.}

The one going to a suburb, from Melbourne

This means, by the way, that you can nest sumti inside sumti inside sumti, up to and including the point where you fry your brain. To hold off on frying your brain just a little, you need to be able to say "this is where the list of nested sumti stops"—at least at the current level of nesting. That means a terminator, of course, and the terminator corresponding to be is be'o. Armed with this little word, you can come up with phrases like these:

> le xatra be la jan. bei la suzyn.
> The letter to Zhang from Susan
> la djiotis. mrilu ti la ranjit.
> Jyoti mails this to Ranjeet
> la djiotis. mrilu le xatra be la jan. bei la suzyn. la ranjit.
> Jyoti mails {Susan's letter to Zhang} to Ranjeet
> le mrilu be le xatra be la jan. bei la suzyn. be'o bei la ranjit.
> The one who mails {Susan's letter to Zhang} to Ranjeet
> le mrilu be le xatra be la jan. bei la suzyn. ____ bei la ranjit.
> The one who mails {Susan's letter to Zhang about Ranjeet}

Tip: Just because you can inflict such untold misery on the world as the examples above, doesn't mean you have to, of course. In fact, like ku and vau (and unlike kei), be'o is not a word you'll see that much of. This is because, when a nested sumti gets followed by a normal sumti, and is not preceded by be or bei, it's pretty obvious that the new sumti is not nested as well, but rather belongs to the main selbri. So be'o isn't normally needed to close off the list of nested sumti—as long as the list is not all that complicated. (And it usually won't be.)

For example:

> mi penmi {le pendo be la ranjit. [be'o]} le barja
> I met Ranjeet's friend in the bar

In such a phrase, the be'o can (and will) be left out.

Vocabulary

cidjrkari	curry. Yes, this is a *very* odd-looking word; we'll explain why in a little while.
ctuca	x_1 teaches audience x_2 ideas/methods/lore x_3 (du'u) about subject(s) x_4 by method x_5 (event)

Exercise 2

Convert the following selbri to sumti, by substituting ti with le. Use be, bei and be'o as needed to link the existing sumti in to the new sumti. If you feel up to it, translate the sumti into as colloquial English as you can manage.

1. ti fanza la suzyn.

2. ti te jukpa loi cidjrkari

3. ti klaji le barja le gusta

4. ti se nitcu fi loinu jukpa loi cidjrkari

5. ti se nitcu la ranjit. loinu jukpa loi cidjrkari

6. ti preti lei xumske la jan. le ctuca

7. ti kansa le ctuca be la ranjit.

8. ti kansa le ctuca be la ranjit. lenu pinxe loi birje (Hint: be careful about this one!)

Internal sumti tcita

Using be, you can attach the default places of a selbri to it when it acts as a sumti. But default places aren't the only places a selbri can have. We have seen in Lesson 5 that sumti tcita and tense cmavo can be used to add new sumti to a selbri. You can add these kinds of places as internal sumti, as well. This can often be useful. For example, if I wanted to say

> This letter, dated the 4th, was mailed on the 7th

I could try

> le vi xatra de'i li vo cu se mrilu de'i li ze

But this would not work at all. A date tagged with de'i applies to the whole bridi, and can appear anywhere in that bridi. So there's no actual way of telling that either date applies to the letter specifically. (Mere position is not enough to do it in Lojban.) What we want to say is that the former date applies just to the letter, and the latter date applies to the mailing of the letter. This means that the 4th, as a date, applies only to the sumti, le xatra, and not to the entire bridi. So it is an internal sumti:

> le vi xatra *be* de'i li vo cu se mrilu de'i li ze

Much better. Still not usable everywhere, though. In particular, you won't be able to attach a sumti to something like a cmene, because it won't contain a selbri. In that case, you would use pe rather than be in front of the sumti tcita.

Huh? Well, let's try it slower. Take fi'e: a sumti tcita meaning 'authored by' (from finti.) Now, fi'e, like *by* in English, tends to apply only to specific things, and not to events: you say "a book by Dickens" or "a sonata by Mozart", not "Jim went to the zoo, by Norman Mailer." (OK, you can say "*Jim Went To The Zoo*, by Norman Mailer" if *Jim Went To The Zoo* is the name of a book. But then *by Norman Mailer* is still attached to a thing, and not to an event.) So fi'e is almost always used as an internal sumti. This means you can say

> le cukta be fi'e la dikens.

Tip: As it happens, that's the same as saying le cukta be fi la dikens. . The good thing about sumti tcita is, you can use them when you've forgotten the default places of your selbri. Which you will.

So how do I say "*Oliver Twist* by Dickens is very good"? I *could* say

> la .Oliver.tuist. be fi'e la dikens. cu mutce xamgu

But that looks kind of odd: .Oliver.tuist is not really a selbri, so it is strange to say that it actually has sumti places of its own. (As it turns out, in fact, this is considered ungrammatical in Lojban.) But if you say

> la .Oliver.tuist. pe fi'e la dikens. cu mutce xamgu

you aren't really committing to .Oliver.tuist being a selbri; you're merely saying that the phrase "authored by Dickens" is closely associated with the thing you're calling la .Oliver.tuist.

Vocabulary

kakne	x_1 is able to do/be/capable of doing/being x_2 (event/state) under conditions x_3 (event/state)
lidne	x_1 precedes/leads x_2 in sequence x_3; x_1 is former/preceding/previous; x_2 is latter/following
pluja	x_1 is complex/complicated/involved in aspect/property x_2 (ka) by standard x_3

Exercise 3

Translate the following sentences into Lojban. The highlighted terms are to be attached into the sentence with sumti tcita; we give you the sumti tcita you need for each sentence. You'll have to work out whether the highlighted term is an internal sumti (in which case use be or pe to link it in), or a normal sumti.

1. I mail you *in Lojban* (bau: in language..., from bangu 'language')

2. I give you a book *in Lojban* (bau: in language..., from bangu 'language')

3. *According to Jyoti*, Ranjeet is foolish (cu'u: as said by..., from cusku 'express')

4. *So named by Susan*, 'Chemistry Irritant' drinks German beer (te me'e: as a name used by..., from te cmene 'name')

5. Names *in Lojban* are preceded by 'la' (se pa'u: as a part of..., from se pagbu 'have as a part'. There's a trick to the quotation here (and you do need to use a quotation); check Lesson 7 again...)

6. City roads are very complicated; *for example, Ranjeet cannot go to the Pakistani restaurant* (mu'u: exemplified by..., from mupli 'example')

Relative clauses

Nesting sumti within sumti goes a long way towards pinning down what exactly we mean; but it's not always going to work. If for example, I have two sisters, I can point out that they are mensi *be mi* until I'm blue in the face; but that won't go any further towards distinguishing one from the other. What I'd want to do instead is introduce a new bridi into the mix: the sister I'm talking about is the one who doesn't like Ricky Martin, say, or the one you saw at the restaurant last night. Similarly, if I'm talking about two different Pakistani restaurants, pointing out that the type of food they serve is Pakistani (gusta be loi kisto) doesn't go very far in differentiating them; pointing out the one which is north of town, or the one I eat curry at, does.

What I want, in other words, are **relative clauses**. In fact, they are what I've just used in English: phrases like *who doesn't like Ricky Martin*; *[which] I eat curry at*; and so on. These clauses contain a verb and nouns in English: they correspond to Lojban bridi, though they might be missing a word or two. What we need in Lojban is some way of connecting a bridi like this to a sumti—without necessarily the peculiarities of words like *who* and *that*.

Lojban allows this: you connect a relative clause—a bridi narrowing down what a sumti means—by using poi. And just as with nu and its relatives (those other words which nest bridi inside bridi in Lojban), you want a terminator to say "the relative clause is over, the rest of these words belong to the main bridi now." That terminator is ku'o.

So let's try this out. How would we say "You talked to my sister—the one who doesn't like Ricky Martin—about economics"? Let's take it by steps:

> do pu tavla le mi mensi loi dinske
> You talked to my sister about economics
> le mi mensi na nelci la rikis.martin.
> My sister does not like Ricky Martin
> do pu tavla le mi mensi {poi *le mi mensi* na nelci la rikis.martin. ku'o} loi dinske
> You talked to my sister who doesn't like Ricky Martin about economics

Notice that you needed the ku'o there, to keep the relative clause out of the hair of the main bridi. Otherwise, loi dinske would be a sumti of nelci and not tavla—which is not really what you want. Just as with nu and kei, though, Lojbanists will normally make sure they don't have to use ku'o, by little tricks like making sure the relative clause comes just before cu—which shuts every open clause down.

Here's another example:

> mi klama le gusta be loi kisto
> I go to the Pakistani restaurant
> le gusta be loi kisto cu berti le tcadu
> The Pakistani restaurant is north of town
> mi klama lo gusta be loi kisto be'o {poi *ra* berti le tcadu}
> I go to the Pakistani restaurant which is north of town

ke'a

We're almost there; but you'll notice we've repeated le mi mensi twice. We might have tried using ri to refer back to le mi mensi. But you'll remember from the exercises to Lesson 7 the acute pain associated with using ri: we should be avoiding it where possible. (In this instance, in fact, we can't use it properly anyway, because a sumti includes its relative clause; so ri would not be referring back to a completed sumti, like it's supposed to: the risk of insane recursion is just too great.) A similar problem arises with ra referring back to le gusta be loi kisto: ra isn't particularly precise, so if at all possible we'd like to use a less ambiguous sumti in its place.

Fortunately, we can avoid ri and ra after all: relative clauses in Lojban have a special pro-sumti, ke'a, which like *who* and *which* in English points back to the sumti you've been talking about. So now, we can make a stab at all four relative clauses in our example:

> le mi mensi poi *ke'a* na nelci la rikis.martin.
> My sister, such that *she* doesn't like Ricky Martin
> My sister who doesn't like Ricky Martin

> le mi mensi poi do viska *ke'a* ca le purlamcte
> My sister, such that you saw *her* at the restaurant during the immediately-preceding-night
> My sister whom you saw at the restaurant last night

> {le gusta be loi kisto be'o} poi *ke'a* berti le tcadu
> The restaurant of Pakistani things such that *it* is north of the city
> The Pakistani restaurant which is north of town
> (The be'o is needed, because what you're describing as being north is the restaurant, not the Pakistani cuisine it serves.)

le gusta be loi kisto be'o poi mi citka loi cidjrkari ne'i *ke'a*
The restaurant of Pakistani things, such that I eat curry in *it*
The Pakistani restaurant [that] I eat curry in
The Pakistani restaurant where I eat curry

To make things somewhat more succinct, there exists a convention that, when a relative clause is missing its ke'a, you fill it in at the first available empty place. Which means, if the bridi after poi has nothing in its x_1 place, that's where the ke'a goes. If it has an x_1 place but no x_2 place, then *that's* where ke'a goes. (This way, poi-clauses look a little more like most languages' relative clauses, as they don't use a distinct word for ke'a and poi.) So our example phrases become:

le mi mensi poi na nelci la rikis.martin.

le mi mensi poi do viska ca le purlamcte

le gusta be loi kisto be'o poi berti le tcadu

le gusta be loi kisto be'o poi mi citka loi cidjrkari ne'i *ke'a*

The last sentence hasn't changed: the convention does not apply to non-default places (like sumti tcita and spatial 'tense' places), since they don't follow a predictable order.

Note: This means that (as you'll have already seen several times by now) Lojban, like 'normal' languages, has usage and conventions, over and above its notions of grammaticality and logic. Strictly speaking, there is nothing wrong with saying lemi mensi poi tavla and actually meaning le mensi poi tavla *ke'a* "my sister who is talked to" instead of le mensi poi *ke'a* tavla "my sister who talks": This is merely an omitted place, after all, and the value that fits the omitted place is theoretically open. And Lojban is by its nature a stickler for the 'Letter of the Law'. Yet you will still find that, like any language actually used by a community, there are more and less usual ways of saying things in Lojban.

Tip: If you ever want to hang two relative clauses off the same sumti, use zi'e to connect them. This corresponds to English *and*, since both clauses are supposed to be true. (More on this in Lesson 11.) For example,

le mi mensi poi na nelci la rikis.martin. *zi'e* poi do viska ca le purlamcte
My sister who doesn't like Ricky Martin *and* whom you saw last night.

Exercise 4

Combine the following pairs of sentences into single sentences. In each case, make the second sentence a relative clause modifying the highlighted sumti in the first sentence. The highlighted sumti in the second sentence is the same as that in the first, and will turn into ke'a; leave ke'a out, where the convention allows it. Also leave out ku'o where this would not result in ambiguity. For example:

.i mi viska *le botpi* .i *le botpi* cu culno →
.i mi viska le botpi poi culno

Watch out for any terminators you may have to insert!

1. .i le ninmu cu dunda le cifnu *le nanmu* .i *le nanmu* cu citka loi cidjrkari

2. .i le ninmu cu dunda *le cifnu* le nanmu .i *le cifnu* cu kakne lenu citka

3. .i *le ninmu* cu dunda le cifnu le nanmu .i mi pu viska *le ninmu* vi le barja

4. .i *le ninmu* cu dunda le cifnu le nanmu .i lenu mi viska *le ninmu* cu nandu

5. .i mi viska va *le barja* le ninmu .i mi klama *le barja* le briju

6. .i ca lenu mi klama *le barja* le briju kei mi penmi le nanmu .i *le barja* cu snanu le briju

7. .i mi viska *le kansa be le ninmu* .i le ninmu cu dunda le cifnu *le kansa be le ninmu*

8. .i mi kakne *lenu citka loi cidjrkari* .i *lenu citka loi cidjrkari* cu nandu

Restrictive and non-restrictive

We've learnt how to use relative clauses to narrow things down. But not all relative clauses are used for that purpose. Sometimes they are used just to supply extra information about someone or something whose identity we've already worked out. For example, if I say

> Lojban, which is descended from (Institute) Loglan, has a public domain grammar

I'm hardly saying that Lojban is descended from Institute Loglan, in order to distinguish it from the scores of Lojbans *not* descended from Loglan! Instead, I'm providing extra, incidental information, to fill in the listener or reader.

This means that there are two kinds of relative clause: **restrictive**, like we've been discussing until now, and **non-restrictive**, like what we've just seen. The grammar of these kinds of relative clause is different in many languages. In American English, for example, style guides recommend that you keep *who* and *which* for non-restrictives, and use *that* for restrictives. ("The Lojban *that* I learned in 1993 is somewhat different from contemporary Lojban.") Furthermore, non-restrictive relative clauses in English usually have a comma in front of them, in writing, and a little pause in front of them, in speaking: this kind of clause is pretty much a parenthetical remark, and is marked out like one.

Lojban distinguishes between the two kinds of relative clause by the word that introduces them: non-restrictive relative clauses start with noi, rather than poi. Otherwise, their grammar is identical:

> la lojban. *noi* [ke'a] se dzena la loglan. pe le ckule cu se gerna lo gubni
> Lojban, which (non-restrictive) [it] has-the-ancestor Loglan-of-the-institute, has-as-its-grammar something-public

(Yes, that's the old "cu closing off everything in its wake" trick in action.)

> **Note:** The restrictive/non-restrictive divide also applies to a word we saw back in Lesson 3: pe. This word is in fact a special case of a relative clause (introducing a sumti rather than a complete bridi.) Since it is a relative clause in a way, it too can have a non-restrictive version: ne.

Exercise 5

Are the relative clauses in the following English sentences restrictive or non-restrictive? We've left off any punctuation hints like commas or choice of correct relativisers, so some sentences will sound a little odd.

1. This is the way *that* the world ends.

2. I saw the same waiter *that* I saw last night.

3. This is my friend Zhang *that* I already told you about.

4. Then came a full train *that* I wasn't going to bother boarding.

5. I'm doing the best *that* I can.

6. Radiophones *that* are generally known as radios are prevalent at the majority of work places.

7. I don't like *what* has happened.

8. I live in the city centre *where* the rent is more expensive.

Summary

In this lesson, we have covered the following:

- Internal sumti (be, bei, be'o);

- Internal sumti attached with sumti tcita (pe, fi'e);

- Restrictive relative clauses (poi, ku'o, ke'a)

- Non-restrictive relative clauses (noi, ne)

Vocabulary

bartu	x_1 is on the outside of x_2; x_1 is exterior to x_2
cacra	x_1 is x_2 hours in duration (default is 1 hour) by standard x_3
fonxa	x_1 is a telephone transceiver/modem attached to system/network x_2
janco	x_1 is a/the shoulder/hip/joint [body-part] attaching limb/extremity x_2 to body x_3
jgari	x_1 grasps/holds/clutches/seizes/grips/[hugs] x_2 with x_3 (part of x_1) at locus x_4 (part of x_2)
jgita	x_1 is a guitar/violin/fiddle/harp [stringed musical instrument] with actuator/plectrum/bow x_2
jgitrviolino	x_1 is a violin
jundi	x_1 is attentive towards/attends/tends/pays attention to object/affair x_2
kanla	x_1 is a/the eye [body-part] of x_2; [metaphor: sensory apparatus]; (adjective:) x_1 is ocular
kerfa	x_1 is a/the hair/fur [body-part] of x_2 at body location x_3
mintu	x_1 is the same/identical thing as x_2 by standard x_3; (x_1 and x_2 interchangeable)
moi	convert number to ordinal selbri; x_1 is (n)th member of set x_2 ordered by rule x_3
nenri	x_1 is in/inside/within x_2; x_1 is on the inside/interior of x_2 [totally within the bounds of x_2]
simsa	x_1 is similar/parallel to x_2 in property/quantity x_3 (ka/ni); x_1 looks/appears like x_2
sazri	x_1 operates/drives/runs x_2 [apparatus/machine] with goal/objective/use/end/function x_3
secau	sumti tcita: without... (from se claxu 'lacked')
zgike	x_1 is music performed/produced by x_2 (event)

Exercise 6

Translate from Lojban:

1. .i bazi lo cacra be li pimu le karce cu zvati le kisto gusta

2. .i la djiotis. noi sazri le karce cu fengu la ranjit. lenu na jundi le ve klama

3. .i la ranjit. jundi la suzyn. soi vo'a

4. .i la ranjit. ca tavla la suzyn. loi zgike pe fi'e la .ioxan.sebastian.bax

5. .i la suzyn. na se cinri lenu jundi loi zgike pe la bax. noi ke'a dotco

6. .i ku'i la suzyn. mutce se cinri lenu jundi le kanla be la ranjit.

7. .i la suzyn. nelci lenu zgana le kerfa be la ranjit. bei le ctebi be'o noi zo'e pe la lex.va,uensas. cu simsa

8. .i la djiotis. noi denpa vi le bartu be le gusta cu sazri lo se bevri fonxa ne la nokias.

9. .i cusku lu .i coi jan. mi'e djiotis.

10. .i ko penmi mi'a vi le dansydi'u pe vi la re moi klaji ba lo cacra be li re li'u

Exercise 7

Translate into Lojban:

1. When Jyoti goes to the interior of the restaurant, Susan asks her "Where were you?"

2. Jyoti says "I was talking to a friend I forgot to talk to earlier."

3. Susan says "Ranjeet was telling me that Bach's music is like Pakistani music in its complexity."

4. Jyoti says "Susan, you think anything without a guitar is complex."

5. Ranjeet says "The violin is identical to the guitar one carries on the shoulder."

6. Jyoti says "Ranjeet is identical to one unable to go to a restaurant north of town."

7. "What will you be eating?"

8. Susan and Ranjeet stare at each other.

9. Jyoti, who is bored by the staring, asks for the carrier (= waiter) to her left to come.

Answers to Exercises

Exercise 1

1. The seller of the book.

2. The one leaving from San Francisco.

3. The vehicle going to San Francisco. (mi klama la sanfransiskos. fu le karce → le karce cu xe klama la sanfransiskos. fu mi)

4. The dwelling of Rena. (la renas. xabju le zdani → le zdani cu se xabju la renas.)

5. The date of my leaving; the date of my departure.

6. The friend of the one meeting Ranjeet; the friend of the 'meet-er' of Ranjeet. (Yes indeed, internal sumti can nest. Somehow, I don't think you're really all that surprised...)

Exercise 2

1. le fanza be la suzyn.: Susan's annoyance, what annoyed Susan

2. le te jukpa be loi cidjrkari: the recipe for curry

3. le klaji be le barja bei le gusta: the road at (or from) the bar to the restaurant

4. le se nitcu be fi loinu jukpa loi cidjrkari: the requirements for cooking curry. (loi cidjrkari is safely tucked away inside the loinu jukpa abstraction, so there's no reason that be need be worried about it.)

5. le se nitcu be la ranjit. bei loinu jukpa loi cidjrkari: Ranjeet's requirements for cooking curry

6. le preti be lei xumske bei la jan. bei le ctuca: Zhang's question about chemistry to the teacher

7. le kansa be le ctuca be la ranjit.: the one with Ranjeet's teacher, Ranjeet's teacher's partner

8. le kansa be le ctuca be la ranjit. *be'o* bei lenu pinxe loi birje: Ranjeet's teacher's partner in drinking beer.

Note: You absolutely must have that **be'o** there; otherwise, **lenu pinxe loi birje** would be the x$_3$ sumti not of **kansa** (the collaborative effort), but of **ctuca** (the subject taught). The meaning would then be "The partner of Ranjeet's teacher about drinking beer." Remember, Lojban words attach to the words closest to them, unless a terminator intervenes.)

Of course, you would never say **le ctuca be la ranjit. bei le *nu* pinxe loi birje**, because you've noticed that the x$_3$ of **ctuca** is a fact (**du'u**) and not an event (**nu**)—and you would *never* get the two confused. Right?

Exercise 3

1. **mi mrilu fi do bau la lojban.**

2. **mi dunda lo cukta be bau la lojban. do** (The book is in Lojban; the giving is not.)

3. **cu'u la djiotis. la ranjit. bebna** (Since Jyoti said the whole **bridi**, the **sumti** applies to the whole **bridi**—so it cannot be 'internal'.)

4. **la xumske fanza ku pe te me'e la suzyn. pinxe loi dotco birje** (Yes, trick question. Despite where *so named by Susan* sits in the sentence, it applies only to the studious person of Zhang, and not to his preferences in alcohol.)

> **Tip:** The need for **ku** in the sentence above is *very deep voodoo*, so there's no need for you to be particularly concerned about it (yet). As *The Complete Lojban Language*, Chapter 8.6 points out, without the **ku** any qualifying phrase becomes part of the name.
>
> To illustrate this, consider the old parlor trick of calling someone *Nobody*. This is a device as old as Homer, and is used to work in jokes like "*Nobody* hurt me!" Lojban disallows this kind of ambiguity (consider why), so this kind of joke is impossible in the language. (The notorious *Who's on First?* sketch by Abbott & Costello is un-Lojbanisable for the same reason.) But you'll still want to talk about people called *Nobody*.
>
> So suppose you're talking about the Greek *Nobody* (Homer's *Oútis*), and comparing him to the Latin *Nobody* (Jules Verne's Captain *Nemo*). And in a pique of Lojban purism, you decide to refer to both with Lojbanised names—**la nomei**. If now you want to say "The Greek *Nobody*", you can't say **la nomei poi xelso**. That would mean that Odysseus identified himself to the Cyclops not as *Nobody*, but as *Nobody Who Is Greek* (something like *Oútis Hòs Akhaiós* in Greek.) You want to make sure that the **cmene** is over before the relative clause begins. Since this **cmene** contains a **selbri**, it is terminated with **ku**: **la nomei *ku* poi xelso**. If you'd stuck with **la .utis.**, the pause would have been signal enough that the **cmene** is over, so the issue would not arise.
>
> No, of course you weren't meant to know all that. But aren't you happy you know it now?

5. **loi cmene be se pa'u la lojban. [cu] se lidne lo'u la le'u** (Hope you remembered to put **la** inside the Lojban 'error' quotes **lo'u … le'u**! You can't use **lu … li'u**, because **la** by itself doesn't make sense as a fragment of Lojban.)

6. **loi tcadu klaji cu mutce pluja mu'u lenu la ranjit na kakne lenu klama le kisto gusta** (Ranjeet's navigational difficulties are an illustration of the *complexity* of city streets—not of the streets themselves.)

Exercise 4

1. **.i le ninmu cu dunda le cifnu le nanmu poi citka loi cidjrkari** "The woman gives the baby to the man who eats curry"

2. **.i le ninmu cu dunda le cifnu poi kakne lenu citka ku'o le nanmu** "The woman gives the baby who can eat to the man" (If you did not insert **ku'o**, you would be claiming that the infant can eat the man!)

3. **.i le ninmu poi mi pu viska vi le barja cu dunda le cifnu le nanmu** "The woman I saw at the bar gives the baby to the man" (Despite the presence of **vi le barja**, **ke'a** can be dropped off, since it occupies the first available *default* place in its **bridi**.)

4. .i le ninmu poi lenu mi viska ke'a cu nandu cu dunda le cifnu le nanmu "The woman that it is difficult for me to see gives the baby to the man" (ke'a cannot be dropped off, since it doesn't occupy a default place of the relative clause bridi, but rather a nested place inside an abstraction within the bridi.)

5. .i mi viska va le barja poi mi klama fi le briju ku'o le ninmu "I saw, some way away from the bar that I go to from work, the woman" (The x_2 place of klama is left empty as the place where ke'a belongs; so now you have to insert fi to make sure le briju is the origin, not the destination. You also need to insert ku'o; otherwise le ninmu becomes a sumti of klama instead of viska: the woman becomes not who you see, but the route you take to the bar (!) .)

6. .i ca lenu mi klama le barja poi snanu le briju ku'o le briju kei mi penmi le nanmu "While going to the bar [which is] south of the office from the office, I meet the man" (Again, ku'o needs to be inserted, to prevent le briju being incorporated into snanu: "going to the bar south of the office from the office's perspective," rather than "going from the office to the bar south of the office."

7. .i mi viska le kansa be le ninmu be'o poi le ninmu cu dunda le cifnu "I see the woman's companion, who the woman gave the baby to" (You must insert be'o, so that the relative clause applies to the entire sumti, le kansa be le ninmu. Otherwise, it will apply only to the sumti it is right next to, le ninmu: "I see the companion of the woman the woman gave the baby to.")

8. .i mi kakne lenu citka loi cidjrkari kei poi nandu "I can eat curry, which is difficult" (Again, you must insert kei, so that the relative clause applies to the entire abstraction. Otherwise, what is difficult is not eating the curry, but the curry itself.)

Exercise 5

1. Restrictive: *the way* is pretty meaningless unless you say what it is the way of.

2. Restrictive: again, *the same waiter* is being uniquely identified by the relative clause, and is otherwise pretty opaque.

3. Non-restrictive: normally, the description *my friend Zhang* should be doing a good job of identifying who is being talked about.

4. Non-restrictive: although this is an indefinite noun phrase in English, the relative clause given doesn't make it any more definite: I'd be saying the same about any full train.

5. Restrictive: *the best* is meaningless without the following relative clause.

6. Non-restrictive: obviously, this is merely providing an alternative name for the same thing.

7. Restrictive: in fact, this is what is called in English a **headless relativiser**—not because the relative clause is about decapitated horsemen in Washington Irving short stories, but because there is no noun ('head') there for the relative clause to narrow down at all! So the relative clause ends up supplying *all* the information on what is being talked about. That's as restrictive as it gets. Lojban would use a fairly empty 'head' to translate this—something like da.

8. Non-restrictive—unless you live in a city with multiple city centres. In which case I'd move away, if I were you: the traffic must be murder...

Exercise 6

1. A little after half an hour, the car is at the Pakistani restaurant.

   Note: That odd expression lo cacra be li pimu is in fact how you'd normally say 'half an hour.' In general, when Lojban measures things, it doesn't divide them up into *n* individual units, but rather says that *x* measures *n* units. So "Reading this lesson took me two hours" would be in Lojban lenu mi tcidu le vi ve cilre cu cacra li re.

We've also specified a distance after the half an hour, through zi. Logically, ba lo cacra be li pimu will be true if I show up after half an hour, or after three hours: in both cases, you've shown up 'after' half an hour. By adding zi, you're making sure that you're not allowing that kind of latitude: the event happens in the *immediate* vicinity of half an hour later. This is being pedantic, of course; but of such pedantry is Lojban made.

2. Jyoti, who was driving the car, is angry at Ranjeet for not paying attention to the route. (Literally, "Jyoti, who was operating the car." Lojban tends to keep its gismu fairly vague: there is no essential difference, as far as it's concerned, between what you do with a car, a computer, or an espresso machine.)

3. Ranjeet and Susan have been paying attention to each other.

4. Ranjeet is now talking to Susan about music by Johann Sebastian Bach.

5. Susan is not interested in paying attention to music by Bach—who is German. (Bach, not the music! Although, on second thought...)

6. But Susan is very interested in paying attention to Ranjeet's eyes.

7. Susan likes observing Ranjeet's lip hair (= moustache), which Lech Wałesa's looks like. (You need the be'o, otherwise it will be Ranjeet's lip that Wałesa's moustache resembles.)

8. Jyoti, who is waiting at the outside of the restaurant (= outside the restaurant), is operating a Nokia mobile phone. (Since this is presumably Jyoti's only mobile phone, we do not need to use pe: the brand is only incidental information, and we don't need it to narrow down which phone is being 'operated'. So ne is the word to use.)

9. She says "Hello Zhang. This is Jyoti." (Hope you remembered coi from Lesson 7!)

10. "Meet us at the disco at Second Street after (= in) two hours." (Sorry about springing that ordinal on you. All Lojban ordinals—pamoi 'first', bimoi 'eighth', nomoi 'zeroth', romoi 'allth = last'—are formed in the same way.)

Exercise 7

1. .i ca lenu la djiotis. klama le nenri be le gusta kei la suzyn. te preti fo dy. fi lu .i do zvati ma li'u (or: te preti lu .i do zvati ma li'u la djiotis.)

2. .i la djiotis. cusku lu .i mi pu tavla lo pendo poi mi to'e morji lenu mi tavla ke'a puku li'u (You have to insert the ke'a.)

3. .i la suzyn. cusku lu .i la ranjit pu tavla mi lesedu'u le zgike be fi'e la bax. cu simsa le kisto zgike le ka pluja li'u (We tucked away ka in an earlier lesson; nu or su'u would be just as fine. You could also have said the less specific le zgike pe la bax. or le la bax. zgike; this could mean the music Bach played or owned, rather than wrote, but in context it's clear enough.)

4. .i la djiotis. cusku lu .i doi suzyn. do jinvi ledu'u ro da pe secau lo jgita cu pluja li'u (Lojban does not distinguish between 'anything', 'everything' and 'all things'.)

5. .i la ranjit cusku lu .i le jgitrviolino cu mintu le jgita poi zo'e bevri vi le janco li'u

Note: Two things. First, Lojban doesn't encourage you to say that one sumti 'is' another sumti; there is a word, du, that sort of does that, but you should think of it as being more like an equals sign (see Lesson 12.) If you want to say that a violin is a guitar, it is better to say either that they are identical (le jgitrviolino cu mintu le jgita), or to turn one of the two sumti into a selbri (lo jgitrviolino cu jgita). Since we need a relative clause here, we have gone with the former.

The other thing is that Ranjeet (much to Jyoti's annoyance) is correct in his Lojban usage. In order to have as broad a coverage as possible, gismu tend to be inclusive rather than narrow in their definitions; we already saw that with Jyoti 'operating' her car. So while the Lojban wordlists list jgita under *guitar*, the gismu is actually used to refer to *any* stringed instrument. Jyoti should have specified Susan's instrument of choice as jgitrgitara (a '*guitar* guitar'), or even dikca jgitrgitara 'electric guitar'.

Those funny-looking words are loan words into Lojban (fu'ivla), and we will also be covering them in Lesson 12.

6. .i la djiotis. cusku lu .i la ranjit. mintu da poi na kakne lenu klama lo gusta poi berti le tcadu (or: la ranjit mintu lo na kakne be lenu klama lo gusta poi berti le tcadu)

7. .i do ba citka ma li'u (You could specify that Jyoti means both of them by using re do or ro do, but you wouldn't normally bother unless it was somehow vital.)

8. .i la suzyn. catlu la ranjit. soi vo'a

9. .i la djiotis. noi to'e se cinri lenu catlu cu cpedu fi le bevri pe zu'a vo'a fe lenu klama (or: cpedu le nu klama kei le bevri pe zu'a vo'a) (As you can see, vo'a is more useful than you might have thought!)

Chapter 10. Cause and Effect

Most children go through a phase where every second sentence seems to start with *why?* For example:

- Why is it raining?
- Why did Sally hit me?
- Why does Sally always get a star from the teacher?
- Why did Fluffy have to die?

To these, the frustrated parent may give a series of answers with *because*:

- Because the clouds are crying.
- Because you pulled her hair.
- Because she works hard.
- Because Fluffy is a rabbit, and rabbits don't live very long.

What neither the child nor his long-suffering parent are aware of is that in these examples, the *why*s ask different questions and the *because*s give different kinds of answers. In some languages, in fact, we would use different words for them: Turkish has three words for *why*, and until recently even English had two (the other being *wherefore*, as in "wherefore art thou Romeo?") We would expect, then, that Lojban would have at least four words for *why*, but in fact it doesn't, since all such questions are handled with ma. What Lojban *does* have is four words for *because*.

Physical causation

Going back to the first question, "Why does it rain?", the child is asking for a physical explanation, and this is what he gets. If we express the rather unlikely explanation in Lojban, we get

> lenu lei dilnu cu klaku cu rinka lenu carvi
> the-event the-mass-of cloud weep physically-cause the-event rain
> The clouds' crying is making it rain.

rinka means 'cause' in a physical or mechanical sense:

> x_1 (event/state) effects/physically causes effect x_2 (event/state) under conditions x_3

To change this 'cause' to a 'because', we can use ri'a. This is a sumti tcita derived from rinka, in the same way that we saw de'i derived from detri in Lesson 5. So it adds a new place to the bridi it sits in: just as de'i means 'with date', ri'a means 'with physical cause'. This means we can now say

> carvi ri'a lenu lei dilnu cu klaku

which is much more elegant. (Note that Lojban does not need the empty *it* in *It's raining*.)

The reason I have emphasised that rinka and ri'a only deal with *physical* causes is that it cannot apply in many cases where an English-speaker would use *because*. Consider the second example. If we say

> la salis. darxi do ri'a lenu do lacpu lei kerfa
> Sally hits you with-physical-cause you pull the-mass-of hair

this is nonsense, since it means that little Joey pulling Sally's hair physically caused her to hit him, which would only be true if Joey had pulled her hair so hard that she had fallen on top of him, perhaps.

Motivation

In the hair-pulling case, what we have is not two events which are physically connected, like clouds and rain, but three events:

1. Joey pulls Sally's hair.

2. Sally decides, as a result of this, to hit Joey.

3. Sally hits Joey.

For the sake of convenience, English misses out the second event and says "Sally hit Joey because he pulled her hair." However, this is not only vague but, some would say, psychologically dangerous. People do not generally react to stimuli automatically, but as a result of motivation, and confusing complex responses with simple physical causation may lead us to believe that we have no control over our emotions or even our actions. Whether or not we believe in free will at a metaphysical level, it is useful to distinguish between physical reactions and responses which have a cognitive/emotional element. Not surprisingly, then, Lojban has a separate gismu for motivation: mukti. The full definition of mukti is

> x_1 (action/event/state) motivates/is a motive/incentive for action/event x_2, per volition of x_3

We can therefore say

> lenu do lacpu lei kerfa [pe la salis.] cu mukti lenu la salis. darxi do [kei la salis]
> the-event you pull the-mass hair [related-to Sally] motivates the-event Sally hit you [through the volition of Sally]
> Your pulling Sally's hair motivated her to hit you.

As we can see, the third place is nearly always unnecessary, since we can assume that the agent of the second event is also the person who decides to do it. Even so, this structure is a bit clumsy, so again we would normally use a sumti tcita—in this case, mu'i. This gives us

> la salis. darxi do mu'i lenu do lacpu lei kerfa
> Sally hits you with-motive you pull the-mass hair

Exercise 1

Don't bother to translate these sentences, just decide whether they should use ri'a or mu'i.

1. The can exploded because it was hot.

2. I felt afraid because I heard a noise.

3. The people revolted because of the high taxes.

4. The bread is moldy because you left it in the plastic wrapper.

5. Prices have risen because of excessive wage claims.

Justification and Implication

The difference between motivation and justification is not always clear, but we can say that the latter involves some rule or standard while the former does not require this. Going back to the example of Sally and the teacher, it is possible to say

> la salis. te dunda lo tartcita le ctuca mu'i lenu sy. tcetoi gunka
> Sally is-given a star-label [by] the teacher with-motivation she much-try work

However, this says only that Sally's hard work motivated the teacher to give her a star. It does not imply that it is the custom for teachers to give stars (or 'star-labels', as I have rather pedantically translated it) as a reward for good work. What we need here is ki'u, the sumti tcita from krinu:

> x_1 (event/state) is a reason/justification/explanation for/causing/permitting x_2 (event/state)

We can therefore more accurately say

> lenu la salis. tcetoi gunka cu krinu lenu le ctuca cu dunda lo tartcita sy.

or, as in the earlier example,

> la salis. te dunda lo tartcita le ctuca ki'u lenu sy. tcetoi gunka

> **Note:** Don't get ki'u mixed up with ku'i 'but, however'!

ki'u appeals to more general considerations than mu'i, but it still deals with human standards, not logical laws. Only a very naive student would believe that if a student is given a star, it must logically imply that that student has worked hard. In the tragic case of Fluffy, however, the fact that Fluffy is a rabbit logically implies that he will not live long, given what we know about rabbits. Here we can confidently use nibli

> x_1 logically necessitates/entails/implies action/event/state x_2 under rules/logic system x_3

The sentence

> lenu la flufis. ractu cu nibli lenu fy. mrobi'o
> the-event Fluffy is-a-rabbit implies the-event he dies

actually misses out a step (the information that rabbits are short-lived) but it will do for practical purposes. If you want a textbook logic example, you can say

> la flufis. ractu .ije ro ractu na'e ze'u jmive .i la flufis. ni'i na ze'u jmive

This expresses the following:

1. Fluffy is a rabbit *and* all rabbits are not long-lived.

2. Fluffy is therefore not long-lived.

Converting causes

The reason I have included this blindingly obvious piece of logic is that it demonstrates how sentences can be joined, and how 'because' can be turned into 'therefore'. We'll deal with the second part first, because there's a few issues about connecting sentences we want to leave till the next section. So for now, don't worry about .ije. Do worry, however, about ni'i.

What we have here is a **proposition** (Fluffy is a rabbit, and rabbits don't live long), and a **conclusion** (Fluffy doesn't live long.) So what is ni'i doing in front of the final selbri? Lojban treats sumti tcita the same as tenses; so ni'i can go in front of the selbri, as if it was a tense. This corresponds to an adverb like *therefore* in English; in terms of Lojban, however, it means the same as if you'd said ni'i zo'e 'because of something obvious' (in this case, the preceding two sentences). So in this construction, ni'i, used as a tense (or ni'i zo'e, using an ellipsed sumti) correspond to *therefore*.

But in the following sentence, where ni'i is a sumti tcita introducing a distinct sumti and not a 'tense', ni'i does not mean 'therefore'. As we'd expect, ni'i relates a sumti to its bridi through the gismu underlying ni'i, namely nibli 'logically necessitates.'. So ni'i means 'logically because':

> la flufis. mrobi'o ni'i lenu ro ractu na'e ze'u jmive
> Fluffy past die with-logical-necessity the-event all rabbits other-than long-time-period live
> Fluffy died because rabbits don't live long.

But what is the sumti tcita for 'therefore'? How do we say the reverse—"Rabbits don't live long; therefore Fluffy died"—in a single sentence? As it turns out, we say it like this:

> ro ractu na'e ze'u jmive seni'i lenu la flufis. mrobi'o
> Rabbits don't live long, with the logical consequence that Fluffy died.

We have here a sumti tcita, seni'i, which means 'with the logical consequence that', i.e. 'therefore'. And this seni'i looks a lot like ni'i, the sumti tcita meaning 'logically because'.

Actually, you should have seen enough to work out the relation between the two from Lesson 9. As you saw there, sumti tcita can be modified with se, te, ve, xe, just like their underlying gismu. You know by now that the sumti introduced by ni'i is le nibli 'that which logically necessitates, the logical cause.' This means that se ni'i is a sumti tcita introducing le se nibli—'that which is logically necessitated; the logical result.' So we have a pair: ni'i 'the logically necessitator, logically because', and seni'i 'the logically necessitated, logically therefore'.

We can apply this principle to the other sumti tcita we've looked at. Here are some examples:

> le lante cu spoja ri'a lenu ri pu glare
> the can explode with-physical-cause the-event it past is-hot
> The can exploded because it was hot.

> le lante pu glare seri'a lenu ri spoja
> the can past is-hot with-physical-result the-event it explode

The can was hot, so it exploded.

so'i prenu cu nelci la djiotis. mu'i lenu ri xajmi
many people like Jyoti with-motivation the-event she is-funny
Many people like Jyoti because she's funny.

la djiotis. xajmi semu'i lenu so'i prenu cu nelci dy.
Jyoti is-funny with-motivated-result the-event many people like her
Jyoti is funny, so many people like her.

Exercise 2

This is just like Exercise 1, except that now we have eight choices: ri'a, mu'i, ki'u, ni'i and their se forms. For each sentence, choose the most suitable sumti tcita.

1. *Alien Bloodbath* won an Oscar because of its brilliant special effects.

2. I like *Quine's Rabbit* because it's got an exciting story-line.

3. He spilt my beer, so I hit him.

4. He walks like that because he has an artificial leg.

5. She's Australian, so she must like Vegemite.

6. That computer can't get a virus because it's running Linux.

7. You have committed adultery, and thus shall burn in Hell.

Connecting sentences

Let's revisit that piece of logic we were ruminating on earlier:

la flufis. ractu .ije ro ractu na'e ze'u jmive .i la flufis. ni'i na ze'u jmive

We've seen how .i shows that a new sentence is starting; but we can also tag things onto the .i. We've seen (in passing) that two sumti can be joined with .e. In the same way, .ije joins two sentences with a logical AND, i.e. it asserts that both sentences are true. Normally we don't need to do this, since we usually assume that what we say is true; but it is useful here, because it binds the first two sentences together, so that when the 'conclusion' sentence comes, it 'therefores' both of them, not just the second. (This is called 'left-grouping' and there are ways to override it, which we'll come back to.)

> **Note:** Again, this sentence misses out a number of logical steps, including the fact that Fluffy is a rabbit and that he had lived out his rabbit life naturally, rather than getting eaten by a dog—but you get the idea, I hope.

Now, lenu-abstractions can be treated as sentences: they contain complete bridi, after all. So we can also phrase these sentences as separate sentences, still using sumti tcita to connect them:

la flufis. mrobi'o ni'i lenu ro ractu na'e ze'u jmive
Fluffy died because rabbits don't live long.
la flufis. mrobi'o .i ni'ibo ro ractu na'e ze'u jmive

Fluffy died. That's because rabbits don't live long.

ro ractu na'e ze'u jmive seni'i lenu la flufis. mrobi'o
Rabbits don't live long, with the logical consequence that Fluffy died.
ro ractu na'e ze'u jmive .iseni'ibo la flufis. mrobi'o
Rabbits don't live long. Therefore, Fluffy died.

There's a new cmavo in the last example, bo. Why? Well, a sumti tcita can indeed be used to connect sentences to other sentences, just as it is used to connect sumti into bridi (though there are only so many sumti tcita this makes sense for—and this lesson contains most of them.) *However*, left on its own, a sumti tcita always applies to the sumti after it. So had I just said

.iseni'i la flufis. mrobi'o

that would have meant something like "With the logical result of Fluffy, [something] dies." I'm not quite sure what this means; maybe the 'something' is some mythical creature that spontaneously generates bunny rabbits as it expires. But of course, this doesn't mean what we want. To make the sumti tcita apply to the *entire* sentence, we follow it with the word bo.

Tip: This applies to other kind of sumti tcita, by the way, like tense words. For example, .i ba bo means 'afterwards, then': the sentence after .i ba bo refers to something that took place later than what took place in the sentence before .i ba bo.

Note: The very astute reader will have noted that 'afterwards' *should* have been .i pu bo; the analogy with ba ku won out, though. (See *The Complete Lojban Language*, Chapter 10.12.) The rest of you may ponder what on Earth I'm talking about, but need not lose sleep over it.

Vocabulary

catke	x_1 [agent] shoves/pushes x_2 at locus x_3
cnita	x_1 is directly/vertically beneath/below/under/underneath/down from x_2 in frame of reference x_3
crane	x_1 is anterior/ahead/forward/(in/on) the front of x_2 which faces/in-frame-of-reference x_3
ganlo	x_1 (portal/passage/entrance-way) is closed/shut/not open, preventing passage/access to x_2 by x_3
telgau	x_1 (agent) makes x_2 be a lock/seal of/on/for sealing x_3 with/by locking mechanism x_4 (stela 'lock' + gasnu 'do')

Exercise 3

Where necessary, insert any of je, seni'ibo, babo, seri'abo after all but the first .i in each of the following text fragments. For example: .i mi telgau fi le vorme .i *seni'ibo* le vorme cu te telgau fi mi

1. .i mi telgau fi le vorme .i ___ do na klama le nenri

2. .i mi telgau fi le vorme .i ___ le vorme cu ganlo

3. .i mi telgau fi le vorme .i ___ mi cliva

4. .i mi viska do .i ___ do viska mi .i ___ mi rinsa do soi mi

5. .i do rinsa mi .i ___ do crane mi .i ___ do seni'i viska mi

6. .i la pantc. catke la djudis. .i ___ ri farlu .i ___ ri cnita

Why?

With four types of *because*, we can now make four types of *why*, simply by using ma. Our child's questions from the beginning of the lesson translate as follows:

- .i carvi ri'a ma
- .i la salis. darxi mi mu'i ma
- .i la salis. te dunda lo tartcita le ctuca ki'u ma
- .i la flufis. pu mrobi'o ni'i ma

Of course, the questions do not have to take these forms; if young Joey is a religious type, he might say la flufis. pu mrobi'o ki'u ma, asking with what justification God took his rabbit from him, whereas if he is scientifically minded, he might ask la flufis. pu mrobi'o ri'a ma, inquiring as to the physical cause of Fluffy's death.

To an English-speaker, this looks back-to-front ("It rains. Why?") but there is really no reason why question-words have to come at the beginning of a sentence. However, if you prefer to start with ma, you can always use the full gismu, e.g.

> ma rinka lenu carvi
> what? physically-causes the-event rain

And since the position of sumti tcita in the bridi is fairly free, nothing is preventing you from saying

> ri'a ma carvi

Answers to *why*-questions are usually not a whole sentence but an event abstraction-sumti, following Lojban's fill-in-the-slot approach to questions and answers; e.g.

- la salis. darxi mi mu'i ma
- lenu do lacpu lei kerfa

This is short for the long-winded *la salis. darxi do mu'i* lenu do lacpu lei kerfa.

Vocabulary

cevni	x_1 is a/the god/deity of people(s)/religion x_2 with dominion over x_3 [sphere]; x_1 is divine
cmoni	x_1 utters moan/groan/howl/scream [non-linguistic utterance] x_2 expressing x_3 (property)
danfu	x_1 is the answer/response/solution/[reply] to question/problem x_2
manku	x_1 is dark/lacking in illumination
palci	x_1 is evil/depraved/wicked [morally bad] by standard x_2
spebi'o	x_1 marries x_2; x_1 becomes a spouse of x_2 under law/custom/tradition/system/convention x_3 (speni 'spouse' + binxo 'become')

Exercise 4

Translate the following questions.

1. Why did Jim marry Samantha?

2. Why's the dog barking?

3. Why is it dark in here?

4. Why is the answer 4.6?

5. Why does God allow evil?

Summary

In this lesson we have looked at four gismu for cause and effect and their corresponding sumti tcita:

ri'a	physical cause (rinka)
mu'i	motive (mukti)
ki'u	justification (krinu)
ni'i	implication (nibli)

We have also seen how sumti tcita can be converted with se and looked briefly at connecting sentences (.ije, .iseni'ibo.) The next lesson will look at connectives in more detail.

Vocabulary

ba'e	forethought emphasis indicator; indicates next word is especially emphasized
carna	x_1 turns/rotates/revolves around axis x_2 in direction x_3
ckasu	x_1 ridicules/mocks/scoffs at x_2 about x_3 (property/event) by doing activity x_4 (event)
clite	x_1 is polite/courteous/civil in matter x_2 according to standard/custom x_3
jubme	x_1 is a table/flat solid upper surface of material x_2, supported by legs/base/pedestal x_3
lanli	x_1 analyzes/examines-in-detail x_2 by method/technique/system x_3 [process/activity]
manci	x_1 feels wonder/awe/marvels about x_2
pi'o	used by... (sumti tcita from pilno 'use')
sanmi	x_1 (mass) is a meal composed of dishes including x_2
se ba'i	instead of... (sumti tcita from se basti 'is replaced')
smaji	x_1 (source) is quiet/silent/[still] at observation point x_2 by standard x_3
tarti	x_1 behaves/conducts oneself as/in-manner x_2 (event/property) under conditions x_3
tirna	x_1 hears x_2 against background/noise x_3; x_2 is audible; (adjective:) x_1 is aural
voksa	x_1 is a voice/speech sound of individual x_2
vi'irku'a	toilet (vikmi 'excrete' + kumfa 'room')
xajmi	x_1 is funny/comical to x_2 in property/aspect x_3 (nu/ka); x_3 is what is funny about x_1 to x_2

Exercise 5

Translate from Lojban.

> **Note:** On occasion, it is useful to give bits of non-Lojban in a Lojban text, leaving it in its original spelling. This could be because we don't want to distort a name too much by 'Lojbanising' it, or because we're actually inserting a phrase from another language into the text. In both cases, we have to give an unambiguous signal where the non-Lojban text finishes, and the Lojban resumes.

> To do this, the non-Lojban is surrounded on either side by a Lojban word—any word, as long as it doesn't occur inside the non-Lojban text. The most popular choice is gy., standing for glico 'English' (since that's where most non-Lojban text comes from these days.)

> If the text is a name, it is preceded by la'o instead of la. If it is a quotation, it is preceded by zoi instead of lu … li'u.

1. .i la ranjit. smaji ca lenu la suzyn. cpedu le sanmi le bevri kei ki'u le nu ry. clite kei .e le nu ry. nelci le voksa be la suzyn. kei

2. .i seri'a bo la djiotis. kakne lenu tirna lenu le'i zutse pe le ri'u jubme cu tavla simxu

3. .i la djiotis. mu'i lenu go'i cu carna fi le ri'u jubme

4. .i ni'i ku la djiotis. na zgana lenu la ranjit. tarti lenu simsa dy. kei mu'i le nu ckasu

5. .i la suzyn. cmila semu'i lenu la djiotis. carna fi sy.

6. .i cusku lu .i mo li'u

7. .i la suzyn. cusku lu .i la ranjit. pu cusku lo xajmi pe la'o gy. Schönberg gy. .e. la'o gy. Stravinsky gy. li'u

8. .i la djiotis. mu'i cmoni cusku zoi gy. chootio! gy.

Exercise 6

Translate into Lojban.

1. After requesting the meal, Ranjeet leaves to go to the bathroom, so he cannot hear Jyoti.

2. Jyoti talks so that she is like Ranjeet in complexity.

3. She says "I shall now analyse the 47th creation (= composition) of Jimmy Bob Bach with this mirror—because I can." (Hint: use la'o. You can come up with a word for 'with'; look at the vocabulary list carefully...)

4. Susan laughs, since Jyoti is as funny as Ranjeet. (Hint: use mintu)

5. Jyoti says "Susan, why are you talking with Ranjeet about crap?" (Hint: do *not* use the Lojban word for 'excrement'; the metaphor won't necessarily translate, and would be malglico. Instead, use 'foolishness'.)

6. Susan says "Because he has *awesome* eyes." (Hint: don't use the Lojban for 'have'; the place structure of 'eye' will do this for you.)

Answers to Exercises

Exercise 1

1. ri'a, obviously.

2. mu'i. Even if it is a classic 'startle response', my fear is not a *direct* result of the noise, but the result of some kind of cognitive interpretation, however low-level.

3. Even the most dogmatic dialectical materialist would probably give mu'i here.

4. ri'a, since the mold cannot really be said to be motivated by the plastic wrapper, or indeed by anything.

5. I would say mu'i, since economics is determined by human motives, not physical laws. Note that here the x_3 of mukti is not 'prices' (jdima) but those who increase the prices: manufacturers, retailers or the government.

   Note: This is actually a classic example of the 'invisible hand' phenomena so beloved of economists: the result is not an *intended* result of human activities, but comes about as a side-effect of them. The best sumti tcita for this is actually one we happen not to have covered here: seja'e 'as a result of' (from jalge 'result'.)

Exercise 2

1. ki'u, because at least somebody thought that it *deserved* an Oscar.

2. mu'i: the exciting story motivated me to like the book.

3. semu'i (an obscure example of British pub culture).

4. ri'a: the artificial leg physically causes him to walk in a particular way.

5. seni'i, even though it's a logical fallacy—just because a lot of Australians like Vegemite doesn't mean that she has to.

> **Cultural note:** Vegemite is the Australian equivalent of the British Marmite; both are a salty paste that you spread on bread. Outside these two countries, nobody seems to like the stuff. Your Australian co-author did not spend his formative years in 'God's Own Country', so he never really did get a taste for it.)

6. A tricky one. You could say ri'a, meaning that the fact that the computer is running Linux physically prevents it from getting a virus, or you could possibly say ni'i, implying that it is an essential feature of Linux computers that they are immune to viruses.

> **Computer flamebait:** One can argue that Macintoshes are immune to viruses only ki'u their being Macs, and not ni'i: they aren't inherently more secure than PCs, they just haven't been paid as much attention by crackers. This would of course be getting into geek wars; but we have a sneaking suspicion many of you will indeed be geeks...

7. seki'u, whether or not you actually believe in Hell or the criteria for entering it. Note also that in English *and* sometimes has the sense of *so*, which is not the case in Lojban:

> do pu zergle .ije vi le daptutra do ba jelca
> It is true that you committed adultery and it is also true that you will burn in Hell
> (literally: you past crime-copulate AND at-this-place the hell you future burn)

More about the logical (and non-logical) connectives follows in the next lesson.

Exercise 3

1. seri'abo: The door is not only logically preventing you from going inside; it is *physically* preventing you.

2. seni'ibo: It logically follows from the definition of 'lock' that, if you lock a door, the door is then closed.

3. babo: there is no real causal connection between closing a door and leaving. You may be closing the door because you've finished your business there; but who's to say why you closed it, after all...

4. *Either* je; babo, *or* babo; babo. The actions don't follow from each other logically or physically. (If they follow at all, they follow by social convention; so you *might* have used seki'ubo.) With the first pair, you're at least allowing that you saw me at the same time I saw you. With the second pair, you definitely saw me only after I saw you.

5. je; nothing. This is a syllogism like the Fluffy syllogism above; it follows from the *two* facts—you greeting me and you being in front of me—that you have seen me. (Well, it doesn't *really* follow, but this is a lesson on Lojban, not logic.) So you need to join the two facts together with AND.

   On the other hand, the 'therefore' is already there, as the 'adverbial' seni'i; so you don't need to insert it again for the third sentence. In fact, as we discussed later on, it would join the wrong sentences together anyway...

6. seri'abo; seni'ibo. People fall as a physical result of being pushed. The definition of 'fall' logically requires that someone who has fallen is lower down than someone who hasn't fallen. (You don't fall upwards. Zero-gravity counterexamples—and you'll make a good Lojbanist if you came up with one—are already anticipated in the x_4 place of farlu!)

Exercise 4

1. la djim. spebi'o la samantas. mu'i ma

2. le gerku ca cmoni mu'i ma (mu'i seems the best choice, since we can assume that dogs bark as a response to something, and are thus motivated rather than physically caused to bark. Note that cu is possible here instead of ca; I have used ca since it seems important that the dog is barking *now*.)

3. vi manku ri'a ma (It isn't really necessary to translate the *in*, since the speaker is probably inside anyway.)

4. li vopixa cu danfu ni'i ma (Give yourself a pat on the back if you got that one right! Numbers and mathematical problems belong to the realm of logic, not the physical world.)

5. le cevni cu curmi lenu palci kei ki'u ma (ki'u is best here, since a religious believer would probably look for some justification for the existence of evil, rather than a physical cause or personal motivation. Some theologians might prefer ni'i, I suppose! The kei is necessary because you're asking a question about the allowing, not about the evil itself.)

Exercise 5

1. Ranjeet is silent while Susan requests a meal from the carrier (= waiter), because (justification) he is polite and because he likes Susan's voice. (Note the kei: only the first kei is absolutely necessary, and by now you should be able to work out why.)

2. As a (physical) result, Jyoti can hear the ones sitting at the table to the right talking to each other. (simxu takes a set as its x_1; more on this in Lesson 14. le ri'u jubme means 'the table to the right': selbri can take sumti tcita and locations as 'tenses', just like they do time tenses.)

3. Jyoti, because (motivation) of this, turns towards the table to the right.

4. Necessarily (= with something logically causing this), Jyoti does not observe that Ranjeet behaves as resembling her in order to mock (i.e. Ranjeet is imitating her) (The logical cause in ni'i ku has been left out, but is presumably the previous sentence. Without the kei, the mocking would be associated with simsa rather than tarti—although there's ultimately isn't that much difference in meaning between the two. Unambiguity doesn't always buy you that much.)

5. Susan laughs, causing (motivating) Jyoti to turn to her.

6. (She) says "What?"

7. Susan says "Ranjeet said something funny to do with Schönberg and Stravinsky."

8. Jyoti thus (motivation) groans "Chootio!" (Gujarati for 'jerk') (Like any other sumti tcita, mu'i can also be used as a 'tense'.)

Exercise 6

1. .i ba lenu cpedu le sanmi kei la ranjit. cliva mu'i lenu klama le vi'irku'a kei se ri'a lenu ry. na kakne lenu tirna la djiotis. (or: ra na kakne)

2. .i la djiotis. tavla semu'i lenu ri simsa la ranjit. le ka pluja

3. .i dy./le go'i/la djiotis./ra cusku lu .i mi lanli le vozemoi se finti be la'o gy. Jimmy Bob Bach gy. se pi'o le vi minra mu'i lenu mi kakne li'u (or la djimis.bab.bax.. You could say le vozemoi se finti pe fi'e ..., but that would mean exactly the same thing. If the composition rather than the analysis happened with a mirror, you would say le vozemoi se finti be la'o gy. Jimmy Bob Bach gy. be'o ne se pi'o le vi minra.

    You could also say le vozemoi be le'i se finti be ... , in which case you're either brilliant, or you've been reading ahead...)

4. .i la suzyn. cisma ki'u lenu la djiotis. mintu la ranjit. le ka xajmi

5. .i la djiotis. cusku lu .i doi suzyn. mu'i ma do tavla la ranjit. [soi vo'a] loi se bebna li'u (loi se bebna, 'the thing one is foolish in', is better here than loi nu bebna or loi ka bebna.)

6. .i lu .i lenu ry./le se go'i/la ranjit./ra cu se kanla lo ba'e se manci li'u (This is an extra-idiomatic way of saying things; kudos if you got it, don't be too worried if you didn't.)

Chapter 11. Putting it together: Lojban connectives

All languages need ways to connect words, phrases and sentences. In English there are a host of words for this purpose: *and, or, because, additionally, however, on the other hand* ... the list seems endless, as foreign students of English know all too well. Lojban also has a wide variety of words like this, known as **connectives**, but it is more systematic about it. (Lojban also handles some of the functions of English conjunctions in other ways—as we saw, *because* and *so* are translated with sumti tcita, not connectives.)

There are two types of connective: logical and non-logical. Logical connectives say something about whether and in what circumstances the two things connected are true; an example is .ije. Non-logical connectives do not deal with separate truth values, but group things together to form different kinds of units; an example is joi, which we've already seen in passing, and we'll be discussing again below.

Moreover, Lojban distinguishes between the logical component of connectives, and their attitudinal content. For example, most languages have different words for *and* and *but*. Logically, they both mean the same thing. In terms of attitude, however, they are different: *but* contains a connotation of contrast or unexpectedness, which *and* does not. So Lojban translates *but* in two parts: .e ku'i 'and—however'. This follows the Lojban principle of keeping content and attitude separate as far as possible (e.g. .ui la djiotis. klama ti has a content element—the information that Jyoti is coming here, and an attitude element—happiness.)

In this lesson we will only look at logical connectives; non-logical connectives (with one exception) will be dealt with later, along with some other attitudinals.

Types of logical connectives

In order to understand Lojban connectives, we first need to look at logical connectives in general. The types of logical connective in Lojban are based on truth tables and are explained in detail in Chapter 14 of *The Complete Lojban Language*. However, if you're not a logician, this can be rather confusing, so here I'll look at them in terms of Boolean operators. If you haven't a clue what a Boolean operator is, don't panic; they are very simple, and you may even have used them in an internet search without realising it. On the other hand, if you've used Boolean operators in maths or computer programming, the rest is a piece of cake. The operators we will look at here are AND, OR, EOR, IF and IFF.

We have already looked at one operator: AND. A statement with AND is true if and only if both elements are true. For example, if you do an internet search for "games AND strategy", the search engine will only come up with pages that contain both games and strategy: you will get pages on strategy games, for example, but not (ideally) on simulation games or military strategy. Similarly in Lojban

> la flufis. ractu .ije ro ractu na'e ze'u jmive

is false if Fluffy is not a rabbit, or if some rabbits are long-lived. It is only true if both sentences are true.

The next type we need to look at is OR. This is not always, or even usually, the same as the English word *or*. English is vague about *or*, which sometimes means 'one or the other or both', but sometimes means 'one or the other but not both'. Compare these two sentences:

1. If it's cold or rainy we'll stay inside.

2. The winner of the competition will receive a holiday in Hawaii or the cash equivalent.

In the first sentence common sense tells us that if it is both cold and rainy we will also stay inside. However, in the second case, the winner would have a hard time convincing the competition organisers that he/she is entitled to both the holiday and the cash. The first case is a genuine logical OR; the second is called an EOR, for 'exclusive or' (or sometimes XOR—I use EOR because it reminds me of the donkey in *Winnie the Pooh*). You can think of OR as 'and/or' and EOR as 'either/or'.

English has similar problems with the word *if*. Sentence (1) is unclear as to what will happen if it is neither cold nor rainy. We assume that in this case we will go out, but this is not necessarily the case. Strictly speaking, we might stay inside even if the weather is beautiful. In fact there are two potential meanings here:

1. IF it's cold or rainy we'll stay inside.

2. IFF it's cold or rainy we'll stay inside.

The first means "If it's cold or rainy we'll stay inside (but we may stay inside anyway)", while the second means "*If and only if* it's cold or rainy, we'll stay inside (otherwise we'll definitely go out)".

Just to make the difference clear, here are some examples:

Romeo loves Juliet AND *Juliet loves Romeo*

> means that both statements are true, i.e. Romeo and Juliet love each other.

Romeo loves Juliet OR *Juliet loves Romeo*

> means that one of them loves the other, and perhaps both of them do.

Romeo loves Juliet EOR *Juliet loves Romeo*

> means that *either* Romeo loves Juliet (but Juliet doesn't love him) *or* Juliet loves Romeo (but he doesn't love her).

Romeo loves Juliet IF *Juliet loves Romeo*

> means that if Juliet loves Romeo, he definitely loves her, but he may love her anyway (the only outcome which is impossible is that Juliet loves Romeo but he doesn't love her).

Romeo loves Juliet IFF *Juliet loves Romeo*

> means that if Juliet loves Romeo, he loves her, and if she doesn't love him, he doesn't love her.

The basic operators OR, AND and IFF are represented in Lojban by the vowels a, e and o.

• i is not used for logical connectives, since it is already in use as a sentence separator.

- u is a special case, taking the logical meaning 'whether or not'—in other words, it emphasises that the second value does not affect the truth of the sentence.

- The other operators, EOR and IF, are based on these vowels combined with negatives. As we shall see below, EOR is .onai and IF is .anai.

> **Tip:** There is some controversy in the Lojban community about whether natural language *if* is best expressed as a logical connective (IF, IFF), or as a sumti tcita. There are a couple of strikes against IF. One is that its logical analysis, NOT A OR B, isn't terribly obvious. Another is that IFF is often what is meant, rather than IF. Yet another is that natural language *if* is strongly tied up with notions of causality, precondition, or deduction—none of which is particularly emphasised by IF as a strictly logical connective. For example, logical IF will give a poor rendering of "It's not true that, if I'm rich, I'm happy"—which is decidedly not the same thing as "It's not true that I'm either not rich or happy"!

> For that reason, you will see many Lojbanists avoiding IF, and instead using sumti tcita like va'o 'under conditions...', seja'e 'results from ... happening', fau 'in the event of...', or ni'i 'logically caused by...'

Exercise 1

In the following, work out whether the logical relationship represented by the emphasised word is closer to OR, EOR, IF, or IFF.

1. *If* you're naughty, I won't get you any ice cream.

2. *If* Jack Kennedy is the president of the United States, this must be the twentieth century.

3. *If* I drink too many strawberry daquiris, I get a hangover.

4. Call now for a free consultation *or* quote!

5. I can come up with six *or* seven reasons why that won't work.

6. Liechtenstein's next to Switzerland *or* Austria or something.

Connecting sumti

The most common connective for sumti is AND. In fact we've already seen this as early as Lesson 7: .i ko'a .e ko'i xanka cmila ("Jyoti and Susan laugh nervously"). Here's another example:

> mi ponse pa gerku .e re mlatu
> I possess one dog AND two cat
> I've got a dog and two cats.

This is actually a contracted way of saying "It is true that I have a dog; it is true that I have two cats," or in Lojban,

> mi ponse pa gerku .ije mi ponse re mlatu

Not all English sentences containing *and* are like this, though. Firstly, sentences like "I had a bath and washed my hair" are structurally different and will be dealt with later on. Secondly, "I visited Ranjeet and Jyoti" is slightly different from "I visited Ranjeet AND I visited Jyoti." In this case, you probably want to say that you visited Ranjeet-and-Jyoti *as a unit* on one occasion—not that you visited Ranjeet and Jyoti on (potentially) different occasions ("It is true that I visited Ranjit, and it is true that I visited Jyoti.") In this case you don't want .e (which is true but potentially misleading), but joi, which means 'in a mass with'. So what you have is

mi pu vitke la ranjit. joi la djiotis.
I past visit Ranjeet in-a-mass-with Jyoti
I visited Ranjeet and Jyoti (together).

You've seen joi before, too: in Lesson 5, where Marx and Engels wrote *The Communist Manifesto* as a joint project, rather than individually (la marks. joi la .engels. finti le guntrusi'o selpeicku.) This is just like the difference between le ci gerku and lei ci gerku which we looked at in Lesson 4—considering the three dogs as individuals, or as a mass. Incidentally, it is not just Lojban which makes this distinction; Turkish, for example, would use *ile* ('with') rather than *ve* ('and') for joi here.

We can also use OR here. For example,

mi ba vitke le mi mamta .a le mi tamne
I future visit the me mother OR the me cousin
I'll visit my mother or my cousin.

This leaves open the possibility that I will get round to visiting both of them at some point. If I want to say that that I will visit either my mother or my cousin but not both, I need EOR. For this we use .onai. This is actually a negative IFF, which sounds confusing, but is quite simple and logical. "If and only if I do not visit my cousin, I will visit my mother" logically implies that, if I visit my cousin, I will not visit my mother, and vice versa; so I will visit either my mother or my cousin but not both. So we have

mi ba vitke le mi mamta .onai le mi tamne
I future visit the me mother EOR the me cousin
I'll visit either my mother or my cousin.

It is probably obvious that .o means IFF, so "I will visit my mother if (and only if) I visit my cousin" would be mi ba vitke le mi mamta .o le mi tamne. If, for some strange reason, I want to use IF and say that I will definitely visit my mother if I visit my cousin, but I may visit her anyway, I need another negative: .anai. But since this is rare in sumti connection, I'll leave that till later.

Finally, there is .u, meaning 'whether or not'. This is not a standard Boolean operator, but I've called it WON for convenience. In this way I can say

mi ba vitke le mi mamta .u le mi tamne
I future visit the me mother WON the me cousin
I'll visit my mother whether or not I visit my cousin.

To sum up:

OR	.a
AND	.e
IFF	.o
WON	.u
IF	.anai
EOR	.onai

Vocabulary

cinynei	x_1 fancies x_2 (cinse 'sex' + nelci 'like')
finpe	x_1 is a fish of species x_2
jisra	x_1 is made of/contains/is a quantity of juice/nectar from-source/of-type x_2
narju	x_1 is orange [color adjective]
nimre	x_1 is a quantity of citrus [fruit/tree, etc.] of species/strain x_2
patlu	x_1 is a potato [an edible tuber] of variety/cultivar x_2
pelxu	x_1 is yellow/golden [color adjective]
rasyjukpa	fry (grasu 'grease' + jukpa 'cook')

Exercise 2

Express the following in Lojban. Don't try to translate the English word for word; work out what the Boolean operator is first, then work from that.

1. Susan fancies Zhang or Ranjeet, or maybe both of them.

2. I like fish and chips.

3. Request (= order) the lemon juice or the orange juice. (Hint: Build expressions for 'lemon' and 'orange' (the fruit) as tanru.)

4. I want the beer, whether or not I want the curry. (Hint: This is a single bridi, 'want'!)

5. If I go from Boston to Washington, I'll go all the way to Atlanta. (Hint: This too involves a single bridi.)

Connectives in tanru

tanru have been lurking in these lessons since Lesson 2 without a proper explanation; so before discussing connectives in tanru, it's worth looking at how tanru normally work.

As we've seen before, we can put two or more words into a selbri or sumti place. An example is the aforementioned 'Communist manifesto', le guntrusi'o selpeicku.

> **Note:** Actually, I cheated a little here; since this is the title of a specific book, not just any old manifesto, it would be better to say la'e lu guntrusi'o selpeicku li'u "the-referent-of quote Communist Manifesto unquote"—but that would be tedious.

Let's start with a simpler example, though.

> xunre cukta
> [there is a] red [type-of] book

The first element of the tanru modifies or restricts the second element, in some unspecified way. What happens if there are three or more elements, though? Like many other features of Lojban grammar, tanru follow a left-grouping rule, which means that the element on the far left modifies the next one, then those two together modify the next, and so on. For example, in a careless moment I once described *The Complete Lojban Language* as le barda xunre cukta since it is, indeed, big and red. However, le barda xunre cukta does not mean this; it means "the {(big type-of red) type-of book}" and it is hard to imagine what "big type of red" would mean.

There are various ways to get out of the left-grouping rule when you need to; we'll see some in Lesson 14, but the simplest one here is to use a logical connective and say

le barda je xunre cukta
the {(big AND red) book}
The big red book.

To make a logical tanru connective, then, we simply add j to the vowel. Turning to Susan's tastes in men, we can say

la suzyn. cinynei ro xajmi ja melbi nanmu
Susan fancy all {(funny OR beautiful) man}
Susan fancies men who are funny or handsome (or both).

> # Warning
>
> This sentence is still true even if Susan also likes men who are *not* funny or handsome. In natural language, social conventions means you wouldn't normally say such a sentence in that case, because it would be misleading. Lojban is stricter about these things, so you might want to add po'o 'only' (see Lesson 13), or use a relative clause: ro nanmu poi se cinynei la suzyn. cu xajmi ja melbi. We'll stick with the vaguer sentences here, though.

Let's say that Susan finds the qualities of humour and good looks attractive but incompatible—she fancies Woody Allen and Steven Seagal, but thinks a mixture of the two would be just too much. We would then say

la suzyn. cinynei ro xajmi jonai melbi nanmu
Susan fancy all {(funny EOR beautiful) man}
Susan fancies men who are either funny or handsome (but not both).

On the other hand, Jyoti is turned on by funny men, and doesn't care about their looks at all. Woody Allen would do fine, but Steven Seagal wouldn't stand a chance unless he could tell a few jokes (funnier than Schwarzenegger's, preferably.) What we need here is

la djiotis. cinynei ro xajmi ju melbi nanmu
Jyoti fancy all {(funny WON beautiful) man}
Jyoti fancies funny men, whether they are handsome or not.

As you'll remember from last lesson, this kind of connective is also used to connect sentences, placed next to .i. So if I wanted to say "Either Susan fancies funny men, or Susan fancies handsome men", I need only say

.i la suzyn. cinynei ro xajmi nanmu .ijonai la suzyn. cinynei ro melbi nanmu

> # Warning
>
> Be careful not to confuse this kind of connection with sumti connectives. mi ba vitke le mi mamta .e le mi speni is not the same as mi ba vitke le mi mamta je speni. The first means that I will visit my mother and my spouse (probably on separate occasions). The second means that I will visit a person who is both my mother and my spouse, which implies that I have a *really* serious Oedipus complex.
>
> On the other hand, joi (and the other 'non-logical' connectives, some of which we will see in later lessons) act as both sumti connectives and tanru connectives. Normally, Lojban grammar arranges things so that

there is no real ambiguity between the two. However (for reasons a little too technical to go into here), if you use joi to join two sumti, and the first sumti is of the normal kind (article + selbri), you *must* terminate the sumti with ku. This is in order to make it explicit for any computers which might be listening that you are joining two distinct sumti, and not just two gismu inside the sumti tanru.

This means you can say loi jisra joi jdacu 'the juice-and-water-mixture'; but you have to say loi jisra ku joi loi djacu 'the juice and the water, considered together'—*not* loi jisra joi loi djacu.

The difficulty in understanding such usage of joi isn't restricted to computers, by the way. Many a human will be momentarily thrown by:

lo nu xamgu xunre joi lo crino

Vocabulary

kukte x_1 is delicious/tasty/delightful to observer/sense x_2 [person, or sensory activity]

Exercise 3

Translate the following from Lojban.

1. la ranjit. pinxe loi vanju jonai birje
2. la ranjit. pinxe loi vanju joi birje
3. la natraj. barja je gusta
4. da spuda ju danfu le preti
5. la jan. klama je penmi je tavla la suzyn.
6. ro prenu cu fengu naja xanka leka se xebni
7. la ranjit. nelci loi kukte ja cpina
8. mi bilga jenai kakne lenu mi klama le barja

Connecting bridi tails

Many human languages—English among them—divide sentences into two parts: the subject, and the rest. In mainstream linguistic parlance, these get called the **noun phrase** and the **verb phrase**. (We've mostly managed to avoid so far the kind of grammar talk that might have sent shivers down your spine at school. Don't worry, this won't hurt a bit...)

Now the thing about subjects is, we tend to talk about them a lot. In fact, it's not unusual to string together a series of sentences, each with the same subject. From sentence to sentence, you keep saying what the same person did, or was. This means you're keeping the subject constant, and changing the rest of the sentence.

This makes for an obvious shortcut: rather than repeat the same subject in two sentences, keep everything in one sentence, with a single subject, and join together the two 'rest-of-the-sentences'. For example, why say *Nick went to California. And Nick stayed there for three years*, when you can join them together as *Nick went to California, and stayed there for three years*?

Lojban, being spoken by human beings (ostensibly), is not immune to this kind of pressure. Strictly speaking, Lojban doesn't have noun phrases and verb phrases. However, it does have zero or more

sumti in front of the selbri, and then a selbri followed by zero or more other sumti. The selbri with its trailing sumti can be considered the **tail** of the bridi (corresponding to the verb phrase), where the initial sumti (if any!) are its **head** (corresponding to the noun phrase).

Lojban allows you to join bridi-tails using a different series of logical connectives. sumti connectives start with vowels, and tanru connectives add a j in front of them. bridi-tail connectives add a gi' instead. So the bridi-tail connective version of AND is **gi'e**.

So what is this good for? Quite simply, you can take sentences like

.i la nik. klama la kalifornias. .ije la nik. stali la kalifornias. ze'a lo nanca be li ci

and change them into the much more stylish

.i la nik. klama la kalifornias. gi'e stali la kalifornias. ze'a lo nanca be li ci

—or, indeed, the even more stylish (and much less like English)

.i la nik. la kalifornias. klama gi'e stali ze'a lo nanca be li ci

You'll be seeing a lot of **gi'e** in Lojban for that reason.

> **Note:** ze'a as a sumti tcita? Sure, and you shouldn't be surprised at this by now. Anything that can be used as a tense can be used as a sumti tcita, and vice versa. Since ze'a as a tense specifies duration, as a sumti tcita it introduces the duration of the bridi. So it corresponds precisely to *for* in English.

Vocabulary

bruna	x_1 is brother of/fraternal to x_2 by bond/tie/standard/parent(s) x_3; [not necess. biological]
dunli	x_1 is equal/congruent to/as much as x_2 in property/dimension/quantity x_3
gunta	x_1 (person/mass) attacks/invades/commits aggression upon victim x_2 with goal/objective x_3
jatna	x_1 is captain/commander/leader/in-charge/boss of vehicle/domain x_2
jikca	x_1 interacts/behaves socially with x_2; x_1 socializes with/is sociable towards x_2
kratrsenatore	x_1 is a senator representing x_2 in senate x_3
mansa	x_1 satisfies evaluator x_2 in property (ka)/state x_3
misno	x_1 (person/object/event) is famous/renowned/is a celebrity among community of persons x_2 (mass)
nupre	x_1 (agent) promises/commits/assures/threatens x_2 (event/state) to x_3 [beneficiary/victim]
slabu	x_1 is old/familiar/well-known to observer x_2 in feature x_3 (ka) by standard x_4
speni	x_1 is married to x_2; x_1 is a spouse of x_2 under law/custom/tradition/system/convention x_3
tinbe	x_1 obeys/follows the command/rule x_2 made by x_3; (adjective:) x_1 is obedient
vlipa	x_1 has the power to bring about x_2 under conditions x_3; x_1 is powerful in aspect x_2 under x_3

Exercise 4

Combine the following pairs of Lojban sentences into a single sentence. Get as many common sumti as possible into the bridi-head. Use conversion liberally.

1. .i la djak.kenedis. jatna le merko .i la djak.kenedis. bruna la rabyrt.kenedis.

2. .i la djak.kenedis. speni la djaklin.buvier. .i la djak.kenedis. se catra la lis.xarvis.azuald.

3. .i la djak.kenedis. nupre lenu lo merko cu cadzu le lunra .i la nasas. tinbe fi la djak.kenedis.

4. .i la djak.kenedis. tavla fi la kubas. .i la djak.kenedis. gunta la kubas.

5. .i la djak.kenedis. mansa lei merko leka vlipa .i la djak.kenedis. ckasu la nikitas.xrucTCOF. leka vlipa

6. .i la djak.kenedis. sutra tavla .i la djak.kenedis. na denpa

7. .i la djak.kenedis. jikca la MErilin.monROS. .i la djak.kenedis. djuno ledu'u la MErilin.monROS. misno

8. .i mi la djak.kenedis. se slabu .i la djak.kenedis. pu pendo mi .i do doi kratrsenatore na dunli la djak.kenedis.

Asking about connectives

- How can you tell someone is a computer programmer?

- You ask them "Do you want milk or sugar?", and they answer "Yes."

In natural languages, that kind of answer is liable to get you a clip around the ears. That is because natural languages are run not only by logic, but also by social conventions. And one of the most important social conventions about language (*Gricean informativeness*, for those taking third year linguistics courses) is that, whatever you say, you should say enough to fully inform your listener about what's going on. If I ask "Do you want milk or sugar?", I need that information in order to prepare you a cup of coffee to your liking. Answering me "yes" doesn't give me much to go on.

As far as strict logic is concerned, though, "Yes" is the only proper answer, as computer programmers (and logicians, and Lojbanists) discover much to their amusement—and to the irritation of the rest of the world. That is because the question is phrased as a yes/no question; and OR, in the question, does not behave any differently as a logical connective than AND. ("Yes" *is* an appropriate answer to "Do you want milk *and* sugar?" Of course, now it's "No" which is not helpful as an answer.)

The same holds for Lojban, of course: .i xu do djica lenu jmina loi ladru .a loi sakta is a yes/no-question, and the only proper answers are .i go'i and .i na go'i. What you should actually be asking, if you want to be logically correct, is "Identify which of the following you want: milk, sugar."

You could say that, but it's not much like Lojban's fill-in-the-slot approach. Instead, Lojban sneakily asks you to fill in a slot you might not have expected: not the 'milk' slot, or the 'sugar' slot, but the *connective* slot:

> .i do djica lenu jmina loi ladru ji loi sakta
> You want to add milk ___ sugar.

By filling in the slot, you get to pick what you want. If you say .e, you are saying the sentence .i do djica lenu jmina loi ladru .e loi sakta—in other words, you want both. If you say .enai, you are using the AND NOT connective, which negates what follows it: so you are saying "I want milk, *and not* sugar." If you want to negate what went before the connective instead, you use na.e. (You can negate what goes before *any* connective by putting na in front of it.) So if you answer na.e, you are saying "I want *not* milk, *and* sugar" (or, as is more usual in English, "not milk, but sugar")—which means that you are picking only sugar. If you want neither, you can negate both sides: na.enai. You can still be unhelpful with your response: .a would leave us right where we started, for instance. But at least this way you have a logically consistent way of picking alternatives presented to you.

> **Tip:** Be careful, though: this kind of question doesn't really generalise past two alternatives, so you may still have to fall back on the 'pick zero or more alternatives out of the following' approach.

You can ask questions in the same way about the other kinds of connectives we have looked at. The connective interrogative for tanru is je'i, and the connective interrogative for bridi-tails is gi'i.

Vocabulary

spita	x_1 is a hospital treating patient(s) x_2 for condition/injuries/disease/illness x_3
stali	x_1 remains/stays at/abides/lasts with x_2
tadni	x_1 studies/is a student of x_2; x_1 is a scholar; (adjective:) x_1 is scholarly

Exercise 5

Answer these questions in Lojban.

1. .i la ranjit. penmi la suzyn. vi le barja ji le spita

2. .i la djiotis. stali le barja gi'i klama le gusta

3. .i la jan. tadni loi xumske gi'i nelci loi dotco birje

4. .i la djiotis. pendo la lis.xarvis.azuald. ji la ranjit.

5. .i la suzyn. nelci loi dotco je'i fraso birje (Hint: Just as you thought: you have no idea whether Susan likes French beer or not. You should still be able to come up with a connective that reflects that.)

Summary

In this lesson, we have covered:

- Lojban logical connectives (AND, OR, EOR, WON, IF, IFF)

- Non-logical connectives (joi)

- sumti connectives (.a, .e, .o, .u, .onai, .anai)

- tanru connectives (ja, je, jo, ju, jonai, janai)

- bridi-tail connectives (gi'a, gi'e, gi'o, gi'u, gi'onai, gi'anai)

- Asking questions about logical connectives (ji, je'i, gi'i)

Vocabulary

bakni	x_1 is a cow/cattle/kine/ox/[bull/steer/calf] [beef-producer/bovine] of species/breed x_2
cidjrkebabi	x_1 is a kebab (Yet another one of those funny-shaped words...)
djacu	x_1 is made of/contains/is a quantity/expanse of water; (adjective:) x_1 is aqueous/[aquatic]
fange	x_1 is alien/foreign/[exotic]/unfamiliar to x_2 in property x_3 (ka)
jipci	x_1 is a chicken/[hen/cock/rooster]/small fowl [a type of bird] of species/breed x_2
ju'i	Pay Attention! Followed by the name of the person; same grammar as doi and coi (selma'o COI)
kensa	x_1 is outer space near/associated with celestial body/region x_2
lanme	x_1 is a sheep/[lamb/ewe/ram] of species/breed x_2 of flock x_3
nanba	x_1 is a quantity of/contains bread [leavened or unleavened] made from grains x_2
pencu	x_1 (agent) touches x_2 with x_3 [a locus on x_1 or an instrument] at x_4 [a locus on x_2]
sabji	x_1 (source) provides/supplies/furnishes x_2 [supply/commodity] to x_3 [recipient]
sluni	x_1 is a quantity of/contains onions/scallions of type/cultivar x_2
spaji	x_1 (event/action abstract) surprises/startles/is unexpected [and generally sudden] to x_2
zdile	x_1 (abstract) is amusing/entertaining to x_2 in property/aspect x_3; x_3 is what amuses x_2 about x_1

Exercise 6

Translate from Lojban.

1. .i le bevri cu klama le jubme pe le ci pendo gi'e cusku lu .i do djica lenu do citka ma li'u

2. .i la ranjit. cusku lu .i do ca sabji le mo cidjrkari ja cidjrkebabi li'u

3. .i le bevri cu cusku lu .i lanme ja bakni ja jipci li'u

4. .i la ranjit. cu cusku lu .i mi djica lo bakni cidjrkari .e lo sluni nanba li'u

5. .i le bevri fi la djiotis. cu dunda fe loi djacu gi'e cusku fe lu .i do djica ma li'u

6. .i la djiotis cusku lu .i lo cidjrkari li'u

7. .iseki'ubo le bevri cu cusku lu .i lanme je'i bakni li'u

8. .i la djiotis. cusku lu .i naje li'u

Exercise 7

Translate into Lojban.

1. The waiter turns to Susan, smiles, and says "Lamb or beef?"

2. Susan either didn't hear the waiter, or didn't pay attention to him.

3. Jyoti touches Susan on the shoulder and says "Hey, Susan?"

4. Susan is surprised, and says "Um... Chicken."

5. Jyoti says "Hope you enjoyed travelling through outer space—whether or not you met any aliens." (Use an attitudinal for 'Hope.')

Answers to exercises

Exercise 1

1. IFF. In English, we expect that IFF is what is meant, anyway; but a very legalistic (and horridly mean) parent can still say "I said I wouldn't get you ice cream if you were naughty; I never said I'd get you ice cream if you were nice." That's because *if* in English logically means IF, and only conventionally means the stronger IFF. This conventional kind of meaning goes by the name of **implicature**; and implicature has always been something of an issue in Lojban, since humans expect it, but it's not really anything to do with logic.

2. Definitely IF: If Calvin Coolidge is president, it's still the twentieth century.

3. IF. If this was IFF, the relation would be symmetrical, so you should be able to say *If I get a hangover, I've drunk too many strawberry daquiris*. But daquiris aren't the only way to get a hangover, so this doesn't follow.

4. The reputable members of the business community who say this kind of thing will hardly begrudge you a quote if you've already called for a consultation; so this is OR.

5. EOR: You may be being imprecise, but you're not being nonsensical—the number of reasons you can come up with can't be both six and seven.

6. OR: As it turns out, it's next to both. (Nick met some people from Liechtenstein once, actually. They found the name of their capital hilarious...)

Exercise 2

1. la suzyn. cinynei la jan. .a la ranjit.

2. mi nelci loi finpe ku joi loi se rasyjukpa patlu (or any reasonable facsimile thereof: loi patlu poi se rasyjukpa, loi rasyjukpa patlu, or anything of the sort.)

   .e is possible, but joi is better, since we are probably talking about fish and chips together. (.u'i this is an example of a Sapir-Whorf effect; if more British people had been involved in the design of Lojban, there would be a gismu for 'chips'.)

   As it turns out, the ku is obligatory there; see the warning in the section on tanru connectives.

3. ko cpedu le pelxu nimre jisra .onai le narju nimre jisra (When you order your beverage, you are not normally expected to order more than one.)

4. mi djica le birje .u le cidjrkari

5. mi klama la .uacintyn .o la .atlantas. la bastn. (Yes, this was meant to be tricky. In particular, it involves IFF rather than IF, since to get from Boston to Atlanta, you would likely go via Washington. So you cannot go to Atlanta without going to Washington, and you've just said you won't go to Washington without going to Atlanta.)

   > **Tip:** We did say that a Lojban cmene cannot contain la (as we mentioned way back in Lesson 1); otherwise it would break up into two names. So la malakais. would break up into the admittedly nonsensical la ma la kais.. However, when there is a consonant in front of the la inside the cmene, the bit before the la would itself be a cmene. Since cmene end in pauses, if there's no pause, then this is a single cmene.
   >
   > In other words, la .atlantas. is in fact OK, because, if it did fall apart, it would fall apart into la .at. la ntas. 'At, Ntas'—and you'd need those pauses for it to really fall apart like that. Without any such pauses, la .atlantas. is still treated as a single word.

Exercise 3

1. Ranjeet drinks something which is either wine or beer.

2. Ranjeet drinks wine mixed with beer (.aunai)

3. *Natraj* is a bar and restaurant (i.e. a bistro, or a licensed restaurant.)

4. *x* is a response, whether or not it is an answer to the question.

5. Zhang goes up to, meets, and talks to Susan.

   This might lead you to ask what the place structure of a tanru is. The answer is, it is the place structure of its final gismu—however it is connected with the rest of the tanru.

6. All people are, if angry, then anxious about being hated.

7. Ranjeet likes tasty or spicy things. (The normal implication in English, made explicit in Lojban, is to add "or both". This is an implicature, as described in Exercise 1.)

8. I should but cannot go to the bar. (Not a typo: .enai builds a new connective, AND NOT, since what follows it gets negated.)

Exercise 4

1. .i la djak.kenedis. jatna le merko gi'e bruna la rabyrt.kenedis. "Jack Kennedy was leader of America and brother of Robert Kennedy."

2. **.i la djak.kenedis. speni la djaklin.buvier. gi'e se catra la lis.xarvis.azuald.** "Jack Kennedy was married to Jacquelin Bouvier and killed by Lee Harvey Oswald."

3. **.i la djak.kenedis. nupre lenu lo merko cu cadzu le lunra kei gi'e te tinbe fi la nasas.** "Jack Kennedy promised that an American would walk on the moon, and was obeyed by NASA." (The conversion works out in putting Kennedy as the x_1 of both **bridi**.)

4. **.i la djak.kenedis. tavla fi la kubas. gi'e gunta la kubas.** "Jack Kennedy talked about Cuba and attacked Cuba." (You can't get Cuba into the **bridi**-head, because it's in different places in the two **bridi**: x_4 in the first **bridi**, x_2 in the second.)

5. **.i la djak.kenedis fi leka vlipa cu mansa fe lei merko gi'e ckasu fe la nikitas.xrucTCOF.** "Jack Kennedy, as regards power, satisfied the Americans, and mocked Nikita Khrushchev." (Tricky, tricky, I know. The x_1 and x_3 are the same; so with some clever usage of **fi**—and **fe**, so that the next **sumti** doesn't get taken for x_4—this can be made to work.)

6. **.i la djak.kenedis. sutra tavla gi'e na denpa**—or equivalently, **.i la djak.kenedis. sutra tavla gi'enai denpa** "Jack Kennedy talked fast and didn't pause."

7. **.i la djak.kenedis jikca la MErilin.monROS. gi'e djuno ledu'u la MErilin.monROS. misno** "Jack Kennedy socialised with Marilyn Monroe and knew that Marilyn Monroe was famous." (Marilyn isn't in the same place in the two **bridi**: she's in x_2 in the first **bridi**, but in a **sumti** *within* an abstraction in x_2 in the second **bridi**.)

8. **.i la djak.kenedis. slabu mi gi'e pu pendo mi gi'e na/gi'enai se dunli do doi kratrsenatore** "Jack Kennedy was familiar to me and was my friend, and is not equalled by you, senator." (If it wasn't for the third sentence, you could have fit the **mi** into the **bridi**-head. The original text, famously spoken by Lloyd Bentsen to Dan Quayle in the 1988 American Vice-Presidential debate, is: "I knew Jack Kennedy. Jack Kennedy was a friend of mine. Senator, you're no Jack Kennedy.")

Exercise 5

1. **.enai** ("Does Ranjeet meet Susan at the bar or the hospital?")

2. **nagi'e** ("Does Jyoti stay at the bar or go to the restaurant?")

3. **gi'e**, because he does both. ("Does Zhang study chemistry or like German beer?")

4. **na.e**—in all likelihood. ("Is Jyoti is a friend of Lee Harvey Oswald's or of Ranjeet's?")

5. **naju**. Think about it... ("Does Susan like German or French beer?")

Exercise 6

1. The waiter goes to the three friends' table and says "What would you like to eat?"

2. Ranjeet says "What curries or kebabs are you serving now?" (There's no reason you can't use **mo** in a **tanru**. As usual, this asks for the listener to fill in the blank. The way Lojban works, **mo cidjrkari ja cidjrkebabi** is interpreted as **mo {cidjrkari ja cidjrkebabi}**—in other words, **mo}** applies to both **cidjrkari** and **cidjrkebabi**. There is more on the structure of **tanru** in Lesson 14.)

3. The waiter says "Lamb, beef or chicken." (That is to say, the sentence "We serve *x* curries and kebabs" is true for *x* being *lamb* OR *beef*, OR *chicken*. This means that the waiter has come up with a new kind of animal, a 'Lamb-OR-Cow-OR-Chicken'; but of course, that description fits any one of a lamb, a cow or a chicken, so what the waiter has said does make sense.)

4. Ranjeet says "I want a beef curry and an onion bread."

5. The waiter gives Jyoti water and says to her "What would you like?" (Whatever is in front of the first **selbri** gets repeated in front of the second; so this is the same as saying **le bevri fi la djiotis. cu dunda fe loi djacu .i je le bevri fi la djiotis. cu cusku fe lu .i do djica ma li'u**.)

6. Jyoti says "A curry."

7. For that reason, the waiter says "Lamb or beef?"

8. Jyoti says "Not A but B" (or, in English, "Beef.")

Exercise 7

1. .i le bevri cu carna fi la suzyn. gi'e cisma gi'e cusku lu .i lanme je'i bakni li'u

2. .i la suzyn. tirna le bevri gi'onai jundi le bevri (or: .i la suzyn. tirna le bevri gi'onai jundi ri)

3. .i la djiotis pencu la suzyn. le janco gi'e cusku lu .i ju'i .suzyn. li'u

4. .i la suzyn. se spaji gi'e cusku lu .i .y. jipci li'u (Not one of the alternatives the waiter presented, so she couldn't very well answer with a connective.)

5. .i la djiotis. cusku lu .i .a'o do se zdile lenu do litru le kensa kei gi'u penmi lo fange (If you left out the kei, the gi'u will attach to litru rather than se zdile, which gives a slightly different meaning. As it turns out, though, both would be acceptable renderings of the English.)

Chapter 12. Aspect, Vocatives, Loan Words, and Equalities

This lesson is something of a mixed bag. In it, we cover four topics which are fairly important in Lojban, each of which kind of fits somewhere else—but would take us far afield in each of the other lessons. **Aspects** are a special kind of tense; **vocatives** are a special kind of attitudinal; **loan words** are a way of introducing new words into Lojban, comparable to lujvo; and **equalities** involve a special kind of selbri.

Aspect

We've seen that we can locate our bridi in space and time, by using tenses. But this is something of a simplification. We can't just say that events are before, simultaneous with, or after other events, because events have beginnings, middles and ends. They are not simply points that can be lined up on a timeline.

And we tend to be very interested in the beginnings and ends of events. There is quite a difference between these three sentences:

- Is he about to do his homework?

- Is he still doing his homework?

- Has he done his homework yet?

Doing homework is an activity that has a beginning, a middle, and an end. So when we pinpoint the time at which doing homework happens, we are also pinpointing its beginning, its middle, and its end. Which means that the first of those questions asks whether the time is before the *beginning* of doing the homework, or after it. The second question asks whether or not the time is in the *middle* of doing the homework. And the third question asks whether the time is after the *end* of doing the homework, or not.

The term in linguistics for situating the beginnings and ends of events is **aspect**. The term Lojban uses is **event contours**: events are perceived as shapes, which have beginnings and ends. (This is why Lojban can use its aspects in space as well as time, although we won't be going into that here.) In many languages, aspect is as important as tense, or even more important. In Russian, to use the best-known example, you cannot use a verb at all without choosing between a stem indicating that something is (or was, or will be) still going on (*imperfective*), and a stem indicating that something is (or was, or will be) completed (*perfective*).

English isn't like that: you can quite often leave off any indication of aspect in your verbs. Yet English has ways of expressing aspect anyway. When we say "I have spoken to the doctor", we are also indicating that we have now finished doing so—we are after the end of the event. When we say "I am speaking to the doctor", on the other hand, we are also indicating that we are in middle of the event: the event is continuing, and is not yet over.

> **Note:** Aspect is quite independent of tense: you can say that something will be over some time in the future ("I will have spoken to the doctor [by then]"), or that something was continuing in the past ("I was speaking to the doctor"), without giving any indication of what is happening in the here-and-now.

Lojban uses cmavo belonging to selma'o ZAhO to express event contours. You use them just like tense words; if you use both, the tense word goes first. The three-way distinction we made—before the beginning, in the middle, after the end—is made with three distinct words: pu'o, ca'o, ba'o. This is, of course, no coincidence: *before* (pu) an event begins, you use pu'o; *after* (ba) an event ends, you use ba'o. So you can come up with sentences like these:

mi ba'o tavla le mikce
I have spoken to the doctor (or had spoken, or will have spoken)

mi ca'o tavla le mikce
I am speaking to the doctor (or was speaking, or will be speaking)

mi pu'o tavla le mikce
I am about to speak to the doctor (or was about to speak, or will be about to speak)

mi pu pu'o tavla le mikce
I was about to speak to the doctor

mi ba ba'o tavla le mikce
I will have spoken to the doctor

mi pu ba'o tavla le mikce
I had spoken to the doctor

mi pu ca'o tavla le mikce
I was speaking to the doctor

Vocabulary

fekpre	insane, crazy person (fenki 'crazy' + prenu 'person')
troci	x_1 tries/attempts/makes an effort to do/attain x_2 (event/state/property) by actions/method x_3

Exercise 1

Translate into Lojban.

1. I will be on the verge of going insane.

2. I'm done reading the book.

3. Jyoti's still on her way to the restaurant.

4. Ranjeet was eating his curry.

5. Susan was to have been with us, but she had to stay at the bar.

6. I'd gone to the hospital before you tried to talk to me.

More Aspects

The aspects pu'o and ba'o describe situations in which the event is still not going on, or is no longer going on: if you draw a time-line, they are outside of the line corresponding to the event. But beginnings and endings are pretty conspicuous, as moments go. So we often want to point out that we are not before the beginning of the event, but right at the point when it begins; and not after the end of the event, but right at the point when it ends.

To pinpoint your time at the instant when the event begins, the aspect word you use is co'a. So you can say mi co'a tcidu le cukta at the moment when you start reading a book. When you stop reading the book, the aspect is co'u. When you finish reading, on the other hand, the word to use is mo'u. So Lojban makes a distinction between finishing and stopping (before the event would have finished normally).

For this kind of aspect, English normally just uses verbs: *start*, *finish*, *stop*. Lojban likewise allows you to use distinct selbri to express these notions: cfari, mulno, and sisti. Using aspects just lets you express things more succinctly; and with Lojban the way it is, anything that makes things more succinct comes in handy.

There are more aspects in Lojban, though you won't necessarily see them as often in Lojban text; you can find out about them in Chapter 10.10 of *The Complete Lojban Language*.

Exercise 2

Some of you may be familiar with the puzzles *Where's Waldo?* and *Where in the World is Carmen Sandiego?*. Well now we're going to play a little game of la jan. zvati ma. For each of these sentences, say where Zhang is, given the aspect expressed. You're allowed to say "Between A and B" in your answer. For example:

.i la jan. ca'o klama la paRIS. la li,ON. → Zhang is between Paris and Lyon.

Watch out for strange Lojbanisations of names!

1. .i la jan. co'a klama la sankt.PEterspurg. la myskFAS.

2. .i la jan. ba'o klama la minxen. la keln.

3. .i la jan. mo'u klama la firentses. la veNEtsi,as.

4. .i la jan. co'u klama la cai,en. la nolinz.

5. .i la jan. pu'o klama la canXAIS. la guanJOUS.

6. .i la jan. ca'o stali le barja.

Vocatives

When you address people by name, you usually do so to make it clear who out of a group you are talking to. We've already seen how to do that in Lojban: doi, followed by the name (without the name article, la.) So "Houston, we have a problem" ends up as

doi xustyn. mi'a se nabmi

(sidestepping the slight illogicality of speaking to a single person in Houston but addressing a whole city.)

Often, however, we address people in order to manage our conversations: to make someone pay attention to our turn; to butt in before it is our turn; to signal that a conversation is beginning or ending; and so on. We can also do this without using names, but instead by various context cues and all-purpose words. When you think about it, for example, *OK* does a lot of work for such a small word.

As we know, Lojban tends to be precise rather than vague. So when it comes to signalling what you want done with a conversation, Lojban doesn't play along with the usual natural language tricks of leaving it up to the principles of politeness and social convention to work out what's going on. Instead, it has explicit words for managing turns in a conversation, which can optionally be followed by the name of whoever you're bringing it to the attention of. Since all these words address someone, they are called **vocatives** (selma'o COI.)

Natural languages don't distinguish as carefully between these various contexts, except in fairly artificial contexts: for example, conversations over two-way radio, where it is impossible to talk over each other, or to negotiate whose turn it is to speak through subtle visual cues. (A less elaborate vocabulary is in place for IRC, its Internet equivalent.) This means that Lojban vocatives look a little like a CB enthusiast's nightmare, because the glosses you see for them come from this more explicit subset of English. But normal English has these kinds of words as well—they're just not as clearly distinguished, because context is usually relied on instead.

We've slipped some of these past you already, too.

- mi'e is the word you use to introduce yourself: it's the only vocative followed by the speaker's name, rather than the addressee's. So mi'e .robin. means "I'm Robin" or "This is Robin speaking."

- coi is the greeting word: it corresponds to "Hello", "Good morning", "Hi", "Wazzup?", and whatever else happens to be in vogue.

- Conversely, co'o is the farewell word, corresponding to "Goodbye", "Farewell", "Yo Later Dude", and so on. Lojbanists signing off on e-mail often end with something like co'omi'e .robin.—this is equivalent to putting your name at the end of your email in English as a signature, and translates as "Goodbye; I'm Robin."

The other vocatives are not as common.

- Two words similar to coi are ju'i 'Hey!', with which you draw someone's attention, and fi'i 'Welcome! At your service!', with which you offer hospitality or a service. (It's what you say to a visitor; you wouldn't say it over the phone, for instance, unless your addressee is calling from the airport and is on their way over.)

- je'e corresponds to 'Roger!' in radio-speak, and 'right' or 'uh-uh' in normal English: it confirms that you've received a message. If you haven't, you say je'enai instead (of course); in normal English, that would be 'Beg your pardon?' or 'Huh?'.

- In case you haven't received the message clearly, you can explicitly ask for the speaker to repeat whatever they said with ke'o.

- Similarly, be'e signals a request to send a message ("Hello? Are you there?"), and re'i indicates that you are *ready* (Lojban bredi) to receive a message. (It's what you say when you pick up the phone—which in English also happens to be "Hello?", but in Italian is *Pronto* 'Ready!'.)

- **mu'o** is what you say when you explicitly make it another speaker's turn to speak: it's the "Over!" of radio.

- When it isn't your turn to speak, but you want to barge in anyway, you can say **ta'a**—though it probably won't make anyone any happier that you're interrupting.

- **nu'e** introduces a promise; **pe'u** introduces a request, and so is fairly similar to the attitudinal .**e'o**.

- **vi'o** acknowledges a request, and promises to carry it out: in radio talk this is "Wilco!", and in normal English "OK" or "All right, I will" (or for that matter, "Consider it done!")

- You say "Thank you" with **ki'e**—to which the appropriate response is *not* **fi'i** ("You're welcome" doesn't mean you're being visited by some guests), but the simple acknowledgement **je'e**.

- Finally, to close communication (radio's "Over and out!"), you can use **fe'o**. (This is what people actually *should* be putting at the end of their e-mails; but it's not as well-known a word as **co'o**)

Vocatives take names, **sumti** or **selbri**. The names come after an obligatory pause, to make sure any eavesdropping computers don't misconstrue the vocative as one long name. The **sumti** or **selbri** describes the addressee (e.g. **co'o la mensi** or **co'o mensi** "Goodbye, sister!".) If any of these are used, they normally don't need terminators after them. If you use the vocative on its own, however, you will need a terminator, because the things likeliest to follow the vocative in a sentence could easily be misconstrued as describing your addressee. The terminator for vocatives is **do'u**. For example,

> coi do'u la suzyn. la ranjit. puzi cliva
> Hello! Susan's just left Ranjeet.

> coi la suzyn. la ranjit. puzi cliva
> Hello, Susan! Ranjeet's just left.

Exercise 3

Give the Lojban vocatives corresponding to the emphasised words in each of the following sentences. You may need to add **nai** to your vocatives. Beware of trick questions!

1. "Jyoti, *are you there?*" "*Just a second!*"

2. "Come on in, Zhang, *make yourself at home!*" "*Much obliged!*"

3. "You're coming along, *right?*" "*Come again?*"

4. "*Excuse me*, is this seat taken?" "*Be my guest!*"

Loan words

You got a brief taste of **lujvo** in Lesson 8. As we said there, **lujvo** are the main way of introducing new words—more precisely, new **brivla**—into Lojban. The most important thing about **lujvo** is that, as **selbri**, they are meant to have very well-defined place structures; and there are guidelines in place for deriving them (see *The Complete Lojban Language*, Chapter 12.) So, particularly when the concept you want to express is 'verb-like' (that is, when it's likely to have **sumti** of its own), **lujvo** are preferred.

There are some cases, though, when you do have to borrow a word from another language, creating a loan word (called in Lojban a **fu'ivla**). This can be because the thing you're talking about is very concrete or particular, and/or because the reference is quite culture-specific. In either case, it would be

really cumbersome to describe it with a combination of gismu. (For example, how would you come up with a description for *brie*? Or *rock 'n' roll*?—which, we should point out, you would have to keep distinct from the later musical genre of *rock*!)

The problem with borrowing words into Lojban is, Lojban has a quite thorough set-up for working out what the words are in a stream of letters. This means that most words you import into Lojban (once you spell them in Lojban letters) are likely to mean something else already. For example, if I want to bring the word *Esperanto* into Lojban, the last thing I want to do is start saying .esperanto. That will get analysed as .e speranto, which is something like 'and marriage-soft'.

> **Note:** Well, it would be if 'soft' was ranto instead of ranti—but the point should still be clear: importing words exactly as they are would lead to confusion and havoc.

The sanctioned way to deal with loan-words (described in more detail in *The Complete Lojban Language*, Chapter 4.7) is to stick a gismu (minus its final letter) in front of the word, showing what sort of thing the word is; and to put an r (or, if an r is already there, an n) between the gismu and the word. The gismu helps the reader or listener, who has likely never seen this word before, guess what the word might be. This is particularly handy if the source word might be ambiguous between two different meanings. And the combination of gismu minus final vowel, source word (which should start with a consonant, and end with a vowel), and r or n will hopefully produce a cluster of consonants crunchy enough that it cannot be mistaken for another Lojban word or phrase.

> **Tip:** There is no standard consonant to put in front of the word to become a fu'ivla if it starts with a vowel. Two popular choices are x and n. Similarly, there is no set convention on where to get the vowel from, if your word ends in a consonant. In these lessons, we'll just repeat the preceding vowel; e.g. *England* → gugdrninglanda (from gugde 'country'.)

So what does all this look like in practice? Well, we've already seen *curry*:

- take 'food', cidj[a];
- take the word in Lojban garb (starting with a consonant and ending with a vowel), kari;
- and wedge them together with an r: cidjrkari.

(The consonant cluster is also crunchy enough to be difficult to pronounce; the r is a syllable on its own, and the word should sound something like *shidgerrrrrkari*.)

Loan words (in Lojban, fu'ivla) are still only sporadically used—particularly because, as of this writing at least, there is no Lojban dictionary where a standard list of them can be looked up. The problem of which language to borrow words from is also hard to settle, and the choices made can cause problems of their own. The most international solution for plant and animal names, for example, is Latin, and in particular the Latin of the Linnaean system of classification. But this means that, to come up with a word for 'catnip', say, you have to know Latin and your Linnaean taxonomy. (Or, like I did, look it up on the Internet—but you can't normally do that while you're having a conversation.) So fu'ivla are still largely unexplored terrain in Lojban.

> **Note:** That said, you will occasionally see 'Stage 4' fu'ivla in use. The fu'ivla we've seen are 'Stage 3'; in Stage 4, you drop the initial 'crunchy' rafsi, reasoning that the word should already be well-known or recognisable enough—and making sure that the word still doesn't look like a normal brivla. (For example,

The Complete Lojban Language suggests tci'ile for 'Chile', instead of gugdrtcile.) Not everyone likes them, so they're not yet all that common, and you'll usually get plenty of warning if someone is using them.

P.S.: If you were wondering, by the way: cirlrbri, zgiknroknrolo, zgiknroko.

Exercise 4

Turn these words into fu'ivla, using the gismu supplied as the prefix. For example:

Mummy/Mommie: mamta → mamtrmami.

1. Cockney: bangu

2. Pizza: cidja

3. Derivative: cmaci

4. Adagio: zgike

5. Psychopathy: bilmi

6. Deuterium: cidro

7. Amethyst: jemna

8. Rallentando: zgike

Equalities

You may at some stage have asked yourself the question, what the Lojban for *is* is. The short answer is, most of the time there isn't one. Lojban represents the world in terms of relations (bridi), and *is* is a fairly empty kind of relation. Moreover, if the thing to the right of *is* (the 'predicate', in grammar terminology) means a class of things, instead of a single entity, then it corresponds to a selbri, and we don't need to put a word for *is* in. So "Robin *is* English" comes out in Lojban as la robin. glico: glico is already a selbri that takes la robin. as a sumti—so we don't need a separate selbri for *is*.

Very, very, *very* occasionally, you'll need a Lojban word for *is* anyway. Lojban offers three words which sort of do the job of *is*; each has its own provisos.

The first word is me. me takes a sumti following it, and converts it into a selbri. So me la nik. is a selbri, which takes as a sumti anything that 'is a Nick'. Similarly, since le mi ci mensi is 'my three sisters', la renas. me le mi ci mensi means "Rena is one of my three sisters" (as she is described by the selbri version of 'my three sisters'.) So me is best thought of as meaning 'is one of'.

> **Historical note:** me, way back in the dawn of (Lojbanic) time, used to mean 'pertaining to' instead of 'is'. You'll see confusion between the two persisting among old timers. Be gentle with them, we pray you...

The second word is du. du is a selbri on its own, and it means that all its sumti are the same thing and have the same identity. So mi du la nik. (or mi du la robin.) is a way of saying "I am Robin (or Nick.)" The claim made is one of identity; so you can flip the sumti around without making any difference: la robin. du mi. It does *not* make a sumti behave like a selbri, so du cannot mean 'is one of', like me does: la renas. du le mi ci mensi makes the nonsensical claim that Rena *is* my three sisters. (Or should that be *are*?)

Tip: Can you say mi du lo prenu, doing the Lojban equivalent of making an indefinite noun 'equal' a definite noun? After all, lo prenu applies to many more people in the world than just me, so du here does kind of act like 'is one of'.

The answer is, yes you can, because in this context they both do refer to the same person. (In strict logical terms: "there is at least one person such that that person is me.") This is frowned upon in Lojban in general, though, because it's misleading: du tends to be reserved for mathematical equality, and for claiming that two different names (or definite nouns) refer to the same thing. If you really wanted to say mi du lo prenu, after all, why wouldn't you just say mi prenu?

These two means are grammatical Lojban, but they are viewed with some distaste, and are usually giveaways that some poor translating from English (or another natural language) has been going on. The third mechanism is better regarded, because it tucks the equality away in an inconspicuous corner. po'u has the same grammar as the sumti modifiers like pe and po we saw in Lesson 3. But instead of claiming that one sumti is associated with the other, or owned by the other, po'u claims that the two sumti are the same thing. So:

> la ranjit. *po'u* le pendo be la djiotis. vi zvati
> Ranjeet, *who is* Jyoti's friend, is here.

Like those other members of selma'o GOI (pe, po and po'e), po'u has a non-restrictive version: no'u. So if I was saying that Ranjeet was Jyoti's friend, not to distinguish him from the other Ranjeets you might know, but just for your information, I should use no'u instead of po'u. You can think of no'u as tantamount to noi du, and po'u as tantamount to poi du.

Note: no'u and po'u are typically used in Lojban to introduce alternate names for something; so they correspond to English *namely, i.e.* For instance, la suzyn. penmi la xumske fanza ku *no'u* la jan. "Susan met 'Chemistry Annoyance', *namely* Zhang."

Vocabulary

xadba	x_1 is exactly/approximately half/semi-/demi-/hemi- of x_2 by standard x_3

Exercise 5

Where appropriate (and *only* where appropriate), translate *is* in each of the following sentences with each one of me, du, po'u, and no'u. To get po'u and no'u to work, you may have to rearrange the sentences. For instance:

> *x*, which is [equal to] *y*, is a number.

- da noi me de cu namcu
- da noi du de namcu
- da no'u de namcu

1. Jyoti *is* a woman.

2. Jyoti and Susan *are* the two women who went in Jyoti's car.

3. Jyoti and Susan *are* among the women whom Zhang considers his friends. (Use jinvi.)

4. Ranjeet, who *is* a friend of Jyoti, *is* half-German.

5. This blue car which *is* the one to the right of mine *is* a Ford car. (Use le pritu for *the one to the right*.)

Summary

In this lesson, we have covered:

- Simple aspects (pu'o, ca'o, ba'o; co'a, co'o, mo'u)

- Vocatives (DOI, COI)

- Loan words

- Words expressing equality (me, du, po'u, no'u)

Vocabulary

banli	x_1 is great/grand in property x_2 (ka) by standard x_3
banxa	x_1 is a bank owned by/in banking system x_2 for banking function(s) x_3 (event)
casnu	x_1(s) (mass normally, but 1 individual/jo'u possible) discuss(es)/talk(s) about topic/subject x_2
cladu	x_1 is loud/noisy at observation point x_2 by standard x_3
cradi	x_1 broadcasts/transmits [using radio waves] x_2 via station/frequency x_3 to [radio] receiver x_4
dukse	x_1 is an excess of/too much of x_2 by standard x_3
ji'a	additionally, also
la'edi'u	'the content of the previous sentence' (*that*, as in "I knew that!")
mau	sumti tcita: exceeded by... (from zmadu 'more')
sanga	x_1 sings/chants x_2 [song/hymn/melody/melodic sounds] to audience x_3
smagau	x_1 acts so that x_2 is quiet/silent/[still] at observation point x_3 by standard x_4 (smaji 'quiet' + gasnu 'do')
ticygau	x_1 (person) acts so that x_2 (event/experience) misleads/deceives/dupes/fools/cheats/tricks x_3 into x_4 (event/state) (tcica 'deceive' + gasnu 'do')
voksa	x_1 is a voice/speech sound of individual x_2
zmadu	x_1 exceeds/is more than x_2 in property/quantity x_3 (ka/ni) by amount/excess x_4
zgikrfanki	This is a fu'ivla, and you'll have to work out what it is. Hint: say the word out loud, minus the prefix.

Exercise 6

Translate from Lojban:

1. .i ba'o lenu citka kei lei ci pendo ca casnu

2. .i ca'o bo ri klama le dansydi'u po'u la zgikrfanki jipci

3. .i la suzyn. cusku lu .i pe'u .djiotis. ko smagau le ve cradi

4. .i mi co'u tirna la ranjit. li'u

5. .i la djiotis. cusku lu .i ke'o .suzyn. mi na'e tirna ri'a lenu le ve cradi cu cladu li'u gi'e mo'u smagau

6. .i la ranjit cusku lu .i .u'i ki'e do'u mi co'a tirna mi li'u

7. .i la djiotis. cusku lu .i .uu mi ji'a go'i li'u

8. .i la ranjit. cusku lu .i ke'onai .djiotis. mi nelci lei me la'o gy. Eurythmics gy. selsanga ne mau lemi voksa li'u

9. .i la suzyn. cusku lu .i mi pu'o cusku la'edi'u li'u

10. .i la djiotis. cusku lu .i ke'onai .suzyn. li'u

Exercise 7

Translate into Lojban:

1. Jyoti, Ranjeet and Susan arrive at the disco at 0:50. (Hint: you don't have a distinct word for 'arrive'; use klama and an appropriate aspect.)

2. Ranjeet says to Jyoti and Susan "Look, you two, I've got to go to the bank."

3. "I was going to bring money, but I was paying too much attention to my radio transmissions." (Hint: use dukse in a tanru)

4. While Ranjeet isn't there, Jyoti says "Susan? Günter—The Great Deceiver—dumped you" (Again, you don't have a word for 'dump'; use prami and an appropriate aspect.)

5. "So I thought you still hated everything German."

6. Susan says "Uh-uh, but Ranjeet's eyes are much more beautiful than Günter's."

7. A long way away from the women, Zhang loudly says "How are you doing, friend!" to Ranjeet.

Answers to exercises

Exercise 1

1. .i mi ba pu'o fekpre

2. .i mi ca ba'o tcidu le cukta

3. .i la djiotis. ca ca'o klama le gusta

4. .i la ranjit. pu ca'o citka loi ri/vo'a cidjrkari

5. .i la suzyn. pu pu'o kansa mi'a gi'e ku'i bilga lenu stali le barja

6. .i mi pu ba'o klama le spita pu lenu do troci lenu do tavla mi

Exercise 2

To explain the peculiar Lojbanisations of place names below, we have helpfully supplied IPA transcriptions in brackets afterwards.

1. Moscow (St. Petersburg [sanktˈpɛtɛrspurg], Moscow [məsˈkfa])

2. Munich (Munich [ˈmynçɛn], Cologne [ˈkœln])

3. Florence (Florence [fiˈrentse], Venice [veˈnetsia])

4. Between New Orleans and Cheyenne (Cheyenne [ʃæˈjɛn], New Orleans [ˈnɑlɪnz]. OK, we aren't necessarily serious about the last one.)

5. Canton/Guangzhou (Shanghai [ʂaŋxai], Canton/Guangzhou [kuaŋtʂow])

6. The bar ([le ˈbarʒa]). Of course.

Exercise 3

1.

   a. be'e ("Will Jyoti receive my message?", although ju'i could also be used, as someone is trying to draw Jyoti's attention.)

   b. re'inai (Jyoti is *not* ready to receive any messages.)

2.

a. fi'i (the English is a classic formula for offering hospitality; it may not always be literally meant!)

b. je'e (the simplest response is simply to acknowledge what has been said to you; "Much obliged!" is doing pretty much the same job as "You're welcome!" You *could* respond with vi'o "That's exactly what I'll do!"; but vi'o is a response to an explicit request, and fi'i isn't really a request. It would also make sense to respond with ki'e.)

3.

a. mu'o ("Please respond", which is pretty much the same thing as "It's now your turn to speak.")

b. ke'o (unless you're sneakily trying to say "No", which would be more like vi'onai "I refuse to comply with your request.")

4.

a. pe'u (because the primary thing you're doing is making a request; but "Excuse me" is also initiating an exchange the other person wasn't expecting, so you could also use ju'i, ta'a, be'e, or even coi.)

b. fi'i, because you're offering a service, although vi'o is just as good, because you're carrying out a request.

Exercise 4

1. bangrkokni

2. cidjrpitsa (Remember, fu'ivla are done by pronunciation, not by spelling.)

3. cmacrderivativi (Or, if you know about Interlingue and ablatives, cmacrderivativo. But that's a long story...)

4. zgikrnadadjio or zgikrxadadjio, depending on what your favourite consonant is.

5. bilmrsaikopati, if you're borrowing the word from English; bilmrpsikopati or bilmrpsikopatia, if you want something closer to Greek (and thus presumably more recognisable to at least some non-English speakers).

6. cidrndeuteriumu (or cidrndeuterio, if you know about those ablatives I'm not going to explain here...) Of course, you can't use r as the joining consonant, since cidr- already ends in r.

7. jemnrnametisti or jemnrxametisti. (As it turns out, jemnrametisti would have also been acceptable as a fu'ivla.)

8. zgiknralentando (Remember, the word already starts with r, so you have to use n to join the two parts of the fu'ivla together instead.)

Exercise 5

1.

a. la djiotis. me lo ninmu.

b. la djiotis. du lo ninmu is possible, but frowned on, as discussed.

c. As for the other two alternatives, even if we tucked away the *is*-clause after po'u or no'u, we would be left with no selbri at all. So we can't get away with them.

2.

a. la djiotis. .e la suzyn. cu me le re ninmu poi klama fu le karce po la djiotis.

b. la djiotis. joi la suzyn. du lei re ninmu poi klama fu le karce po la djiotis (note the masses! If you'd used .e, you would be saying that Jyoti was the two women, and Susan was also the two women!)

c. There are two **selbri** here, but you can't really tuck one away with **po'u** and be left with a **selbri** for the rest of the sentence.

3.

a. la djiotis. .e la suzyn. me le ninmu poi la jan. jinvi le du'u ke'a pendo ri.

b. la djiotis. .e la suzyn. du le ninmu poi la jan. jinvi le du'u ke'a pendo ri is possible but frowned on.

c. A version with **no'u** is not really possible, because there would be no **selbri** left for the main **bridi**.

4.

a. la ranjit. noi me lo pendo be la djiotis. cu me lo xadba dotco.

b. Frowned on but possible: la ranjit. noi du lo pendo be la djiotis. cu me lo xadba dotco.

c. Frowned on but possible: la ranjit. no'u lo pendo be la djiotis. cu me lo xadba dotco.

5.

a. le vi blanu karce poi me le pritu be le mi karce cu me la ford. karce

b. le vi blanu karce poi du le pritu be le mi karce cu me la ford. karce (The first *is* does indeed act as an equality sign: you're describing a car two different ways, to narrow it down. But the brand of a car is a class, so the second *is* is not an equality sign.)

c. le vi blanu karce po'u le pritu be le mi karce cu me la ford. karce (Since you're narrowing down what the car is, you need a restrictive rather than a non-restrictive clause.)

Note: This use of **me** is pretty standard to get a **cmene** into a **tanru**. There are often times when you will want to use a name to describe a class of things, rather than a unique thing. This in turn means you have to treat a **cmene** like a **selbri**, entering into domains like **tanru**. In fact, as an extension of this, Type 1 and 2 **fu'ivla** are merely **cmene** converted with **me** to **selbri**: Type 1 involves the undigested **cmene**, with **la'o** (e.g. me la'o gy. *curry* gy.), while Type 2 Lojbanises it, using **la** (e.g. me la karis.).

Exercise 6

1. After they have finished eating, the three friends are now discussing. (Aspects can be used as **sumti tcita**, just like tenses can. **ba'o** means pretty much the same as **ba** here, but emphasises that they had *finished* eating when they started talking again.)

2. While they were doing so, they went to the disco [which is] *The Funky Chicken* (Aspects can also be used to connect sentences, just like tenses can. **.i ca'o bo** means that the second sentence took place while the first sentence was still going on. The **fu'ivla** considers *Funky* to be a kind of music: 'The Funk Chicken' is probably more accurate.)

3. Susan says "Jyoti, please turn the radio down."

4. "I've stopped hearing Ranjeet."

5. Jyoti says "Come again, Susan? I didn't hear you because the radio is loud", and completes turning it down. (i.e. she turns it down to completion—all the way down.)

6. Ranjeet says "Heheh, thanks! I now start hearing myself!" (This is a more pedantic rendering of what in English would be more like "I can hear myself think again". The **do'u** is necessary, because otherwise Ranjeet would be addressing himself: "Thanks, Me!")

7. Jyoti says "Unfortunately, so can I."

8. Ranjeet says "Don't repeat, Jyoti. I like Eurythmics songs, but my own voice more. (or: I like my own voice more than Eurythmics songs.)" (Ranjeet, too clever a Lojbanist for his own good, is playing around with his vocatives.)

9. Susan says "I was about to say that." (The full tense would have been **pu pu'o**, but you don't have to state the tense as well as the aspect when you think it is obvious from context.)

10. Jyoti says "Don't repeat, Susan." (Two can play at that game!)

Exercise 7

1. .i la djiotis. .e la ranjit. .e la suzyn. mo'u klama le dansydi'u ti'u li no pi'e muno (Not **co'u klama**, which would have had them stop on the way; nor **ba'o klama**, which would mean that they had already arrived at 0:50.)

2. .i la ranjit. cusku fi la djiotis. joi la suzyn. fe lu ju'i redo mi bilga lenu mi klama le banxa (or: **mi .ei klama le banxa**. Since Ranjeet speaks to Jyoti and Susan as a unit (together), **joi** is more appropriate, though **.e** is strictly speaking correct.)

3. .i mi pu pu'o bevri loi jdini gi'e dukse jundi lemi se cradi li'u (A more pedantic version—in keeping with Ranjeet's style—would be: **.i ku'i lenu mi jundi le se cradi pe mi cu se dukse**)

4. .i ca'o lenu la ranjit. na zvati kei la djiotis. cusku lu be'e .suzyn. la ginter. no'u la banli ticygau co'u prami do (**co'u** is the only really good aspect to use; it's somewhat more controversial to think of love as something with a natural ending point (**mo'u**), and Günter—though he has turned Susan off some perfectly acceptable beverages—had not necessarily reached that point, anyway. If you wanted to keep the umlaut, you could also use **la'o dy. Günter dy.**, or something like that. We presume this is the only Günter they know, so his nickname isn't being used to distinguish him from other Günters; hence, **no'u** instead of **po'u**.)

5. .i semu'ibo mi pu jinvi ledu'u do ca'o xebni ro lo dotco li'u (or: **ro dotco**, since **lo** is assumed after numbers. **ro da poi dotco** is also correct.)

6. .i la suzyn. cusku lu .i je'e do'u ku'i le kanla be la ranjit. cu mutce zmadu le kanla be la ginter. le ka melbi li'u (Kind of a baptism by fire for you with that new **gismu**. Sorry about that. You can't avoid **do'u** here, otherwise Susan would be speaking to Ranjeet's eyes: "That's right, O eyes of Ranjeet's."

   By the way, the **cu** is necessary; otherwise, **kanla be la ranjit. mutce zmadu** would be taken as a single **tanru**—individual **gismu** within a **tanru** can still have their own **sumti** attached with **be**.)

7. .i vu le ninmu la jan. cladu cusku lu .i coi pendo li'u la ranjit. (A pure greeting, of course; Zhang is not actually asking Ranjeet 'how he is doing' anything. He might want to know *what* he is doing there; but that's the next chapter of the saga...)

Chapter 13. Keeping it flowing: Textual cmavo

Most of what we've been concentrating on until now has had to do with the logical side of Lojban—getting sentences to be true. To that end, we've been looking at how to describe relationships between things (bridi, internal sumti); how to situate events and things in time and space; how to describe things as masses or individuals; how to speak about events and facts; and so on.

This kind of thing is the 'hard-core' of Lojban, so to speak; the logical machinery on which Lojban is based, and which works with concrete realities. But there's another, less concrete side to language. No, not its ineffable soul, or its intrinsic poetry, or anything like that: we're not about to go into such rarified abstractions. (Although those rarified abstractions do have some rather tangible—and linguistically concrete—bases.) The less concrete side of language has to do, not with *what* you say about things, but *how* you manage the business of saying it. This means things like:

- how you express your attitudes to things;

- how you put the things you talk about in the foreground or the background;

- how you deal with misunderstandings and errors;

- how you structure your texts.

A language isn't really a language if it can't cope with things like these—although typically these kinds of things are not dealt with in traditional grammars, but are picked up in usage. If there's one thing you'll have noticed about Lojban, of course, it's that it is as explicitly specified as possible. Accordingly, Lojban has a special subsection of its grammar dealing with these issues, rather than leaving it up to usage. But, precisely because this isn't what logic was designed for, the grammar Lojban uses here has little to do with bridi: it is a much simpler grammar, mostly using isolated words. We'll go through the ones you're likeliest to meet.

Lojban with lots more attitude

You'll remember from way back in Lesson 1 that Lojban has little words called *attitudinal indicators* (or *attitudinals*), which show how you feel about something. That 'something' is whatever precedes the attitudinal. As we have seen, if the attitudinal is after a terminator, it's a reaction to whatever phrase ends in the terminator. If it follows an article, then it applies to the entire sumti; if it follows a connective, it applies to the connective and whatever following term it is connecting; and so on.

Attitudinals belong to selma'o UI. This means that their grammar is as simple as can be: they can turn up after just about any word of Lojban, without disrupting anything going on grammatically. For that reason, they don't need terminators: there's no danger of them swallowing up any errant sumti (unlike their close relatives, the vocatives.)

There are some cmavo whose job is to modify other UI cmavo, though. You've seen one already: nai has the function of converting the attitudinal expressed to its opposite. So if .a'u expresses interest, its opposite, .a'unai, expresses repulsion. We saw in our discussion of negations that, when you set up a scale between something and its opposite (to'e), you can also speak of something that's neutral, in-

between (no'e). The same goes for attitudinals, and the word to use in that case is cu'i. So .a'ucu'i expresses neither interest nor repulsion, but disinterest.

You can divide up the continuum even more finely. If you want to say that you feel an emotion only weakly, you can add to it ru'e. If you want to say you feel it strongly, you can add sai. And if you want to say you feel it *really* strongly, you add cai. This gives you a seven-part scale:

cai > sai > (nothing) > ru'e > cu'i > nairu'e > nai > naisai > naicai

So for instance, if you want to say "Eh. That's cool", you'd say .a'ucu'i. If you want to say "That is really gross!", you'd say .a'unaisai. And if you want to say "Oh my God, that is the most interesting thing in the world since the very invention of Lojban!!!", .a'ucai is a pretty safe bet.

> **Note:** All these modifiers belong to selma'o CAI, except for nai—which turns up all over Lojban grammar, as we've already seen, and has its own selma'o, NAI.

There are 39 attitudinals fitting the pattern VV (two vowels, possibly with an apostrophe between them; these are a subclass of selma'o UI, called UI1.) Each of these corresponds to a different emotional state. With the addition of the seven-way scale we've just described, that makes 273 attitudinals you can use, plunking them pretty much wherever you want in your sentence. That's not even counting selma'o UI4 and UI5, which can further modify your attitudes. As with everything else, Lojban allows you to be as specific as you want to be in expressing yourself.

> **Note:** selma'o UI4 specifies what 'part' of you is feeling the emotion—whether it is a physical, social, mental response, and so on. selma'o UI5 has some 'left-over' modifiers; we already saw in passing ga'i, which indicates haughtiness.

> The cmavo in this category you will see almost constantly is zo'o. It is used just like the smiley-face in e-mail, to indicate that you're being humorous when saying something, and it's used for much the same reason. In these two communication systems, it's difficult to work out whether someone is joking or not—in e-mail, because you can't hear the tone of voice that gives things away; in Lojban, because by its ideology the language doesn't want to leave things to natural-language–based intuition (and also because it's used a lot on e-mail anyway.) So hints like this are always welcome, and frequently taken advantage of.

Vocabulary

> **Note:** Attitudinals have three-way glosses: what they mean on their own, what they mean with cu'i after them, and what they mean with nai after them.

.ai	attitudinal: intent – indecision – rejection/refusal
.o'o	attitudinal: patience – mere tolerance – anger
.o'u	attitudinal: relaxation – composure – stress
.e'u	attitudinal: suggestion – abandon suggest – warning
.i'e	attitudinal: approval – non-approval
.uu	attitudinal: pity – cruelty
.u'u	attitudinal: repentance – lack of regret – innocence

Exercise 1

Match one of the following attitudinals to each of the following situations.

.a'unairu'e
.e'uru'e

.e'ucai
.i'enai
.i'eru'e
.i'esai
.o'onai
.o'u
.u'u
.uu

1. You see someone stub their toe.

2. You bought the last ice cream in the shop, and the toddler queuing behind you has started crying.

3. You'd like to ask someone to take you along to the shops, if it's not too much trouble.

4. You will absolutely *die* if your sister doesn't take you to the Ricky Martin concert.

5. Your local football team, the *Loglandia Contrapositives*, has just won a match. You watch football maybe twice a year.

6. You have just been slapped in the face, and you are neither the Buddha nor Christ—or into S&M, for that matter.

My attitudinals! All mine! (And you?)

A common pitfall to avoid is trying to specify whose attitude the attitudinals express. The reason UI cmavo are so simple is that they express direct emotional responses—gut reactions, without making any fine distinctions like whose attitude is involved. The reaction is always taken to be the speaker's. So .ui do cliva means *you*'re happy that someone else is leaving, just like "You're leaving—Yay!" does. If you wanted to say that the 'someone else' is happy, not you, then you wouldn't say "Yay!" at all. Instead, you'd say something like "You must be happy you're leaving." The same goes in Lojban: if you're relaying someone else's responses, not your own, then that's what bridi are there for.

You wouldn't likely make this mistake for .ui; but there are other cmavo it's almost impossible not to do this with. The worst offender is probably .ei, which expresses obligation. .ei mi cliva means "I ought to leave." But .ei do cliva doesn't necessarily mean "You ought to leave." It's more like "I feel the obligation for you to leave": I can say this if I want you gone while you're making yourself comfortable—but not if you've remembered you've got to be somewhere else, while I'd want nothing more than for you to stick around.

> **Tip:** The temptation to use attitudinals for others' reactions is strong enough, in fact, that there are a couple of ways of getting around it. If you add the UI5 cmavo se'i, you say that you feel the emotion for yourself. If you add se'inai, then, you say that you feel it for someone else: .uise'inai is pretty much "I'm happy for you!" And if you add dai, you're saying that the emotion is someone else's, and that you are empathising with them. If .a'u is "That's interesting!", .a'udai is more like "That must have been interesting for you!"

One final thing: if you want to know how someone feels about something, once again Lojban provides a fill-in-the-slot question word. The word asking the listener to fill in the attitudinal that best applies is pei. You can fill pei in with anything from selma'o UI, NAI or CAI. So if I ask you

.i pei le lunra cu blanu
The moon is blue—how do you feel about that?

at least one response is .ienai "Disagree!" ("Uh-uh", "No way!", "No!", etc.) pei can also explicitly ask for NAI or CAI alone, by following a UI cmavo. So a response to

> .i .u'ipei do farlu le pesxu
> You fell into the mud! Funny, eh?

could well be ru'e: "Kinda..." Then again, it could also be naicai: "Absolutely not, and I shall thank you never to mention it in my presence again." (Allowing for some latitude in translation...)

Discursives

Attitude isn't the only meaning UI cmavo convey. Another subclass of UI cmavo (UI3: **discursives**) carry information about how a particular word or phrase fits in with everything else you're saying.

We've seen one such cmavo already: ku'i, which means 'but, however'. This means that whatever it is attached to contrasts with what you've been saying. It usually applies to a whole sentence (so normally you'll see it next to .i), but it can apply to a single word: .abu na.e *ku'i* by. is the proper Lojban for "Not A, *but* B."

The flipside to ku'i is ji'a 'additionally, also' (which we saw in passing last lesson.) This means that whatever it is attached to *adds* on to what you've been saying. Again, this can apply to individual words, as well as sentences:

> .i .ai mi venfu do doi melbi .e *ji'a* le do cmalu gerku
> I'll get you, my pretty—and your little dog, *too*!

In some cases, there is nothing to either contrast or add to what you've said, because what you've said is the unique relevant case. In that context, you would use *only* in English. Because *only* is somewhat clumsy to express in terms of pure logic, Lojban allows another discursive as its equivalent: po'o. So "Only cats like catnip" is in Lojban

> loi mlatu po'o cu nelci loi spati be la'o ly. Nepeta cataria ly. (*Nepeta cataria* being the Linnaean name for catnip I had to go look up online.)

If you wanted to say that something is *not* the only applicable case, then of course you'd say po'onai.

There are several more discursives, but you won't seem them all that often. Some to watch out for, though, include:

ba'u	exaggeration – accuracy – understatement
sa'e	precisely speaking – loosely speaking
ju'o	certainly – uncertain – certainly not
la'a	probably – improbably
ta'o	by the way – returning to the subject
zu'u	on the one hand – on the other hand

There are two more UI cmavo that will come in handy. da'i means 'hypothetically'; it points out that what you are saying is a hypothesis, rather than fact. This is how you distinguish between hypothetical and non-hypothetical kinds of *if*:

> .i *da'i* do zvati le nu la rikis.martin. tigni .inaja do tirna la'o sy. La Vida Loca sy.

> If you *had* gone to the Ricky Martin concert, then you *would have* heard *La Vida Loca*.

> .i *da'inai* do zvati le nu la rikis.martin. tigni .inaja do tirna la'o sy. La Vida Loca sy.
> If you *did* go to the Ricky Martin concert, then you *must have* heard *La Vida Loca*.

ki'a, finally, is a cmavo you want to make your friend. ki'a is Lojban for 'Huh?' When you don't understand what someone has just said—whether because you don't get what they were referring to, or you don't know the word, or the grammar confused you—you can repeat the word or phrase you didn't get, and add ki'a as a plaintive request for clarification (so it's even better than *Huh?*, because you can point out exactly what made you say *Huh?*):

> .i mi puzi te vencu lo matcrflokati
> .i matcrflokati ki'a
> "I just bought a *flokati* [rug]."
> "*Flokati*? Huh?"

Exercise 2

Give the Lojban discursives corresponding to the emphasised words in each of the following sentences.

> **Note:** This exercise relies heavily on a particular variant of idiomatic American English. (Since the equivalents of discursives, and attitudinals in general, are among the features of language that tend to be idiomatic, this is hard to avoid.) If you're not familiar with the idiom, don't worry about this exercise; you'll get plenty of practice with discursives once you start using Lojban conversationally, anyway.

1. The Eiffel Tower is, like, 20 miles tall *or something*.

2. *Say* this guy goes up to you and goes, "Dude, your fly's undone." That'd be, like, *so* embarrassing!

3. *So, anyway*, I see this dude, and he's like, all "I'm *just* hanging with my friends, you know what I'm saying?". And I'm, like, "*Hellooo?* There's, like, nobody else here!"

4. So, like, *here you've got* this dude who's, like, totally grody, scoping me out. *And then there's* Tiffany walking by in the other direction. *Plus* she's got Tracy and Shannon with her. And she *totally* walks two feet away from me acting like, "Do I know you?" Like, bogus to the max!

(You may attain Lojban divinity status if, on some future date, you come back to this scintillating little anecdote and translate in to Lojban. Like, totally.)

Erasure

When you make a mistake while speaking, whether in your wording or your grammar, you don't normally bother to correct it—if you even realise you made a mistake in the first place. That's because natural languages are fairly redundant (for this very reason!); and we normally rely a lot more on context than on what we actually hear, anyway. If we do catch ourselves making an error, we stumble out a correction that will do the trick, without going into details like how many words should be cancelled: again, context is almost always more than adequate. So if I say

> I downloaded and learned some Esperanto vocabulary. Er, Lojban vocabulary.

context and common sense dictate that *Lojban vocabulary* is meant to replace *Esperanto vocabulary*. But what if it was meant to replace *some Esperanto vocabulary*? Or *downloaded and learned some Esperanto vocabulary*? We wouldn't normally care, in natural languages.

But Lojban is Lojban precisely because it is *not* a natural language. And this kind of imprecision does not sit well with how the language was designed. So Lojban allows you to be more precise about what words you are correcting. Whether it is actually too be precise to be useful—well, that's something for usage to determine. But the tools are available, if you want them.

si erases the immediately preceding word. If you want to erase two words in a row, you say si si after them. So the correction above would be in Lojban

>   .i mi te benji je cilre loi *bangrnesperanto valsi* si si *lojbo valsi.*

The problem with si is, you have to count words. This can get tedious, and you shouldn't have to keep a transcript of your words when you want to correct yourself. The other correction word Lojban offers is somewhat more helpful: sa erases a phrase. It works by taking the word following it, which starts the phrase to serve as the correction. It then goes back in the sentence, looking for the last time you used a phrase starting with the same word. (Same selma'o, actually.) Once it finds the last such phrase, it replaces all text from that phrase up to sa with the phrase following sa. For example:

>   *.i mi te benji je cilre loi* sa *.i mi cilre loi lojbo.*

The correction following sa is a sentence; you know that, because the first word after sa is the sentence marker, .i. So the sentence following sa replaces the current sentence up to and including sa. Or consider:

>   .i mi mrilu fi do *ca le purlamdei* sa *ca la reldjed.*

The correction is ca la reldjed. 'on Monday'. So what it replaces is everything from the last phrase beginning with ca: ca le purlamdei 'yesterday'. The English version would be "Yesterday I mailed you... actually, it was Monday."

> **Tip:** Of the Lojban erasure words, sa is not as widely known as si, and another, unofficial solution has arisen on IRC (Internet Relay Chat) to the problem of correcting a word in the sentence after you've completed that sentence. (People on IRC tend to type faster than they should, so this kind of problem arises pretty frequently.) The solution is to repeat the error word, then erase it with si, then give the correction. Strictly speaking, that's not how si is meant to work—it only makes sense to a computer parser if the erasure is within the current sentence; but you'll see this on IRC fairly often.

Exercise 3

Apply the required erasures to the following Lojban sentences.

1. .i mi viska le si la djan.

2. .i mi viska la djan. si si si catlu la djan.

3. .i mi viska la djan. sa catlu

4. .i lenu lebna loi lojbo valsi cu nandu sa nu vimcu loi lojbo valsi lo jufra cu nandu

5. .i mi .e lemi pendo cu zvati le barja sa .e la ranjit. cu zvati le barja ca lenu do zvati le gusta

Bits and pieces

Inevitably with textual cmavo, there's a lot of words that can only be called odds and ends; they each have a specific little job, and don't have much in common. *The Complete Lojban Language*, Chapter 19, bemoans the same problem in paedagogy for the same topic; so at least we're in good company.

To survive in Lojbanistan, though, you'll certainly need the following:

- ni'o begins a new paragraph. Paragraphs are usually associated with new topics, and ni'o is meant to remind you of cnino 'new'. There's some complicated stuff about what happens with tenses and assigned pro-sumti across different types of paragraph, but you can do without that for now.

- To emphasise a word, where you would use stress in a spoken natural language, and italics or capitals in a written language, Lojban insists (as should be no surprise to you by now) that you use a separate word: ba'e. Like UI, this word can go pretty much anywhere in a Lojban sentence, but it emphasises the word that *follows* it, rather than what precedes it. Or, to put it in Lojban,

  zo ba'e basna le valsi poi se lidne jenai lidne zo ba'e

- zo ki'a, I hear you ask? Good, that means you've been paying attention! zo is a quotation marker, just like lu. However, zo quotes *only* the word immediately after it. This means it does not need a terminator: we already know where the quotation ends. The saving of two syllables is highly valued in a language which can get as prolix as Lojban does.

  Note: Since zo quotes any word following it—*any* word—it turns out that zo ki'a doesn't mean "zo? Huh?" at all, but "The word ki'a." To ask "zo? Huh?", you'll have to resort to (wait for it) zo zo ki'a.

- Parenthetical remarks can go anywhere UI can—meaning pretty much anywhere in a Lojban sentence. With parentheses, just like with quotes, you need to know where the parenthesis starts, and where it ends. And just like quotes, the end-parenthesis terminator is going to be pretty hard to drop out. The normal Lojban parentheses are to and toi. So "This (no, I don't want another one!) apple is rotten" comes out in Lojban as:

  ti poi *to vi'onai do'u mi na djica lo drata toi* plise cu fusra

Vocabulary

cizra x_1 is strange/weird/deviant/bizarre/odd to x_2 in property x_3 (ka)

Exercise 4

Translate the following disfunctional dialogue.

1. .i zo to to mi ca tavla fo la lojban toi xamgu lenu tavla fo la lojban
2. .i xamgu ki'a
3. ni'o xu do nelci lai loglandias.kontrapositivos.
4. .i lai ki'a
5. .i mi to .e do xu toi gleki lenu te vecnu loi matcrflokati
6. .i do tavla lo ba'e cizra

Summary

In this lesson, we have covered lots and lots of little words:

- Attitudinal scales (NAI, CAI)

- Non–self-directed and empathic attitudinals

- Attitudinal questions (pei)

- Discursives (UI3)

- Erasing words and phrases (si, sa)

- Paragraphs (ni'o)

- Emphasis (ba'e)

- Single-word quotations (zo)

- Parentheses (to, toi)

Vocabulary

crida	x_1 is a fairy/elf/gnome/brownie/pixie/goblin/kobold [mythical humanoid] of mythos/religion x_2
dansu	x_1 (individual, mass) dances to accompaniment/music/rhythm x_2
dasni	x_1 wears/is robed/garbed in x_2 as a garment of type x_3
drata	x_1 isn't the-same-thing-as/is different-from/other-than x_2 by standard x_3; x_1 is something else
.e'e	attitudinal: competence – incompetence/inability
.ia	attitudinal: belief – skepticism – disbelief
krixa	x_1 cries out/yells/howls sound x_2; x_1 is a crier
lanli	x_1 analyzes/examines-in-detail x_2 by method/technique/system x_3 [process/activity]
milxe	x_1 is mild/non-extreme/gentle/middling/somewhat in property x_2 (ka); x_1 is not very x_2
sesi'u	sumti tcita: assisting... (sidju "help")
pensi	x_1 thinks/considers/cogitates/reasons/is pensive about/reflects upon subject/concept x_2
sisku	x_1 seeks/searches/looks for property x_2 among set x_3 (complete specification of set)
terdi	x_1 is the Earth/the home planet of race x_2; (adjective:) x_1 is terrestrial/earthbound
xalfekfri	inebriated, drunk (xalka 'alcohol' + fenki 'crazy' + lifri 'experience')
zirpu	x_1 is purple/violet [color adjective]

Exercise 5

Translate from Lojban. Remember, ka is the abstractor that specifies a quality (and is obligatory for the second place of sisku.)

1. ni'o ta'o la jan. milxe xalfekfri ki'u lenu klama lo drata barja

2. .i ta'onai la jan. cusku lu .i doi le pedro si pendo .e'uru'e mu'i ma do vi zvati li'u

3. .i la ranjit. cusku lu .i lenu mi kansa la djiotis. .e lo pendo be ri to mutce melbi .uasai toi li'u

4. .i la jan. lu .i mi lenu do .e re melbi cu kansa cu ba'e gleki doi pendo sa lenu do kansa re sa'e melbi cu gleki li'u

5. .i la ranjit. lu .i .e'epei zo'o do ca klama la jipci li'u

6. .i la jan. lu .i .audai do denpa lenu viska lenu mi dansu lenu si si la jipci vi .y. la jipci li'u

7. .i ranjit. lu .i ro da pe le dansydi'u co'a krixa zo pe'u vau ba'uru'e li'u

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8. .i jan. lu .i xu .iacu'i do ba'o cradi fo le crida li'u

9. to la ranjit. cu lanli loi se cradi sesi'u la nu sisku leka terdi bartu pensi toi

10. .i la ranjit lu .i .i'e ju'o lenu do tavla cu zdile li'u

11. .i la jan. lu .i je'e do'u .i'ese'i go'i li'u

Exercise 6

Translate into Lojban.

1. Only Susan doesn't know that Zhang knows Ranjeet. (Hint: trick question! The two instances of *know* do *not* translate to the same gismu!)

2. Susan: "Woah! You're here, and you're wearing purple, too!"

3. Zhang: "If I'd known you'd be here, I'd have worn nothing :-)" (*Nothing* in Lojban is 'zero somethings'.)

4. Jyoti: "Not only geeky, but insane." (Make up a fu'ivla for 'geeky', based on kulnu 'x_1 [mass of ideas, customs, skills, arts] is culture of nation/ethos x_2 (mass); x_1 is ethnic'. Assume (for now!) the place structure "x_1 is geeky".)

5. Ranjeet is very amused, and says "Probably!"

6. (Far away, an extraterrestrial intelligence sets off for Earth.) (You'll need a three-part tanru for this. And you've already seen it, if you've been good....)

Answers to exercises

Exercise 1

1. .uu is the most usual reaction. This is one meaning of English *Sorry!*

2. .u'u (again, unless you flout the dominant social norms.) This is the other meaning of English *Sorry!*

3. .e'uru'e, the "Eh, whatever" type of request.

4. .e'ucai, the "Begging on hands and knees" type of request.

5. .i'eru'e: yet another 'slacker' attitudinal.

6. .o'onai. In Lojban, anger is considered the opposite of patience: "losing your temper". The Buddha would presumably react with .a'ucu'i (indifference), and Christ with .io (love). Someone getting a thrill out of this would react with something more like .oinai (un-complaint, i.e. pleasure.)

Exercise 2

1. ba'u is the only discursive Lojban would tolerate here, as the Eiffel Tower, is, like, totally *not* 20 miles tall!

2.

   a. da'i

   b. ju'o "that would certainly be embarrassing" (or sa'e—"that would, in precise terms, be embarrassing.")

3.

   a. ta'onai ("getting back to what I was saying...")

   b. po'o ("this is the only relevant thing I'm doing.")

   c. ki'a (there's a wealth of attitudinals in this word, but ki'a is really the only relevant discursive.)

4.

   a. zu'u ("on the one hand..."; it might not be as elegant as the Classical Greek contrast clauses with *men* and *de*, but that's what it means.)

   b. zu'unai

   c. ji'a

   d. sa'e (or ba'ucu'i: presumably our hapless narrator isn't exaggerating here.)

Exercise 3

1. .i mi viska la djan.

2. .i mi catlu la djan.

3. .i mi catlu (What follows sa is a selbri; so it replaces the last selbri we've seen, as well as everything else up to sa, including the sumti, la djan.)

4. .i lenu vimcu loi lojbo valsi lo jufra cu nandu (You're telling me!)

5. .i mi .e la ranjit. cu zvati le barja ca lenu do zvati le gusta (The phrase following sa is the name la ranjit.; everything from that name on, i.e. cu zvati le barja, is deleted.)

Exercise 4

1. The word to (I am now speaking Lojban) is good for speaking Lojban.

2. Good?!

3. To change the topic: Do you like the (mass of) Loglandia Contrapositives?

4. lai?! (Not a commonly used article, after all.)

5. I (and you?) are happy to buy *flokati* rugs. (Note that xu, as a UI cmavo, specifically queries the word it follows; this is shorthand for asking "Do you too?")

6. You say *strange* things.

Exercise 5

1. (New Paragraph) Incidentally, Zhang is somewhat drunk, because he went to another bar.

2. Anyway, Zhang says "Pedro, I mean, friend, do you mind telling me what you're doing here?"

3. Ranjeet says "I'm with Jyoti and a friend of hers (really good-looking; what a win!)"

4. Zhang: "I, for you and two beautiful people accompanying, am *happy*, friend... I mean, for you accompanying two beautiful people (to put it precisely), am happy" (We can get away with "this sentence no verb" in Lojban. And let's not be too hard on Zhang, either, who has the sense to fix his Lojban grammar even in his elated state. He has tried to say "for you and two beautiful people being together", but kansa in Lojban corresponds to "you are together with two beautiful people": it is not reciprocal.)

5. Ranjeet: "You're now going to the *Chicken*—sure you can manage it? :-) "

6. Zhang: "You're just waiting to see me dance that, er, the *Chicken* at, uh, the *Chicken*." (The empathy attitudinal dai expresses desire, but it's a desire Zhang is projecting onto others. That's roughly what *just* is doing in the English: "You must be wanting it, waiting for me...". Zhang produces one too many lenus, so he has to delete his last one; note that lenu counts as two words!)

7. Ranjeet: "Everybody in the disco starts shouting 'Please do'—more or less." (Any resemblance to "Everybody in the house say 'Yeah'" is purely obscured by Ranjeet's pedantry. The attitudinal goes after vau, which you may remember from Lesson 5 is the terminator for a sentence; so the 'slight exaggeration' attitudinal applies to the whole sentence.)

8. Zhang: "Are you *really* done sending broadcasts to the pixies?" (Sacrificing Zhang's pretty good wordplay, considering his 'tired and emotional' state.)

9. (Ranjeet analyses radio transmissions for the *Search for Extraterrestial Intelligence*.) (Abstractions can be names just like simple sumti.)

> **Note:** When you search in Lojban, you search for something that fits some property, and so you name the *property* as x_2. That means that you don't say you're searching for good things, but for *goodness*— that is, you're searching by checking whether each thing you come across has goodness or not. This is sort of an extension of Lojban's fill-in-the-slot approach to questions: .i mi sisku leka ___ terdi bartu pensi .i *lo fange pe la mars.* cu terdi bartu pensi .i *lo fange pe la venus.* cu terdi bartu pensi .i *lo fange pe la vulkan.* cu terdi bartu pensi .i *la jan.* na terdi bartu pensi.

10. Ranjeet: "Good job! Certainly you talking is entertaining." (Or more colloquially, "It's fun to hear you talk.")

11. Zhang: "Yup, it is, isn't it!" (Spoken with some comical smugness, no doubt...)

Exercise 6

1. .i la suzyn. po'o na djuno ledu'u la ranjit. slabu la jan. (Some languages, like French and German, differentiate between knowing facts and knowing people. Some languages, like English, do not. No prizes for guessing which side of the divide Lojban is on. po'o follows la suzyn., since that's who it applies to.)

2. .i la suzyn. lu .i .uecai do vi zvati gi'e ji'a dasni loi zirpu li'u *or* .i la suzyn. lu .i .uecai do vi zvati .i je ji'a do dasni loi zirpu li'u (You can tone it down to .uesai, if you want.)

3. .i la jan. lu .i da'i mi djuno ledu'u do vi zvati kei nagi'a dasni noda zo'o li'u *or* .i la jan. lu .i da'i mi djuno ledu'u do vi zvati .inaja mi dasni noda zo'o li'u. In fact (for reasons we won't go into here), things turns out to be less problematic for hypothetical *if*-statements if you use a solution based on nibli or ni'i: .i la jan. lu .i lenu mi da'i djuno ledu'u do vi zvati cu nibli lenu mi dasni noda zo'o li'u, or .i la jan. lu .i mi da'i djuno ledu'u do vi zvati .i seni'ibo da'i mi dasni noda zo'o li'u

4. la djiotis. lu .i kulnrgiki po'onai gi'e ji'a fekypre li'u (*But* here doesn't contradict expectation; it corroborates it. So in this case *but* actually means 'also'! You could in fact add *also* or *too* in the English sentence. Some languages have different words for the two types of *but*: German, for instance, would here use *sondern* instead of *aber*.)

5. .i la ranjit. mutce se zdile gi'e cusku zo la'a (or lu .i la'a go'i li'u)

6. to vuku lo terdi bartu pensi co'a klama la terdi toi *or* to lo terdi bartu pensi vu co'a klama la terdi toi (You could optionally put an .i after to, but you don't have to: there's no danger of the sentence within parentheses being merged in with the sentence before it.)

Chapter 14. Why didn't I think of that before? More connectives

We have already seen in Lesson 11 several Lojban connectives described. This lesson rounds off discussion of connectives, with three additional types. First, we consider forethought connectives: these are used to identify the logical relation between two terms by being placed in front of the first term, rather than in between the two. Then, we look at some more non-logical connectives—which may prove more useful than you might have expected, especially in a 'logical' language. Finally, we look at connectives used to structure tanru—in particular, how to group gismu together within tanru.

Forethought connectives

As we've already seen, there are some things odd about the Lojban logical connective for IF. One oddity we haven't touched upon is that you realise that there's a conditional going on only halfway through. Recall what a typical instance of IF looks like:

> .i mi djuno ledu'u do vi zvati .inaja mi dasni noda

You read the first sentence, and everything goes swimmingly: "I know that you're here." Then, shazam! you get the connective: "IF that were the case, I would wear nothing." You didn't know in advance that the first sentence was going to be an IF. This is unlike the case in English (and natural languages in general), where the *if* comes right at the start of the first sentence, and gives you plenty of warning about what's coming up.

The problem here is, the logical version of IF *denies* what comes before it. So in effect, you're getting the first statement, quite normally, and then the surprise: "Either *that*'s not true, or *this* is true." Things are just as bad for other connectives denying what comes before them. For instance, na.e is a perfectly reasonable connective:

> mi djica loi bakni na.e loi jipci
> I want not the beef, but the chicken.

But look at what the Lojban is actually saying:

> I want the beef—NOT! and the chicken.

There was a vogue in the '90s of putting NOT! at the end of sentences in American English (see *Wayne's World*.) This was a joke, and the reason it was a joke is that saying a sentence isn't true *after you've already said it* isn't exactly being helpful.

So if we're going to use logical connectives in Lojban, and are obligated to pull NOT!-tricks like this, the Lojban listener can understandably get frustrated. Once again, though, Lojban has an answer. With **forethought connectives**, you can indicate the logical relationship between two terms *in front of* the first term. You still need a word separating the two terms, to show what is being logically connected; but now you know in advance what that logical connection is.

If sumti are involved, the forethought connective is formed by placing **g** in front of the vowel indicating the logical relationship. The two sumti are then connected with the leftover g-word, **gi**. So the forethought version of **mi .e do** is

> ge mi gi do

Here, **ge** means that the two sumti coming up are connected with AND, while **gi** indicates that what follows is the second sumti in the relation. (These forethought connectives belong to selma'o GA.)

The real usefulness of these forms comes out in the NOT!-connectives we've just seen. If you want to give some warning when choosing the chicken instead of the beef, you can now say

> mi djica *genai* loi bakni *gi* loi jipci

(Forethought connectives can be followed by **nai**, just like their afterthought counterparts.) If you wanted to say "beef, not chicken", you would put **nai** after the **gi**:

> mi djica ge loi bakni ginai loi jipci

If you're connecting bridi, as it turns out, you still use selma'o GA. If you don't follow GA + sumti immediately by **gi** and another sumti, then Lojban grammar assumes that you're connecting not sumti any more, but bridi. So our forethought version of Zhang's statement of wishful thinking is:

> .i *ganai* mi djuno lenu do vi zvati *gi* mi dasni noda

You'll notice that there is no second **.i** here. Two bridi connected by GA belong to the same sentence; we already know from the grammar that what's coming up after the **gi** is a separate bridi, so we don't need to separate it out with **.i**.

> **Tip:** This can actually turn out handy in beating Lojban precedence. For example, remember in Lesson 10 that we gave two sentences, and their logical conclusion:
>
> > .i la flufis. ractu .ije ro ractu na'e ze'u jmive .i la flufis. seni'i na ze'u jmive
>
> We should be able from that to say
>
> > .i la flufis. ractu .*ije* ro ractu na'e ze'u jmive .*iseni'ibo* la flufis. na ze'u jmive
>
> right? Actually, no we can't: **bo** has the function of connecting sentences through sumti tcita, because it connects sentences on its own. And when it does, it connects them tighter than **.ije** does. This means that **.iseni'ibo** connects only to the immediately preceding sentence—not to the preceding sentence pair! So Fluffy's death is presented as a consequence of rabbits not living long—not a consequence of *both* rabbits not living long *and* Fluffy being a rabbit.
>
> However, if we put the two bridi in a single sentence, then none of this is an issue: the conclusion will attach to both bridi, but will still attach to a single sentence:
>
> > .i *ge* la flufis. ractu *gi* ro ractu na'e ze'u jmive .*iseni'ibo* la flufis. na ze'u jmive

There is also a forethought connective for tanru, corresponding to JA: these are the connectives belonging to selma'o GUhA, and are formed by placing **gu'** in front of the connective vowel (connecting the second tanru with **gi**.) So if we want to say that Susan fancies men that are, if funny, then also handsome, the afterthought version is

la suzyn. cinynei ro melbi naja xajmi nanmu

To make this slightly (but only slightly!) more comprehensible, we can put this in forethought mode:

la suzyn. cinynei ro *gu'anai* melbi *gi* xajmi nanmu

There are no forethought versions of bridi-tail connectives. In practice, however, two bridi connected by GA can be bridi-tails just as easily as full bridi: there is no real meaning distinction between the two.

Exercise 1

Give sentences using forethought connectives instead of the afterthought connectives used below.

1. .i la djiotis. nelci loi cidjrkari .a loi nanba

2. .i la djiotis. nelci loi cidjrkari .iju la djiotis. citka loi cidjrkari

3. .i la djiotis. nelci ju citka loi cidjrkari

4. .i la djiotis. nelci loi cidjrkari gi'e xebni loi zirpu

5. .i la djiotis. .onai la suzyn. djuno ledu'u la jan. zvati jonai tadni

6. .i la djiotis. nelci loi cidjrkari .a loi nanba .e loi jisra (Remember: Lojban nests to the left!)

7. .i la djiotis. .onai la suzyn. djuno ledu'u la jan. zvati .inaja la jan. se denpa

Non-logical connectives

We have already seen one non-logical connective, joi. By non-logical, we mean that the truth of the combined terms does not depend on the truth of the individual components. It may not be true that la kris. bevri le pipno "Chris carries the piano", or la pat. bevri le pipno "Pat carries the piano", for example (to revisit an example from Lesson 4), even if it is true that la kris. joi la pat. bevri le pipno "Chris and Pat carry the piano."

Lojban has several other non-logical connectives; we'll cover the most frequently used ones:

- ce joins sumti (usually) into a **set**, rather than a mass like joi.

   We haven't said much about sets; and because sets are fairly abstract entities, as entities go, you don't often have occasion to talk about them. While you can say mi viska loi remna "I saw a mass of people", for example (you saw them as a bunch), you aren't likely to say mi viska lo'i remna "I saw a set of people."

   But as we have seen in the exercises, some gismu need sets in order to work. simxu, for example, takes as its x_1 a set. This is because the group of things or people in a mutual relationship needs to be well-defined: you've got to be able to say with certainty whether someone is involved in the relationship or not. The point of sets is that you can categorically say x belongs to the set or doesn't. The membership of masses is left much more nebulous, so saying "a bunch of people talk to each other" doesn't make as definite a statement. The same goes for cuxna 'choose': what you choose from in Lojban (x_3) is a set, because you normally have to be certain what belongs in the group you're choosing from, and what doesn't.

   So when you form a set out of several sumti, you connect them with ce. To say "Jyoti, Susan and Ranjeet talk to each other", you would say something like

> la djiotis. ce la suzyn. ce la ranjit. simxu lenu tavla

or

> la djiotis. ce la suzyn. ce la ranjit. tavla simxu

Similarly, if you pick one of Jyoti, Susan or Ranjeet, you would say

> mi cuxna pa da la djiotis. ce la suzyn. ce la ranjit.

- If you are referring to an **ordered set**—a sequence of things, in other words—then you use ce'o to place things in order. This gets invoked when you're compiling a list for whatever reason; for example, the Lojban alphabet is a sequence, and you'd list it as

> .abu ce'o by. ce'o cy. ce'o dy. ce'o .ebu ...

and so on. This is what liste 'list' and porsi 'sequence' expect as their x_1 sumti.

- fa'u carries the meaning of *respectively*: it relates pairs of sumti **cross-wise**. If I were to say

> la suzyn. .e la djiotis. tavla la jan. .e la ranjit.

that means that both Susan and Jyoti talk to both Zhang and Ranjeet. If I want to say that Susan only talked to Zhang, and Jyoti only to Ranjeet (i.e. "Susan and Jyoti talked to Zhang and Ranjeet, *respectively*"), a logical connective is not useful. Instead, I would use fa'u to connect both pairs of sumti:

> la suzyn. fa'u la djiotis. tavla la jan. fa'u la
> ranjit.
> Susan, cross-wise with Jyoti, talks to Zhang, cross-wise with Ranjeet.

- If you're talking about a range, you use bi'i to describe the range between the first thing and the second thing; so it corresponds to English *between*. If you want to say "I dropped my pencil somewhere between the office and the bar", you would describe the location "somewhere between the office and the bar" as le briju ku bi'i le barja. The whole sentence would come out as:

> mi falcru lemi pinsi *vi le briju ku bi'i le barja*

> ## Warning
>
> This selma'o, BIhI, like selma'o JOI to which all non-logical connectives belong, can join both sumti and selbri. So Lojban grammar requires you to terminate a sumti before JOI with ku.

- If the order of the things defining the range matters, you use bi'o. This corresponds to *from... to...* in English (though *between* covers both ordered and unordered intervals.) For example, "from 1 PM to 2 PM" is an interval lasting an hour; but "from 2 PM to 1 PM" would normally be interpreted as a 23-hour interval (1 pm the following day), since times in English are assumed to be presented in order. Lojban follows suit with li pavo lo'o bi'o li paci as a 23-hour interval. If I said li pavo lo'o bi'i li paci, the order of the two times would not matter at all; so I could still be talking about a one-hour interval instead.

> **Tip:** The selma'o BIhI needs *all* sumti terminated before it, not just normal sumti with le or lo. Since numbers are also sumti, you have to use the terminator corresponding to li, which is lo'o.

> **Note:** You can use non-logical connectives in forethought mode, too: the forethought connective is the non-logical connective followed by gi. So the forethought version of la kris. joi la pat. is joi gi la kris. gi la pat.

Exercise 2

Which logical or non-logical connective would you use to translate the emphasised phrases in the following sentences?

1. The murderer is one of *Colonel Mustard, Professor Plum, or Miss White*.

2. The Greek Dialect Dictionary has published five volumes, *from alpha to delta*.

3. See the Lojban Reference Grammar, *pp. 22–24*.

4. A dactyl consists of *two short syllables, one long syllable*; an anapaest consists of *one long syllable, two short syllables*.

5. Out of *Zhang, Susan, Jyoti and Ranjeet*, Zhang is the purplest.

6. *Jyoti and Susan* discuss Zhang's fashion sense.

7. *Ranjeet and Zhang* are wearing shirts.

tanru grouping

The default grouping in Lojban is leftwards. This means that, if you have three things connected together in Lojban, the first two go together before you join in the third. For example, la djiotis. .e la suzyn. .onai la ranjit means not "Jyoti and either Susan or Ranjeet", but "Either Jyoti and Susan, or Ranjeet."

Does the distinction matter? Depends on your background; programmers, for example, are often driven to distraction in making sure their logical connectives work out in the right order (usually by copious use of brackets.) But there is often a real difference in meaning; the first interpretation given above describes a couple, for example, but the second doesn't.

The grouping of terms in Lojban grammar is particularly important when it comes to tanru. The way gismu group together in a tanru determines what that tanru means. For example,

> *bad music magazine*

has in English two interpretations: a bad magazine about music, or a magazine about bad music. In Lojban, its equivalent

> xlali zgike karni

has *only* the interpretation 'magazine about bad music', because the first two gismu (xlali zgike 'bad music') group together first. So it is important to be able to modify the grouping of gismu, so that we can make sure the tanru means what we actually intend it to mean. For that reason, Lojban has a couple of mechanisms in place for making tanru group together properly.

If you are a programmer, or a mathematician, you have long ago made brackets your trusted aide in dealing with this kind of problem. So you won't be surprised to hear that Lojban has cmavo that act as

parentheses, grouping gismu together. Those cmavo are not to and toi: those are reserved for your own parenthetical comments, and you never know when you might want to insert a snide remark in the middle of a particularly arduous tanru. Rather, the cmavo you need are ke, to open the grouping bracket, and ke'e, to close it. So if xlali zgike karni means a *{bad music} magazine*, then a *bad {music magazine}* is in Lojban:

> xlali *ke* zgike karni *ke'e*

Now, ke'e is a terminator, like all the other terminators we've seen: ku, kei, ku'o, vau, and so on. And like those terminators, it can be dropped out when no ambiguity will result. So if we know we're at the end of the tanru, having reached the end of the selbri (because we've just bumped into a sumti, say, or a new sentence), then we also know that any open ke brackets must now close; so ke'e can be omitted. This means you won't necessarily see a ke'e 'close bracket' after each ke 'open bracket':

> .i mi pu zi te vecnu lo xlali *ke* zgike karni .i to'e zanru la'o gy. Eurythmics gy.
> I just bought a bad {music magazine [}]. It dissed the Eurythmics.

That's one way of grouping together gismu in tanru. The other way is to use a cmavo we've already seen in a related role: bo. When bo appears between two gismu, it means that those gismu group together more tightly than anything else. So an alternative way of saying *bad {music magazine}* is

> xlali zgike *bo* karni

This means that zgike bo karni should count as a unit, to which the description xlali 'bad' applies.

bo does the same job with sentences (.i bo, .i ba bo, .i seni'i bo all attach to only the preceding sentence), with connectives (.e bo, gi'e bo), and so on. So if I want to say "Jyoti and either Susan or Ranjeet", I would say

> la djiotis. .e la suzyn. .onai*bo* la ranjit.

For that matter, ke can also be used with connectives (though not with sentences; they have their own kind of bracket, tu'e–tu'u.) So I could also say

> la djiotis. .e *ke* la suzyn. .onai la ranjit. *ke'e*

—where in most cases the ke'e may be left out.

> **Tip:** You can't start a run of sumti with ke, for reasons of Lojban grammatical pedantry we won't go into here.

> **Tip:** An advantage of putting the connective before the two terms, or after the two terms, is that you can completely avoid this kind of ambiguity. The more geeky among you will have heard of Reverse Polish notation: this does arithmetic by placing the operators *after* the numbers they operate on (e.g. `(2 + 3) × 5` becomes `2 3 + 5 ×`), and so avoids having to use brackets. The same holds for Lojban forethought connectives: "Jyoti and either Susan or Ranjeet" is

> > *ge* la djiotis. *gi* gonai la suzyn. gi la ranjit.

> and "Either Jyoti and Susan, or Ranjeet" is

> > *gonai* ge la djiotis. gi la suzyn. *gi* la ranjit.

Since there is no ambiguity, you won't need **bo** or **ke** with forethought connectives.

Exercise 3

Gloss the following into English, using brackets to indicate their structure. For instance:

> xlali zgike karni
> ((bad music) magazine)

1. xlali bo zgike karni

2. xlali zgike bo karni

3. ke xlali zgike karni

4. ke xlali zgike bo karni

5. xlali ke zgike ke karni ke tcidu

6. xlali zgike bo karni tcidu

7. xlali zgike ke karni tcidu

8. ke xlali zgike ke'e karni tcidu

9. xlali ke zgike karni ke'e tcidu

10. ke xlali zgike bo karni ke'e tcidu

Summary

In this lesson, we have covered:

- Forethought logical connectives (GA, GUhA)

- Non-logical connectives (ce, ce'o, fa'u, bi'i, bi'o)

- Uses for sets and sequences

- tanru-grouping cmavo (ke, ke'e, bo)

Vocabulary

cabdei	today (**cabna** 'now' + **djedi** 'day')
certu	x_1 is an expert/pro/has prowess in/is skilled at x_2 (event/activity) by standard x_3
cfipu	x_1 (event/state) confuses/baffles x_2 [observer] due to [confusing] property x_3 (ka)
ckafi	x_1 is made of/contains/is a quantity of coffee from source/bean/grain x_2
ckule	x_1 is school/institute/academy at x_2 teaching subject(s) x_3 to audien./commun. x_4 operated by x_5
frumu	x_1 frowns/grimaces (facial expression)
glare	x_1 is hot/[warm] by standard x_2
gusni	x_1 [energy] is light/illumination illuminating x_2 from light source x_3
jamfu	x_1 is a/the foot [body-part] of x_2
ladru	x_1 is made of/contains/is a quantity of milk from source x_2; (adjective:) x_1 is lactic/dairy
moi	convert number to ordinal selbri; x_1 is (n)th member of set x_2 ordered by rule x_3
ni	abstractor: quantity/amount abstractor; 'the amount that...'
skapi	x_1 is a pelt/skin/hide/leather from x_2
stedu	x_1 is a/the head [body-part] of x_2
sodva	x_1 is made of/contains/is a quantity of a carbonated beverage/soda of flavor/brand x_2
traji	x_1 is superlative in property x_2 (ka), the x_3 extreme (ka; default ka zmadu) among set/range x_4

vimcu	x_1 removes/subtracts/deducts/takes away x_2 from x_3 with/leaving result/remnant/remainder x_4
zbasu	x_1 makes/assembles/builds/manufactures/creates x_2 out of materials/parts/components x_3
zmadu	x_1 exceeds/is more than x_2 in property/quantity x_3 (ka/ni) by amount/excess x_4

Exercise 4

Translate from Lojban.

1. .i la jan. traji leka zirpu kei fo la jan. ce la ranjit. ce la djiotis. ce la suzyn.

2. .i ji'a la jan. gonai zmadu la ranjit. leni certu lenu dansu gi xalfekfri caku

3. .i la suzyn. cu bevri loi birje gi loi sodva fa'u gi la djiotis. fa'u la jan.

4. .i la jan. gu'u sutra gi djica pinxe lei sodva

5. .i la ranjit. cusku lu .i pe'ipei do baza djica loi glare cnino bo se zbasu ckafi li'u

6. .i la jan. cusku lu .i cnino skapi ki'a .i le ca skapi be mi cu stedu bi'i jamfu melbi li'u

7. .i la ranjit. krixa lu .i ckafi li'u

8. .i la jan. se cfipu catlu gi'e ba ke cmila gi'e cusku lu .i na go'i doi bebna .i mi pinxe loi sodva li'u

Exercise 5

Translate into Lojban. Use only forethought connectives.

1. Jyoti, who is holding and drinking coffee, speaks to Susan.

2. "It's good that Zhang is here, and that you met him today."

3. Susan says "Tell me about Ranjeet, not Zhang."

4. "Is he an old schoolfriend of yours?"

5. Just then, Susan hears *Superfreak*, the first out of the songs which are danced to (= to dance to.)

6. Susan shouts "Yay!", and she and Ranjeet start dancing.

7. Jyoti stares at Zhang, who is smiling and building a chicken out of pretzels, and frowns. (Make a fu'ivla for *pretzel* based on nanba 'bread'. Be careful, by the way: is Zhang *really* constructing a chicken?)

8. An alien space vehicle arrives, shines light, and removes the four friends from the disco. (Use ce'o to join the steps in this somewhat unlikely sequence of events.)

Answers to exercises

Exercise 1

1. .i la djiotis. nelci ga loi cidjrkari gi loi nanba

2. .i gu la djiotis. nelci loi cidjrkari gi la djiotis. citka loi cidjrkari

3. .i la djiotis. gu'u nelci gi citka loi cidjrkari

4. .i la djiotis. ge nelci loi cidjrkari gi xebni loi zirpu

5. .i gonai la djiotis. gi la suzyn. djuno ledu'u la jan. gu'onai zvati gi tadni (or: .i go la djiotis. ginai la suzyn. djuno ledu'u la jan. gu'onai zvati gi tadni)

6. .i la djiotis. nelci ge ga loi cidjrkari gi loi nanba gi loi jisra (You're joining loi cidjrkari .a loi nanba to loi jisra)

7. .i ganai go la djiotis. ginai la suzyn. djuno ledu'u la jan. zvati gi la jan. se denpa

Exercise 2

1. **ce**: You are picking a murderer out of a group, so the group you are picking from needs to be well-defined. That makes it a set.

2. **bi'o**: The dictionary does not contain the letters alpha and delta, of course, but all the Greek dialect words between those two letters; so we are dealing with a range. And however slow the *Academy of Athens* has been in getting the volumes out (67 years and counting), it has still done them in alphabetical order; so the order of the interval matters.

3. **bi'o**: This is still a range, as you are being asked to consult the text contained *between* those pages (you will also be looking at page 23.) The pages are also assumed to be in numerical order, so **bi'o** is preferred (although **bi'i** would not be incorrect: even if you looked through the pages backwards, you would still end up looking at the same pages.)

4. **ce'o**: Even if you don't know what on earth a dactyl and an anapaest is (no, they are not components of dinosaurs), you can tell from the definition that the order of short and long syllables makes a difference. So the two terms involve types of sequences.

5. **ce**: You are still picking something out of a well-defined group, so Lojban uses a set. In fact, all superlatives in Lojban ('fastest', 'smartest', 'most likely to dance the funky chicken') involve sets in the same way.

6. **joi**: Discussion is a group effort, and it does not involve ranges of people or sequences of people. We *could* speak of sets of people involved in discussion, if we assumed that you're definitely either in the discussion or out of it; but **joi** avoids having to commit to such a clearcut distinction.

7. **.e**: This is a perfectly logical connective: what Ranjeet and Zhang do with their shirts, they do independently.

Exercise 3

1. ((bad music) magazine)

2. (bad (music magazine))

3. (((bad music) magazine))—The **ke** spans the entire **tanru**, so it doesn't make much of a difference in the meaning.

4. ((bad (music magazine)))

5. (bad (music (magazine reader)))

6. ((bad (music magazine)) reader)—**bo** binds **zgike** and **karni** together, so this becomes a three-part **tanru**, which still binds leftwards.

7. ((bad music) (magazine reader))

8. (((bad music) magazine) reader)—the **ke**–**ke'e** pair is merely reproducing the standard structure of a **tanru**.

9. ((bad (music magazine)) reader)

10. ((bad (music magazine)) reader)

Exercise 4

1. Zhang is the most purple out of Zhang, Ranjeet, Jyoti and Susan. (Literally, "Zhang is superlative in purpleness among..." You would normally use a **lujvo**—in this case **ziryrai** 'purplest'—to cut the sentence down to a manageable size: **la jan. ziryrai la jan. ce la ranjit. ce la djiotis. ce la suzyn.**.)

2. Also, Zhang either dances better than Ranjeet, or drunk (at that time). (*Or*: when he's not drunk.) (Literally, again, the Lojban gives more detail: "Zhang exceeds Ranjeet in the amount by which he is expert at dancing." And

here, too, you can use a lujvo to make the sentence somewhat simpler: **.i la jan.** *cremau* **la ranjit. lenu dansu**, from **certu zmadu** 'more expert'.)

3. Susan brings Jyoti a beer, and Zhang a soda. (Or soft drink, or pop, or coke, or cordial, or lolly water—whatever your local word for carbonated beverages is.)

4. Zhang quickly (whether or not willingly) drinks the soda. (Remember that **gu'u sutra gi djica** means the same as **sutra ju djica**: it is the willingness, rather than the quickness, that is irrelevant.)

5. Ranjeet says "Don't you think you'll eventually want some hot, freshly-brewed coffee?" (As the punctuation in the English shows, the Lojban words for *freshly-brewed*—literally the more prosaic 'newly constructed'—go together. If the **bo** was not there, Ranjeet would be saying something like the coffee being novel in that it is hot (*{hot [kind of] new} made coffee*); perhaps the establishment doesn't normally have much of a water heating process, so any actual hot coffee would be a sensation.)

6. Zhang says "New skin? Huh? My current skin is head-to-foot beautiful!" (Zhang has misheard Ranjeet over the thumping music, not to mention the buzz in his own head. As this shows, you can use non-logical connectives to join together **selbri** as well as **sumti**: *from head to toe* snuck inside a **tanru** is as good a place as any for it.)

7. Ranjeet shouts "Coffee!"

8. Zhang looks confusedly, and afterwards (then) laughs and says "No, silly! I'm drinking soda!" (Ranjeet's exclamation can also be interpreted as an observative—"Look! Coffee!", especially to a mind as addled as Zhang's.)

> **Note:** Just like **.i**, **gi'e** can be followed by a tense to indicate when the second term happened relative to the first term. If **gi'e** means 'and', then **gi'e ba bo** means 'and later', or 'and then'. We saw someting similar with **gi ca bo** above.
>
> But **bo** still binds immediately to what went before it. So if we left things as they were, we would be saying something like "Zhang looks confusedly and then laughs. He also says..." In that case, it wouldn't necessarily be clear that he spoke *after* he stared at Ranjeet, dumbstruck: since logical AND says nothing about the time when things happen, that sentence would still be true even if Zhang had made his perceptive remark three days earlier.
>
> What we want is for the *and later* to apply to *both* him laughing and him talking. To force this to happen, we use the bracket **ke** instead of **bo** (**ke** can also take tense): "Zhang {stares}, *and then* {laughs and says 'No, silly...'}" You might also want to refer to p. 364 of *The Complete Lojban Language*.

Exercise 5

1. **.i la djiotis. noi gu'e jgari gi pinxe loi ckafi cu tavla la suzyn.**

2. There are several ways you can say this:

   - **.i lu .i lenu ge la jan. vi zvati gi do penmi ri ca le cabdei cu xamgu li'u**

   - **.i lu .i ge lenu la jan. vi zvati gi lenu do penmi ri ca le cabdei cu xamgu li'u**

   - **.i lu .i xamgu fa lenu ge la jan. vi zvati gi do penmi ri ca le cabdei li'u**

   - **.i lu .i xamgu fa ge lenu la jan. vi zvati gi lenu do penmi ri ca le cabdei li'u**

3. **.i la suzyn. cusku lu .i ko tavla mi ge la ranjit. ginai la jan.**

4. **.i xu slabu ckule bo pendo do li'u** *or* **.i xu slabu ke ckule pendo do li'u** (**slabu ckule pendo** would have meant 'friend from an old school' instead.)

5. **.icazibo la suzyn. tirna la'o gy. Superfreak gy. no'u le pamoi be le'i selsanga poi se dansu** *or* **.icazibo la suzyn. tirna la SUperfrik. noi pamoi le'i selsanga poi se dansu**

6. .i ge la suzyn. krixa zo .ui gi joigi la suzyn. gi la ranjit. co'a dansu (if you want to emphasise that they're dancing together) *or* .i ge la suzyn. krixa zo .ui gi ge la suzyn. gi la ranjit. co'a dansu (if you don't.)

7. .i la djiotis. ge catlu la jan. noi ge cisma gi zbasu le jipci loi nanbrpretsele gi frumu (le jipci 'that which I describe as a chicken' is the easiest way around the fact that Zhang's incipient masterpiece of contemporary art is not an actual flesh-and-blood, clucking chicken. Lojban being the logical language it is, you'll probably find people insisting on the distinction, and saying things like 'facsimile of a chicken' or 'chicken-like thing'.

   Like we said, the final vowel of nanbrpretsele is pretty much up to you—until there's a standard dictionary fu'ivla for it, at least.)

   > **Note:** Strictly speaking, neither le jipci nor lo jipci actually work. le is **non-veridical** ("that which I describe as"), but it is also specific (the speaker, at least, must have a specific referent in mind—which is not necessarily the case here.) lo is **veridical**, so it at least raises the expectation that the chicken clucks and lays eggs—although many Lojbanists would allow for metaphorical extension, and say that a chicken made out of pretzels is still a chicken, of the species *Chickenus Breadproductus Pretzelus*. (Remember: all chickens have to have a species or breed (lo se jipci) to be called le jipci! Compare *The Complete Lojban Language*, Chapter 6.2, and the example of teddybears.)

8. .i lo fange kensa bo xe klama ce'ogi mo'u klama gi ce'ogi te gusni gi vimcu le vo pendo le dansydi'u (Although fange ke kensa xe klama would also have been fine. fange kensa xe klama would have meant a vehicle intended only for alien space—which can't be right, since the spaceship has just paid planet Earth a surprise visit. *Way* surprising...)

Chapter 15. Singled out: Isolating specific places

In this lesson, we look at three features of Lojban grammar which normally get relegated to the 'too-hard' basket. Each of them involves singling out a particular sumti from a bridi, as being somehow more special than the other sumti. The full logical machinery associated with these 'singlings out' can get rather formidable, which is why Lojbanists tend to regard these features with some degree of awe. Hopefully we'll present these concepts to you with a minimum of fuss, in enough detail that you can go about using them comfortably in your Lojban.

Indirect questions

A Lojban question word is a request to "fill in the slot", *wherever* it appears in a sentence. So

> *ma* cilre la lojban.

is the question "*Who* is learning Lojban?" By the same token,

> mi djica lenu *ma* cilre la lojban.

is the question "I want *who* to learn Lojban?"—or, in actual English (since English likes to have its question words at the start of the sentence), "*Who* do I want to learn Lojban?" And

> mi pu cusku lesedu'u *ma* cilre la lojban.

is "I said *who* is learning Lojban?"—i.e. "*Who* did I say is learning Lojban?"

There's no reason du'u should behave any differently than nu, let alone sedu'u; so

> mi djuno ledu'u *ma* cilre la lojban.

means "I know that *who* is learning Lojban?"—i.e. "*Who* do I know is learning Lojban?"

What it does not mean is "I know who is learning Lojban"—as in "I know the identity of the person learning Lojban." In a construction like that in English, you are not asking a real question; that's why this is called an **indirect question**. Instead, you are saying that you already *know* the answer to the question. You can tell that the word *who* in that statement is not a request for information, because it is not at the start of the sentence, there's no question mark (or questioning intonation), and the question word is not being emphasised.

Lojban does not use any of these workarounds; a question word is a question word in Lojban, wherever it happens to end up in the sentence. This means that mi djuno ledu'u *ma* cilre la lojban. can never be an indirect question: it is asking for an answer. (It is asking for an answer even if you're doing it rhetorically, although that's the kind of behaviour which Lojbanists—a level-headed bunch by most accounts, at least when they're speaking in Lojban—might not necessarily appreciate.) So what to do?

Well, let's look at what you do know. Let's say the person learning Lojban is Fred. If I ask you the question ma cilre la lojban., you know what value to fill in the ma slot with: la fred. So you could just say

mi djuno ledu'u la fred. cilre la lojban.

For whatever reason, however, you're not telling me the actual name—totally within your prerogative. In fact, I could say about you that "*You* know who is learning Lojban"—but because I don't know it, I have no name to fill in the 'who' slot with.

So you know that *someone* is learning Lojban: do djuno ledu'u zo'e cilre la lojban. And you can fill in the value of zo'e, even though I can't. What we want is some word that would tell us "the answer that goes here isn't being said, but it is known anyway." That word is the UI cmavo, kau. So we can say:

mi djuno ledu'u zo'e *kau* cilre la lojban.
I know someone is learning Lojban, and I know who it is.

do djuno ledu'u zo'e *kau* cilre la lojban.
You know someone is learning Lojban, and *you* know who it is.

kau says that the value of the word it attaches to is known—whatever that word might be. So in fact, you can put it next to a question word, and it will cancel out the question word's force. mi djuno ledu'u *ma kau* cilre la lojban. means exactly the same as mi djuno ledu'u zo'e *kau* cilre la lojban.—and it has the advantage of looking just like the indirect questions we're already familiar with.

> **Tip:** Question words have the advantage that they are fairly devoid of content, so they don't make any presumptions you might not welcome. For example, if I know that no-one is learning Lojban, I can say mi djuno ledu'u makau cilre la lojban.; but I cannot say mi djuno ledu'u dakau cilre la lojban.—because da by default means 'at least one entity'.

Since kau belongs to selma'o UI, you can place it pretty much anywhere. In particular, anywhere you can put a question word in Lojban, you can turn it into an indirect question by adding kau. So you can say "I know how many people are learning Lojban", as

mi djuno ledu'u *xo kau* prenu cu cilre la lojban.

(Remember, xo is the question word for numbers.)

You can even make indirect questions of Lojban's more exotic question words. For example, in Lesson 11, the waiter asks Jyoti and Susan lanme je'i bakni "lamb or beef?" Once they answer, he knows whether they want to eat lamb or beef; in Lojban,

ba'o lenu la djiotis. .e la suzyn. spuda kei le bevri cu djuno ledu'u re ra djica lenu citka loi lanme *je'i kau* bakni

Vocabulary

farna	x_1 is the direction of x_2 (object/event) from origin/in frame of reference x_3
gunro	x_1 rolls/trundles on/against surface x_2 rotating on axis/axle x_3; x_1 is a roller
rokci	x_1 is a quantity of/is made of/contains rock/stone of type/composition x_2 from location x_3
sepli	x_1 is apart/separate from x_2, separated by partition/wall/gap/interval/separating medium x_3
simsa	x_1 is similar/parallel to x_2 in property/quantity x_3 (ka/ni); x_1 looks/appears like x_2

Exercise 1

Express the following indirect questions in Lojban. Use Lojban question words to translate the English question words.

1. I want to know when you will talk to me.

2. I don't know why you don't talk to me.

3. I've said who I thought was a fool.

4. Tell me where the beer is.

5. You said who I should give the book to.

6. Tell me how does it feel when you're on your own with no direction known like a rolling stone. (Not only is there a profusion of Dylan here, but this is kind of a trick question. But do translate it as an indirect one, anyway.)

Properties

We have seen, here and there, instances of Lojban expressions of properties. Lojban treats properties as abstractions, introduced by ka. There is nothing controversial about that; properties are things you can talk about (sumti), which involve relationships and characteristics (selbri.) So if xendo means 'kind', for instance, le ka xendo refers to 'kindness'.

The thing about properties, though, is that they are properties *of* something. They are associated, not just with a selbri, but with a particular place of the selbri. For example, kindness is not just le ka xendo, but the property of someone displaying kindness—as a characteristic of that someone. In other words, not just le ka xendo, but le ka ___ xendo, where ___ stands in for that 'someone'.

As a further example, consider influence and susceptibility. Both involve the relationship expressed in Lojban as xlura:

> x_1 (agent) influences/lures/tempts x_2 into action/state x_3 by influence/threat/lure x_4

So the Lojban for influence is le ka xlura. And the Lojban for susceptibility is... le ka xlura? Strictly speaking, yes: both properties involve the same bridi, xlura.

But obviously, we can't have the same expression for both influence and susceptibility; we have to have a way of highlighting the place in the bridi we are interested in. Though the two properties involve the same bridi, they focus on different places of that bridi. Influence is the property associated with the x_1 of xlura, the influencer. Susceptibility is the property associated with the x_2 of xlura, the influencee. So how do we say that in Lojban?

Lojban's solution to this problem is fairly similar to Lojban's approach to questions, as it turns out. Remember in Lesson 13 that the search for extraterrestrial intelligence was, in terms of Lojban, a search for the value to fit in the slot

> leka ___ terdi bartu pensi

By the same token, influence is a property of things that fit into the x_1 place of xlura; so you can think of influence as leka ___ xlura. If we know that mi fits into the slot, we have 'my influence'; if we know that

la fred. fits into the slot, we have 'Fred's influence'. And susceptibility is a property of things that fit into the x_2 place of xlura; so you can think of susceptibility as le ka xlura ___ (or le ka ___ se xlura.)

Lojban has a word for that slot associated with properties. It isn't ma, because you're not asking someone what fills the slot; you're just pointing out that there's a slot there that can be filled. It isn't ke'a either, because ke'a refers back to something you've already expressed as a sumti (though you might think of a relative clause as a property belonging to that sumti.) Property slots get their own KOhA cmavo, ce'u. So:

- Influence is le ka ce'u xlura "the property that x influences": anyone or anything that has that property can stand in for ce'u.

- Susceptibility is le ka xlura ce'u "the property that [something] influences x", or le ka ce'u se xlura "the property that x is influenced": anyone or anything that has *that* property can stand in for ce'u.

- And extraterrestrial intelligence is le ka ce'u terdi bartu pensi "the property that x is an earth-exterior thinker." You can tell whether you've found your Little Green Men by substituting them for ce'u, and seeing if the bridi is true:

  > le ka *lo fange pe la vulkan.* cu terdi bartu pensi

  Lambda Note, Part 1: If you:

  - did Computer Science at University, and you didn't skip *Theory of Computation* in third year just because it had all sorts of strange Greek letters and ivory tower mathematics in it;
  - did Computer Science at University, and skipped *Theory of Computation* in third year, but hacked around with LISP a lot anyway;
  - did Linguistics at University, and did not run screaming from the *Formal Semantics* elective in third year (if you were even offered it) just because it had all sorts of strange Greek letters and more mathematics than you were used to (i.e. none);

  then it will mean something to you that ce'u is a lambda variable, and that

  > le ka ce'u xlura da de di

  corresponds to

  > $\lambda x.\mathrm{xendo}(x,\mathrm{da},\mathrm{de},\mathrm{di})$

  The rest of you (which includes 90% of all programmers and 99% of all linguists) can go ahead and forget I ever mentioned this.

If you cast your mind back to Lesson 7, you'll remember that we split up the abstractions Lojban uses into two main types: events, using nu, and facts or propositions, using du'u. A property, as introduced by ka, is still what we called there a reification. That means it's just like du'u: it's something you hold in your mind about what happens in the world, rather than something that objectively happens in the world. The difference is, ka has an empty slot, occupied by ce'u; and you're interested in the ka-clause only inasmuch as you're interested in what fills the slot. On the other hand, du'u-clauses don't necessarily have any such slot—although they can.

> **Note:** This means that, when you get down to it, there is no real difference between ledu'u ce'u xendo and leka ce'u xendo. But as we discuss below, there is a real difference between ledu'u xendo and leka xendo: by default, ka is

assumed to contain ce'u somewhere (since it is a property *of* something.) No such assumption is made for du'u: ledu'u xendo is normally assumed to be just ledu'u zo'e xendo; the fact that someone is kind, rather than the property of someone being kind.

Most usage of ka in Lojban fits this pattern of 'filling a slot' straightforwardly. This is particularly the case when a ka-asbtraction is required in the place structure definition of a gismu: a ka-clause is required, because by its definition the gismu involves that slot. So with sisku 'seek', you search for ka-clauses, to find what will fill the slot. With karbi 'compare', you compare things to see how well they fit the slot. Or alternatively, the gismu by definition fills that slot, by relating the property to the value satisfying it. For example,

- mi fange do leka ce'u se krasi le bartu be le tcadu: I am alien to you in the property of "x_1 is from out of town" (as applied to me.)

- mi barda leka le xadni be ce'u cu clani: I am big in the property of "x_1's body is long"—i.e. "x_1 is tall" (as applied to me.)

- mi mansa do leka ce'u pensi: I satisfy you that the property "x_1 is intelligent" applies to me.

What happens when you find the value that fills the slot? Then—and here Lojban parts ways with English—you no longer have a slot; so you no longer have a property. You've gone back to du'u. If mi mansa do leka ce'u pensi, that's the same as saying do djuno ledu'u mi pensi. A property applying to a known entity is no longer a property at all in Lojban, but a fact—or (if you no longer have to reify it) an event.

Be careful here: what English (and in fact, most traditional usage) calls properties are often actually considered just states in Lojban—that is, something that happens in the world, but without anybody lifting a finger. Being a runner (also known as 'running') is hard work; so we're happy to think of it as an event: nu bajra. But being happy (also known as 'happiness') is something that just happens, without any work; so we're inclined to call it ka gleki. But that's misleading. English distinguishes between *running* and *happiness* grammatically, because *run* is a verb and *happy* is an adjective. But verbs and adjectives don't mean anything to Lojban (or to many other languages), so there's nothing to say you can't say nu gleki instead. Much of the time, in fact, that is precisely what you should be saying. As a rule of thumb: if you wouldn't say ka bajra in a sentence, don't say ka gleki either.

> **Note:** For instance, is *illness* a quality in the sentence "Fred's illness is more debilitating than George's"? Let's use *running* instead. If we translated *more debilitating* as a single lujvo, rubri'amau, would we say leka la fred. bajra cu rubri'amau leka la djordj. bajra? No; we'd likely say lenu la fred. bajra cu rubri'amau lenu la djordj. bajra. In fact, there *is* a quality involved in the sentence, if you expand it out fully—but it's not the illness, but the debilitatingness: lenu la fred. bilma cu zmadu lenu la djordj. bilma kei leka ce'u rinka lenu zo'e ruble "The event of Fred being ill exceeds the event of George being ill in the quality of causing someone to be weak."

> **Tip:** In older Lojban, you'll often see phrases like leka mi gleki for "the property of me being happy." That's because we used to not know any better (ce'u is a recent addition to the language), and were treating Lojban properties pretty much the way English does. The proper way to say this in Lojban is lenu mi gleki, or ledu'u mi gleki. Alternatively, if you want to emphasise that the property "x_1 is happy" is being applied to you, you can say leka ce'u gleki kei poi ckaji mi—a literal translation of "the property 'x_1 is happy' as applied to me".

> **Lambda Note, Part 2:** The infinitesimal number of you that know about lambda calculus are by now thinking this is a pretty lame way of implementing beta-reduction. All I can say to that is, if you want LISP, you always know where to find it...

Sometimes you'll want to speak of properties of applying to two entities at once. For example, the cop wants to know who talked about the heist, and to whom:

> le pulji cu djica lenu djuno ledu'u makau tavla makau le nu jemna zercpa.

In that case, he's looking for *both* x_1s *and* x_2s to fill in his ka-property:

> le pulji cu sisku leka ce'u tavla ce'u lenu jemna zerle'a To put it more formally, he is seeking pairs {.abu, by.} such that the proposition .abu tavla by. is true.

> **Tip:** By default, two different instances of ce'u are two distinct entities. So the example given is not saying that the police are looking to someone who talked to themselves about the heist!

The main use for multiple instances of ce'u is our old friend simxu: if we want to speak about reciprocality, we are very much interested in which two places are related through that reciprocality:

> mi ce do simxu leka ce'u tavla ce'u lenu jemna zerle'a

There are some reciprocalities that can be distinguished nicely in this way: simxu leka draci fi ce'u ce'u is a situation where people take turns writing plays for each other, while simxu leka draci fo ce'u ce'u is a situation where people take turns performing plays for each other.

> **Note:** The quantity abstractor, ni 'the amount by which...' can also take ce'u. Had we actually looked at ni in this course at all, this piece of information might have been slightly more useful to you.

Vocabulary

ckire	x_1 is grateful/thankful to/appreciative of x_2 for x_3 (event/property)
mamta	x_1 is a mother of x_2; x_1 bears/mothers/acts maternally toward x_2; [not necessarily biological]

Exercise 2

Express the following qualities in Lojban, using ce'u explicitly in all cases.

1. Gratitude

2. Similarity to Arnold Schwarzenegger

3. Motherhood

4. Having a mother

5. My similarity to Arnold Schwarzenegger

6. Being a place where people get anxious; creepiness, (one interpretation of) hauntedness (Hint: Use sumti tcita.)

From sumti to abstraction: tu'a

When looking up words in a gismu list, you may have already noticed that, where languages like English have people or things as subjects and objects, Lojban often uses abstractions instead as gismu places. For example, in English, you say that *someone* is interesting, or *something* is interesting. In Lojban, you aren't really meant to say either. The definition of cinri is:

> x_1 (abstraction) interests/is interesting to x_2; x_2 is interested in x_1

In other words, as far as Lojban is concerned, it's not things or people that are interesting, but *actions* or *properties* involving those things or people. For example, Jyoti cannot be said to be interesting simply by virtue of being Jyoti; the way Lojban puts it, it's the things Jyoti does (or is) that are interesting—the way she talks about British sitcoms, her choice of headgear, her tendency to break into '80s songs after she's had a few drinks. (Oh, I forgot to tell you about all that. Maybe next course.)

The same goes for fenki 'crazy'. In almost every language, it is people that are called crazy. Only occasionally are actions also called crazy. Lojban, however, defines fenki as:

x_1 (action/event) is crazy/insane/mad/frantic/in a frenzy (one sense) by standard x_2

In other words, as far as Lojban is concerned, craziness lies in actions, not in people; a crazy person is by definition someone who does crazy actions.

> **Note:** This means that someone suffering from the particular forms of mental illness loosely called 'crazy' wouldn't be called fenki in Lojban—since their condition is not *primarily* a matter of socially unacceptable actions—but rather menli bilma: 'mentally ill'.

For now, you may be prepared to accept this as an endearing quirk of Lojban. (If you're not, we explain why Lojban is all topsy-turvy like this in the next section.) But very often, you have no idea what to say is the selbri of that abstraction, or you don't particularly care to. For example, yes, Jyoti doing this, that and the other is what is interesting about her; but I may not know first-hand what exactly her particular talents are, or I may not feel like going into a five-minute spiel every time I merely want to point out that she is interesting. If I can't say the Lojban for "Jyoti is interesting", I should at least be able to say something like "Jyoti {doing some stuff I'm not listing here} is interesting", or "Some things about Jyoti are interesting." In other words, I have to say

lenu la djiotis. cu ___ cu cinri

but I shouldn't have to fill in that slot with an explicit selbri each time.

There are slots in Lojban sentences that we have in fact been leaving empty all the time. Remember zo'e? zo'e is the 'don't care' value we leave implied in the unspecified places of bridi. For example, when I say mi klama le barja, I'm not bothering to specify my point of origin, route, or vehicle. They are all implied to be zo'e: mi klama le barja zo'e zo'e zo'e. This means that there is a point of origin, a route and a vehicle involved, but we don't really care what they are.

zo'e is a sumti; but it has a selbri equivalent, co'e. co'e can appear where any selbri can appear, but it leaves the relationship between its sumti unspecified. So mi co'e le barja means something like "I thingummy the bar": the bar and I are in some relationship, but I'm not bothering to say what it is. I might be going to it, coming from it, sleeping in it, refurbishing it, or hearing about my neighbour getting drunk in it once. It just doesn't matter enough for me to say what.

Now normally, you can't get away with this: if you leave out the selbri in your story, you pretty much have no story. But with these abstractions that we wish weren't really abstractions, co'e is just what you need: you can get away with making an abstraction containing only the sumti you want to talk about. You don't have to specify *anything* else in the abstraction—especially not the selbri. So if I want to say "Jyoti is interesting", I need only say

lenu la djiotis. cu *co'e* cu cinri

I'm still saying an abstraction involving Jyoti is what is interesting, so I'm following the requirements of the gismu list. But that's all I'm saying; what particular abstraction it is that is interesting, I am leaving entirely open. In the same way, if I want to say "Zhang is crazy" (or "berserk", probably a closer translation of fenki), I don't have to enumerate the various wacky stunts he has pulled over the years. I can simply say that "some stuff about Zhang is crazy", which in Lojban comes out as

> lenu la jan. *co'e* cu fenki

The value of co'e could be

- dasni [loi zirpu] "wears purple"

- dansu [la zgikrfanki jipci] "dances the Funky Chicken"

- tavla [bau la lojban.] "speaks Lojban"

or whatever; we're just not bothering to name it here.

Lojban can go one better, though. As you can tell, Lojban is going to have you saying lenu ___ cu co'e kei quite often (and you never know when you might need that kei terminator); so it offers you an abbreviation: tu'a. tu'a da means lesu'u da cu co'e kei (where su'u, you may recall, is the generic abstractor); so you can translate tu'a as "some abstraction associated with...", or more colloquially, "some stuff about...". tu'a is easily the most popular way of dealing with abstractions you wish weren't there in Lojban; Lojban sentences using it come out fairly similar to the natural language sentences *without* abstractions that we're used to seeing. So the usual Lojban for "Jyoti is interesting" is

> *tu'a* la djiotis. cinri

and the usual Lojban for "Zhang is crazy" is

> *tu'a* la jan. fenki

Vocabulary

djica	x_1 desires/wants/wishes x_2 (event/state) for purpose x_3
cfari	x_1 [state/event/process] commences/initiates/starts/begins to occur; (intransitive verb)
fanza	x_1 (event) annoys/irritates/bothers/distracts x_2
nelci	x_1 is fond of/likes/has a taste for x_2 (object/state)
snuti	x_1 (event/state) is an accident/unintentional on the part of x_2; x_1 is an accident
troci	x_1 tries/attempts/makes an effort to do/attain x_2 (event/state/property) by actions/method x_3

Exercise 3

Some of these sentences need to be translated in Lojban with tu'a, and some don't. Supply the appropriate translation, in either case.

1. I tried the curry.

2. I wanted the curry.

3. I liked the curry.

4. My leaving was accidental.

5. Gratitude annoys me.

6. Curry annoys me.

7. The irritation has begun.

Raising: jai

<div style="border:2px solid black">

Warning

This section is long and complicated. On the plus side, it's also the final section in the course.

</div>

Things weren't always like this. In the '80s, the ancestor of Lojban still said that things were interesting, and people were crazy, just like most normal languages, and without detouring through abstractions. So what happened?

Well, what happened was that Lojbanists noticed how linguists have been analysing these concepts in natural languages, and how they were coming up with their own versions of selbri. Often, what was a noun in one part of the sentence, and a verb in another part, were brought together and considered to be underlyingly part of the same abstraction sumti.

> **Note:** The word for selbri in English, by the way, is *predicates*; we've been avoiding it up to now, but we think you can handle the truth from now on...

A good example is the phrase *I am difficult to annoy* in English. At first sight, you might think that *I* is a sumti of *difficult*. And grammatically it is: it's the subject. But logically it isn't: what we're describing as difficult is not *me*. We can't say:

- "Who is difficult?"
- "Me (to annoy)."

What's actually going on is that, underlyingly, what is difficult is *to annoy me*: the action of getting me annoyed is what is hard to achieve—not me! This is why English also allows you to say *It is difficult to annoy me*, and (if you squint a little) *To annoy me is difficult*. And sure enough, Lojban expresses this concept according to that 'underlying' form:

> lenu fanza mi cu nandu
> The event of annoying me is difficult

So why did English pull that weird switcheroo with *I am difficult to annoy*? Basically, because when we talk, we aren't concentrating in our minds on intangible abstractions like "the event of annoying me", let alone "the state of Jyoti having certain unspecified properties." Instead, we run little stories in our head, with heroes and villains: concrete heroes and villains—people, for the most part. And as it happens, we make the subjects of our sentences be the heroes and villains we're concentrating on. (That's what a subject's ultimate job is: to present what we're concentrating on.)

So by pulling a switcheroo like that, we're not talking about abstractions and events any more; the subject of the sentence is now our perennially favourite subject—namely *me*: it's *me* that is difficult to annoy. (Yes, it *is* all about me...) This process is called in linguistics **raising**, because it raises concrete

subjects (and objects) we want to talk about, out of the haziness of an abstraction sumti (or 'clausal argument', to use English logical terminology.)

Once the requisite number of Lojbanists did an undergraduate course in syntax (you may commence throwing darts at effigies of Nick Nicholas at your leisure), it was realised that there were a *lot* of gismu whose place structures contained both a raised concrete sumti (usually x_1), and an abstraction sumti which itself contained the first sumti. For example, the place structure of fenki used to be

> x_1 is crazy in behaviour x_2 (abstraction) by standard x_3

But *any* abstraction that would go into x_2 would contain the x_1 sumti: any crazy behaviour would automatically be the behaviour of the crazy person. For example, you'd get

- la jan. fenki lenu la jan. dasni loi zirpu
- la jan. fenki lenu la jan. dansu la jipci
- la jan. fenki lenu la jan. tavla bau la lojban.

The question then became: does the x_1 tell us anything the x_2 wasn't already telling us? We know who was involved in the crazy behaviour, because that person would be a sumti inside x_2. (More specifically, he or she would be the active party: someone hitting random strangers is crazy; someone being hit by random strangers isn't—although arguably someone *allowing* themselves to keep being hit by random strangers is.) Was there any reason, then, to grant the person an extra place in the overall bridi? The decision was, no: behaviour is what is crazy, so you can work out that the person acting out the behaviour is the crazy person. There's no need to have an extra place for the person, when you can already work out who they are. The same conclusion was arrived at for cinri: it is abstractions—events and qualities—that attract interest; and an interesting person is simply a person involved in an interesting abstraction.

All well and good; but natural languages do raising for a reason. So when Lojban has its gismu without raising, it gains in eliminating redundancy and logical muddledness; but it loses in 'naturalness'. We like talking about people rather than abstractions in our languages; and Lojban should not go out of its way to form an exception to this.

There is a solution of sorts to this problem using tu'a; but it doesn't actually do what raising does in natural languages: it doesn't *change* the x_1 place from an abstraction to a concrete sumti. And there are times you will want to do just that.

One example is joining bridi-tails. In English, you can say *Jyoti is interesting and beautiful.* This is based on two sentences (*Jyoti is interesting*, *Jyoti is beautiful*) which have the same subject. So we can easily combine them into a single sentence. In Lojban, the equivalent sentences are

> tu'a la djiotis. cinri

and

> la djiotis. melbi

There is no way you're going to join those two bridi together with gi'e: they simply do not have their first sumti in common. But they're both somehow 'about' Jyoti; so you really should be able to work around this.

An even more important instance when you want raising is in forming sumti out of this kind of gismu. A sumti means whatever goes into the x_1 of its selbri. If la djiotis. ninmu "Jyoti is a woman", then I can describe Jyoti as lo ninmu 'a woman'. If lemi karce cu xe klama le gusta fu mi "My car is a vehicle to the restaurant for me", then I can describe lemi karce as lo xe klama 'a vehicle'. So how do I say that someone is a cheat, or a deceiver? The gismu for 'deceive', tcica, has the place structure

x_1 (event/experience) misleads/deceives/dupes/fools/cheats/tricks x_2 into x_3 (event/state)

This means that, while in English we say that "x_1 (person) deceives x_2 into doing x_3, by doing x_4", in Lojban the person and the action are merged into the one place. That makes lo tcica a trick, not a trickster; a deception, and not a deceiver. To say that someone is a trickster or a deceiver, we need to use tu'a: tu'a da tcica. But you can't put lo in front of tu'a da: the deceiver has to be the x_1 of some selbri, in order to get their own sumti.

The solution to this is to force Lojban to have raising after all, changing the place structure of the selbri involved. This works just like se changing the place structure of its selbri, swapping its first and second place. If we put jai in front of a selbri, its x_1 place changes from an abstraction, to any sumti contained *within* the abstraction. Let's try this with a few sentences:

- *lenu la jan. dasni loi zirpu* cu fenki
- *la jan.* cu jai fenki

- *lenu la djiotis. cu co'e* cu cinri
- *la djiotis.* cu jai cinri

- *tu'a la ranjit.* tcica la suzyn.
- *la ranjit.* jai tcica la suzyn.

- *lenu fanza mi* cu nandu
- *mi* jai nandu

You'll notice that, with these new place structures, the Lojban phrases sound pretty much like their English equivalents. For example,

la djiotis. jai cinri
Jyoti is interesting

la ranjit. jai tcica la suzyn.

Ranjeet deceives Susan

We can now do with jai those things we couldn't before. The Lojban for "Jyoti is interesting and beautiful", for example, is

> la djiotis. jai cinri gi'e melbi

That's because Jyoti goes in the x_1 place of jai cinri, just as it goes into the x_1 place of melbi. And if I want to make a sumti meaning 'deceiver' or 'trickster', I can use jai to do it:

> *tu'a la ranjit.* tcica → *la ranjit.* jai tcica → *lo jai tcica*

However, mi jai nandu does *not* correspond to "I am difficult to annoy." In switching a concrete sumti for the original x_1—the abstraction that was difficult—we have lost the abstraction itself: there is nothing in mi jai nandu that means 'to annoy'. But not to worry: Lojban allows you to keep the original abstraction in the bridi by preceding it with fai. fai is a place tag like fa and fe; it effectively adds a new place to the bridi. So *I am difficult to annoy* is matched almost word-for-word by the Lojban sentence

> mi jai nandu fai lenu fanza mi

And we can apply this pattern further afield; for example, "the book took three months to write" is in Lojban properly

> lenu finti le cukta cu masti li ci
> To write the book had a month-duration of three

Raising allows the slightly more familiar-looking

> le cukta cu jai masti li ci fai lenu finti

jai has not proven as popular as tu'a, presumably because it involves a fairly thorough rearrangement of place structures—and has the whiff about being somehow 'un-Lojbanic'. But as we've seen, it allows you to talk about things in a way that is in many ways more natural; and though it belongs to 'advanced' Lojban, it is a feature you will find it useful to be familiar with.

Exercise 4

That was pretty heavy going. You can relax: this exercise will go easy on you. (You still have the final translation exercises to go through, after all!) Where possible, and by all means necessary, recast the abstractions in the following sentences so that they use jai (and fai, where applicable.)

1. .i tu'a mi nabmi

2. .i ledu'u mi xebni loi kensa fange cu nabmi

3. .i mi djuno tu'a la lojban.

4. .i mi djuno ledu'u la lojban. cu bangu kei la lojban.

5. .i lenu mi ckire da cu nibli lenu mi se xamgu tu'a da (Don't try and be too clever here—it won't work...)

6. .i lenu lenu la jan. xalfekfri cu nabmi cu cizra (Only eliminate one level of abstraction.)

7. .i da poi lenu fanza ke'a cu nandu cu zvati (Reduce this, then see if you can't reduce it a little more...)

Summary

In this lesson, we have covered:

- Indirect questions (kau)

- Property variables (ce'u)

- Raising (co'e, tu'a, jai, fai)

And with that, we have reached the end of the *Lojban for Beginners* course! There are several bits of the grammar of Lojban not covered here; but you now have the essentials with which to start using Lojban, and you are in a good position to pick up the rest—preferably from *The Complete Lojban Language,* which is a fairly easy read for a reference grammar. Moreover, most of the Lojban you will see will stick fairly closely to the grammar covered here. .i .a'o do se zdile tu'a le ve ctuca gi'e ba gleki lenu pilno la lojban.

Vocabulary

Note: Remember the 'error quote' lo'u... le'u from Lesson 7.

birti	x_1 is certain/sure/positive/convinced that x_2 is true
cipra	x_1 (process/event) is a test for/proof of property/state x_2 in subject x_3 (individ./set/mass)
curmi	x_1 (agent) lets/permits/allows x_2 (event) under conditions x_3; x_1 grants privilege x_2
dicra	x_1 (event) interrupts/stops/halts/[disrupts] x_2 (object/event/process) due to quality x_3
drata	x_1 isn't the-same-thing-as/is different-from/other-than x_2 by standard x_3; x_1 is something else
drani	x_1 is correct/proper/right/perfect in property/aspect x_2 (ka) in situation x_3 by standard x_4 (Note: when people say correct things, that does not automatically make them 'correct/proper/right/perfect')
jarco	x_1 (agent) shows/exhibits/displays/[reveals]/demonstrates x_2 (property) to audience x_3
kucli	x_1 is curious/wonders about/is interested in/[inquisitive about] x_2 (object/abstract)
kumfa	x_1 is a room of/in structure x_2 surrounded by partitions/walls/ceiling/floor x_3 (mass/jo'u)
logji	x_1 [rules/methods] is a logic for deducing/concluding/inferring/reasoning to/about x_2 (du'u)
mebri	x_1 is a/the brow/forehead [projecting flat/smooth head/body-part] of x_2
remna	x_1 is a human/human being/man (non-specific gender-free sense); (adjective:) x_1 is human
rufsu	x_1 is rough/coarse/uneven/[grainy/scabrous/rugged] in texture/regularity
sonci	x_1 is a soldier/warrior/fighter of army x_2
tarci	x_1 is a star/sun with stellar properties x_2

Exercise 5

Translate from Lojban.

1. .i le vo pendo na djuno le du'u ri zvati ma kau mu'i ma kau

2. .i la jan. cusku lu .i mi cazi ckire da'i tu'a loi glare ke cnino se zbasu ckafi li'u

3. .i la djiotis. se cinri leka ce'u cizra pe le kumfa poi dy. nenri

4. .i la suzyn. cusku lu .i .ue le vi canko noi jarco tu'a loi tarci cu pe'i jai se xanka li'u

5. .i la ranjit. cusku lu .i go'i fa ji'a le re fange noi jarco leka le mebri po'e ce'u cu rufsu li'u

6. .i pa fange poi simsa lo sonci cu jai cfari fai lenu lanli le terdi pendo kei gi'e cusku lo'u .uxrup .ua. doglau. latl. tcak. val. tca. le'u

7. .i la ranjit. kucli ledu'u le fange cu tavla bau ma kau

8. .i le ka tu'a ce'u se kucli cu se jundi le drata fange noi cusku zoi gy. Greetings people of the planet … um… Saturn? gy.

9. .i la jan. cusku lu .i tu'a le fange na drani so'a da li'u

Exercise 6

Translate into Lojban. Use **ce'u** in quality abstractions. Use **jai** instead of **tu'a** wherever possible.

1. Susan says "Excuse me, but I think you are uncertain about where you are—which is Earth."

2. The alien says "You are correct."

3. "We are, uh, merely testing you for terrestrial intelligence."

4. Jyoti says "You could have done that and not have interrupted our dancing."

5. Ranjeet says "And also, if you knew that we are terrestrial people and intelligent, then you also knew that we are terrestrial intelligences." (Use forethought connectives.)

6. The alien says "Are you the radio transmitter?"

7. Ranjeet says "I am one of the radio transmitters."

8. "But **mi po'onai cradi** is more logically correct."

9. The alien frowns, says "You are allowed to leave", and un-removes the friends from the dance hall.

10. The alien says "xuˈmɑn ˈmɛɡːoɡ. ˈwɛdʒpux", which is translated as "Human logic. Yuck."

Answers to exercises

Exercise 1

1. mi djica lenu mi djuno ledu'u do ba tavla mi ca ma kau (You can place the **ca ma kau** anywhere after **ledu'u**.)

2. mi na djuno ledu'u do na tavla mi mu'i ma kau (Same goes for **mu'i ma kau**.)

3. mi ba'o cusku lesedu'u mi pu jinvi ledu'u ma kau bebna (Yes, Lojban can get prolix…)

4. ko cusku lesedu'u le birje cu zvati ma kau or ko cusku lesedu'u birje vi ma kau (… except, perhaps, where it matters most! The observative in the second version actually works: "Beer! Where?!")

5. do pu cusku lesedu'u mi bilga lenu mi dunda le cukta ma kau *or* (if you want to risk the attitudinal) do pu cusku lesedu'u mi .ei dunda le cukta ma kau

6. OK, this doesn't have to be that close (let alone rhyme), and in fact the English is closer to a direct than an indirect question, but this is something like ko cusku fi mi fe lesedu'u pei kau do sepli gi'e na djuno le farna gi'e simsa lo gunro rokci.

   Told you this was kind of a trick question…

Exercise 2

1. le ka ce'u ckire

2. le ka ce'u simsa la arnold. cfartseneger. (or la'o gy. Arnold Schwarzenegger gy., if you prefer. The Lojban sound system (phonology) doesn't allow **cv** in sequence; this is something you can worry about more in your further Lojban studies. See *The Complete Lojban Language*, p. 36)

3. le ka ce'u mamta

4. le ka mamta ce'u or le ka ce'u se mamta

5. le ka ce'u simsa la arnold. cfartseneger. kei poi ckaji mi (or, of course, le du'u mi simsa la arnold. cfartseneger., which actually means the same thing.)

6. le ka xanka vi ce'u. A little contrived, we admit.

Exercise 3

1. .i mi troci tu'a le cidjrkari (What you actually try is to eat it—or, on occasion, to keep it down.)

2. .i mi djica tu'a le cidjrkari (This usually comes as a shock to people learning Lojban, but you can't actually want objects, only events. The event you usually want is to be in possession of the object, in some way or other.)

3. .i mi nelci le cidjrkari (The gismu list explicitly allows nelci to involve both objects and events; so you don't need tu'a here. This makes nelci quite different to djica.)

4. .i lenu mi cliva cu snuti (No surprise there; 'leaving' corresponds to an abstraction.)

5. .i leka ckire cu fanza mi

6. .i tu'a le cidjrkari cu fanza mi (Unlike gratitude, curry is certainly not an abstraction.)

7. .i le fanza cu cfari (Yes, you read correctly. To fit the x_1 of cfari, a sumti doesn't actually have to *look like* an abstraction; it just has to *mean* an abstraction. Anything that can be described as le fanza is going to be an abstraction, because of the place structure of fanza. So since the x_1 of fanza is a state or event, and the x_1 of cfari is also a state or event, they can both be describing the same thing—without needing to strain abstractions out of one or the other using tu'a.)

Exercise 4

1. .i mi jai nabmi "I am a problem."

2. .i mi jai nabmi fai ledu'u mi xebni loi kensa fange "I am a problem in [the fact] that I hate space aliens."

3. .i la lojban. jai se djuno mi "Lojban is known to me." (We did say "all means necessary…")

4. .i la lojban. jai se djuno mi la lojban. fai ledu'u la lojban. cu bangu "Of Lojban, it is known to me about Lojban that Lojban is a language." (As this indicates, the x_3 place of djuno is raised out of its x_2 place. Since you have wide liberty in stating what you know about a subject, however, this won't necessarily always be the case:

> .i mi djuno ledu'u loi cidro ku joi loi kijno cu cupra loi djacu kei loi xumske
> I know about chemistry that hydrogen and oxygen makes water

5. .i mi/da cu jai nibli lenu mi se xamgu tu'a da kei fai lenu mi ckire da, *or* .i mi/tu'a da jai se nibli lenu mi ckire da kei fai lenu mi se xamgu tu'a da No real English equivalent; the original sentence is "Me being grateful to *x* necessitates that I have been benefitted by *x*."

6. .i lenu la jan. xalfekfri cu jai cizra fai lenu nabmi "Zhang being drunk is strange in that it is a problem" *or* .i lenu la jan. jai nabmi fai lenu xalfekfri cu cizra "Zhang being a problem in that he is drunk is strange."

Note: Can you eliminate both abstractions? For the record, yes you can, by applying jai twice:

> .i la jan. jai jai cizra fai xi pa lenu xalfekfri kei fai xi re lenu nabmi

Messily, we now have two fai places: the Lojban subscript phrases xi pa 'subscript 1' and xi re 'subscript 2' helpfully keep them apart. You're not really encouraged to do this kind of thing, though; after all, jai was intended to make Lojban more natural—not more wacky!

7. da poi ke'a jai nandu fai lenu fanza da cu zvati "*x* such that *x* is difficult to annoy is here." You do need to indicate somehow who is being annoyed in the fai-clause. One way of doing so is to leave the raised sumti in, as we've just done: fai lenu fanza da cu zvati. Another is to make the raised place of the fai-clause its x₁, conventionally its most important place: da poi ke'a jai nandu fai lenu se fanza cu zvati.

Since what you're describing is a thing or person (a person, in this case), that means that da poi ke'a jai nandu fai lenu fanza should be a sumti, with nandu as its selbri. This gives

> le jai nandu be fai lenu fanza cu zvati
> The one difficult to annoy is here.

If you came up with that, we hereby dub thee King/Queen of Lojban! .i ko jgira! If not, well, that's OK, too; this kind of expression isn't all that popular yet, so you're not at a terrible disadvantage if you don't use it...

Exercise 5

1. The four friends do not know where they are, or why they are there. (You can ask more than one question in a sentence in Lojban, direct or indirect.)

2. Zhang says "Right now, I would be grateful for a hot, freshly-brewed coffee." (You are grateful in Lojban for events rather than objects, so fully expanded, .i la jan. ckire da'i *lenu kakne lenu pinxe* loi glare ke cnino se zbasu ckafi.)

3. Jyoti is interested in the weirdness of the room she is in. (pe is another way of associating abstractions with specific objects.)

4. Susan says "Wow! This window, which shows the stars, is in my opinion something to be anxious about." (se xanka describes an event that provokes anxiety, so jai se xanka describes a *thing* involved in the event that provokes anxiety. Strictly speaking, Susan is probably misusing jarco...)

5. Ranjeet says "So are the two aliens, who show that their foreheads are rough" or "who exhibit roughness in their foreheads." (... Ranjeet, of course, cannot help but be correct in his usage of jarco.)

6. One alien who is like a soldier starts analysing the Earthling friends, and says "'ʔuxrup wɑʔ 'ɖoɣlɑwʔ lɑtɬ tʃɑq vɑl tʃɑʔ?" (A lot of you may have guessed the language the alien is speaking. You are correct, and let's leave it at that, shall we?)

7. Ranjeet is curious about what language the aliens are speaking in. (No, I haven't clued him in...)

8. Being an object of curiosity is something noticed by the other alien, who says (in English) "Greetings people of the planet ... um... Saturn?"

9. Zhang says "Stuff about the aliens is not right in most regards." (In other words, there are properties involving these aliens that are not correct in most regards; for example, their sense of direction.)

Exercise 6

1. .i la suzyn. cusku lu .i ta'a do'u pe'i do na birti ledu'u do zvati ma kau po'u la terdi li'u

2. .i le fange cu cusku lu .i do jai drani (Not do drani, which would mean "You, as Susan, are a correct (or perfect) human being"; it is only one aspect of Susan, namely what she has just said, which is being described here as correct.)

3. .i mi'a .y. jai cipra po'o leka ce'u terdi pensi kei do li'u (You could say .i mi'a .y. jai cipra po'o leka *do po'u ce'u* terdi pensi kei li'u, because it's the person with the quality being tested that is the test subject. But for practical reasons, Lojban hasn't eliminated this particular redundancy, so you might as well exploit it.)

4. .i la djiotis. cusku lu .i do pu kakne lenu go'i gi'enai jai dicra lenu mi'a dansu li'u (In Lojban, only events interrupt; latex-foreheaded aliens are 'involved in interrupting'.)

5. .i la ranjit. cusku lu .i ji'a ganai do pu djuno ledu'u mi'a ge terdi prenu gi pensi gi do djuno ledu'u mi'a terdi pensi li'u (Ranjeet can never resist a good syllogism.)

6. .i le fange cu cusku lu .i xu do du le cradi li'u (A legitimate use of du, since to the alien 'The radio transmitter' and 'You' refer to the same person.)

7. .i la ranjit. cusku lu .i mi me le cradi (If you want to emphasise the plurality of the transmitters, you could say .i mi me le su'o re cradi "I am one of the two or more radio transmitters".)

8. .i ku'i lu mi po'onai cradi li'u cu zmadu fi leka ce'u logji drani li'u (Although a person saying something correct is not eligible to be the x_1 place of drani, the correct thing that they say *is* eligible: drani is not by definition restricted to abstractions.)

9. .i le fange cu frumu gi'e cusku lu .i do jai se curmi fai lenu cliva li'u gi'e to'e vimcu le pendo le dansydi'u

10. .i le fange cu cusku zoi gy. xuˈmɑn ˈmɛqːoq. ˈwɛdʒpux gy. noi se fanva fu lu .i remna logji .a'unai li'u (or, in Lojban phonetic approximation, lo'u xuman. mekok. .uedj. pux. le'u.)

Appendix A. Unsettled Business

Lojban is a young language, but a language which prides itself on being fully and explicitly documented... almost always. In a couple of instances, topics alluded to in these lessons are still somewhat up in the air. Though what the lessons themselves say about Lojban grammar you can rely on, there are some side issues on which the dust has not yet settled as of this writing. This appendix covers two issues in particular; you do not need to go through this on your first reading of the lessons, but once you start reading, writing, and speaking Lojban, this appendix tries to explain some things you may bump into, and which might strike you as odd.

Embedded vo'a

In Lesson 8, we said that vo'a refers back to 'the first sumti of this bridi'. This is all well and good when your sentence only contains one bridi. But when it doesn't—and it often doesn't—we have a problem. In

>   la kris. djuno ledu'u la pat. prami vo'a

does vo'a refer to la kris. ("Chris knows that Pat loves her"), or la pat. ("Chris knows that Pat loves herself")? In

>   la kris. djuno ledu'u la pat. prami la djun. soi vo'a

does vo'a swap la djun. with la pat. ("Chris knows that Pat loves June and vice versa, that they love each other"), or with la kris. ("Chris knows that Pat loves June, and June knows that Chris loves Pat")?

The answer will, perhaps, shock you. In both cases, vo'a is acting as what is called in linguistics a reflexive: it refers back to something in the same sentence. In natural languages, reflexives almost always refer back to subjects; and in Lojban, the x1 place is as close as you will get to a subject. The difference is, when you have this kind of embedding, the reflexive can refer back to the subject of the verb it is immediately tied to (**short-distance reflexive**), or it can refer all the way back to the subject of the entire sentence (**long-distance reflexive**.)

Now, *herself* in English is a short-distance reflexive: if Chris knows that Pat loves herself, then Chris knows that Pat loves Pat, not Chris. Reflexives in almost all languages are short-distance; relatively few languages allow their reflexives to be long-distance as well as short-distance (Chinese), or have long-distance reflexives distinct from short-distance (Icelandic). So if vo'a corresponds to *herself*, then it too is short-distance.

And here, we have some unfortunate confusion. *The Complete Lojban Language* describes vo'a as short-distance. But the earlier material defining the language had it as *long*-distance; and that is in fact how just about all Lojbanists use it.

Why would Lojbanists do something seemingly so perverse, and contrary to how most languages work? Basically, because their attitude towards pro-sumti is quite different to normal language attitudes towards pronouns. Lojbanists would like to have unambiguous pro-sumti—pro-sumti whose reference can be determined with certainty. Now, to do a short-distance reflexive's job (refer to something in the same bridi), you can very often use ri instead of vo'a. But to do a long-distance

reflexive's job (refer to something in the main bridi of the sentence), ri usually will not work, because you will have mentioned other sumti in between. This leaves you stuck with ra, which is deliberately as vague as natural language pronouns. "But," reasons the average Lojbanist, "if I wanted natural language vagueness, I'd be speaking a natural language. And because I will need to refer back to sumti of the main sentence often (main and embedded bridi tend to involve the same cast of characters), I'd rather vo'a serve as an unambiguous way of doing just that."

So whether because it was what they got used to in 1991 (and they didn't want to relearn the language in 1997), or because they thought vo'a would be more useful that way, Lojbanists interpret la kris. djuno ledu'u la pat. prami vo'a as saying that Chris knows that Pat loves *her*, not herself. So Lojbanists use vo'a as a long-distance reflexive.

... almost always. There are two occasions when you will occasionally see short-distance interpretations instead. The first is when the long-distance interpretation doesn't make sense for some reason. For example, the x_1 place of the main bridi contains the embedded bridi containing vo'a—so a long-distance reading would get terribly recursive: lenu la suzyn. jmina fi le vo'a ctebi cinta cu cinri makes sense as "Susan putting on her lipstick is interesting", but not as the horridly recursive "Susan putting on *x*'s lipstick is interesting"—where *x* is "Susan putting on *x*'s lipstick", where *x* is "Susan putting on *x*'s lipstick", where *x* is "Susan putting on *x*'s lipstick"...)

The second occasion is (you guessed it) soivo'a. People are used to thinking of soivo'a as *vice versa*, which forces a short-distance interpretation. And while there are reasons you would want vo'a in general to be a long-distance reflexive, there isn't much occasion for a long-distance reciprocal.

If usage to date were the only thing that determined the meaning of Lojban words (as is usually believed by the community), we might say that vo'a is *by default* long-distance, but becomes short-distance under special circumstances (such as soivo'a.) But past usage is not the only factor in determining what Lojban words mean. Lojbanists cherish their precious few unambiguous pro-sumti, and most would rather not lose one. So, while some Lojbanists have said (and will likely continue to say) things like la kris. djuno ledu'u la pat. prami la djun. soi vo'a, meaning that Pat and June love each other, most Lojbanists think they are being wrong, and would prefer something like la kris. djuno ledu'u la pat. prami la djun. soi *ri*.

> **Note:** The phrase la djun. soi ri counts as one sumti, so thankfully ri here does not refer to June!

Incidentally, there are truly unambiguous alternatives to vo'a, if you're not comfortable with the way this is heading. We won't explain them here, but you might be able to guess how they work anyway. The guaranteed short-distance reflexive in Lojban is lenei, and the guaranteed long-distance reflexive is leno'axiro. (leno'a is enough when there is only one level of bridi nesting.) In the unlikely case your use of vo'a is met with blank, uncomprehending stares, you can try using these instead.

Unfilled places in ka-abstractions

When there is no ce'u in the abstraction, there is some controversy as to how the ka-abstraction is to be interpreted. In many instances, the existence of a slot to be filled by ce'u is required by the definition of the bridi itself. For example, sisku leka pensi makes no sense, unless you are looking for a specific something that fits a ce'u slot in pensi.

For such instances, the location of ce'u is ambiguous, and *The Complete Lojban Language* mentions no convention having arisen, like with ke'a, on where it goes by default. The current default assumption is

that ce'u here behaves like ke'a, and occupies the first empty place. This means that, while le ka xlura without ce'u can potentially mean both 'influence' and 'susceptibility', the default assumption is that it means 'influence', while le ka se xlura means 'susceptibility'. Likewise, le ka xendo can usually be assumed to mean le ka ce'u xendo 'the property of people being kind', and probably not le ka xendo fi ce'u 'the property of an action being something in which kindness is shown' (although that action *is* frequently what is meant in English by *kindness*.)

A more contentious issue is, whether this should hold for all ka-abstractions, wherever they may occur. For example, does mi tavla fi leka xendo mean the same thing as mi tavla fi leka ce'u xendo zo'e zo'e? Are you saying you are talking about kindness, as a property specifically applied to the person showing the kindness?

The majority view as of this writing is yes. This means that ka is treated the same, whether it appears as a sumti of sisku or tavla.

The catch is, when ka was originally invented, ce'u didn't exist yet. And the original definition of ka refers not to properties at all, but to qualities.

Property and *quality* are fairly abstract, as words of English go, so this may not seem to make any difference. However, the objection that has been raised is that ka shouldn't always be regarded as singling out one or two places. The quality of kindness, it is argued, does not single out the person being kind, or the person to whom the kindness is shown (which is what a property does.) Instead, it concentrates only on the selbri of the relationship: what it means to say that a relationship of kindness holds, whoever is involved in it.

This view is not universally held; at least some of the Lojbanists who think ka is all about being a property of something specific, think this notion is better expressed instead by si'o, the abstractor defined as 'idea, concept'.

Talk at this level of abstraction is not something you're likely to run into the moment you start using Lojban. It does explain, however, why you'll see *property* used a lot here, but *quality* a lot elsewhere. It may also explain why you will see some grown Lojbanists blanch at the sight of a ce'u...

Appendix B. Vocabulary

.a	sumti or	logical connective: sumti afterthought or
.abu	a	letteral for a
.a'o	hope	attitudinal: hope – despair
.a'u	interest	attitudinal: interest – disinterest – repulsion
.ai	desire	attitudinal: intent – indecision – rejection/refusal
.au	desire	attitudinal: desire – indifference – reluctance
.e	sumti and	logical connective: sumti afterthought and
.ebu	e	letteral for e
.e'e	competence	attitudinal: competence – incompetence/inability
.ei	obligation	attitudinal: obligation – freedom
.enai	sumti but not	logical connective: sumti afterthought x but not y
.e'o	request	attitudinal: request – negative request
.e'u	suggestion	attitudinal: suggestion – abandon suggest – warning
.i ja	sentence or	logical connective: sentence afterthought or
.i je	sentence and	logical connective: sentence afterthought and
.i je'i	sentence conn?	logical connective: sentence afterthought connective question
.i jenai	sentence but not	logical connective: sentence afterthought x but not y
.i jo	sentence iff	logical connective: sentence afterthought biconditional/iff/if-and-only-if
.i jonai	sentence xor	logical connective: sentence afterthought exclusive or
.i ju	sentence whether	logical connective: sentence afterthought whether-or-not
.i naja	sentence only if	logical connective: sentence afterthought conditional/only if
.i	sentence link	sentence link/continuation; continuing sentences on same topic
.ia	belief	attitudinal: belief – skepticism – disbelief
.ibu	i	letteral for i
.i'e	approval	attitudinal: approval – non-approval – disapproval
.ie	agreement	attitudinal: agreement – disagreement
.ii	fear	attitudinal: fear – security
.iu	love	attitudinal: love – no love lost – hatred
.o	sumti iff	logical connective: sumti afterthought biconditional/iff/if-and-only-if
.obu	o	letteral for o
.oi	complaint	attitudinal: complaint – pleasure
.onai	sumti xor	logical connective: sumti afterthought exclusive or
.o'o	patience	attitudinal: patience – mere tolerance – anger
.o'u	relaxation	attitudinal: relaxation – composure – stress
.u	sumti whether	logical connective: sumti afterthought whether-or-not
.ua	discovery	attitudinal: discovery – confusion/searching
.ubu	u	letteral for u
.u'e	wonder	attitudinal: wonder – commonplace
.ue	surprise	attitudinal: surprise – not really surprised – expectation
.u'i	amusement	attitudinal: amusement – weariness
.ui	happiness	attitudinal: happiness – unhappiness
.u'u	repentance	attitudinal: repentance – lack of regret – innocence
.uu	pity	attitudinal: pity – cruelty
.y	hesitation	'er' (hesitation)

.ybu	y	letteral for y
.y'y	'	letteral for '
.y'ybu	h	letteral for h
ba	after	time tense relation/direction: will [selbri]; after [sumti]; default future tense
badri	sad	x_1 is sad/depressed/dejected/[unhappy/feels sorrow/grief] about x_2 (abstraction)
ba'e	emphasize next	forethought emphasis indicator; indicates next word is especially emphasized
bai	compelled by	bapli modal, 1st place (forced by) forcedly; compelled by force ...
bajra	run	x_1 runs on surface x_2 using limbs x_3 with gait x_4
bakfu	bundle	x_1 is a bundle/package/cluster/clump/pack [shape/form] containing x_2, held together by x_3
bakni	bovine	x_1 is a cow/cattle/kine/ox/[bull/steer/calf] [beef-producer/bovine] of species/breed x_2
bangrnesperanto	Esperanto	x_1 is the language Esperanto used by x_2 to express/communicate x_3 (si'o/du'u, not quote)
bangu	language	x_1 is a/the language/dialect used by x_2 to express/communicate x_3 (si'o/du'u, not quote)
banli	great	x_1 is great/grand in property x_2 (ka) by standard x_3
banxa	bank	x_1 is a bank owned by/in banking system x_2 for banking function(s) x_3 (event)
ba'o	perfective	interval event contour: in the aftermath of ...; since ...; perfective
bapli	force	x_1 [force] (ka) forces/compels event x_2 to occur; x_1 determines property x_2 to manifest
barda	big	x_1 is big/large in property/dimension(s) x_2 as compared with standard/norm x_3
barja	bar	x_1 is a tavern/bar/pub serving x_2 to audience/patrons x_3
bartu	out	x_1 is on the outside of x_2; x_1 is exterior to x_2
batci	bite	x_1 bites/pinches x_2 on/at specific locus x_3 with x_4
ba'u	exaggeration	exaggeration – accuracy – understatement
bau	in language	bangu modal, 1st place in language ...
be	link sumti	sumti link to attach sumti (default x_2) to a selbri; used in descriptions
bebna	foolish	x_1 is foolish/silly in event/action/property [folly] (ka) x_2; x_1 is a boob
be'e	request to send	vocative: request to send/speak
bei	link more sumti	separates multiple linked sumti within a selbri; used in descriptions
benji	transfer	x_1 transfers/sends/transmits x_2 to receiver x_3 from transmitter/origin x_4 via means/medium x_5
be'o	end linked sumti	elidable terminator: end linked sumti in specified description
berti	north	x_1 is to the north/northern side [right-hand-rule pole] of x_2 according to frame of reference x_3
bevri	carry	x_1 carries/hauls/bears/transports cargo x_2 to x_3 from x_4 over path x_5; x_1 is a carrier/[porter]

bi	8	digit/number: 8
bi'i	unordered interval	non-logical interval connective: unordered between ... and ...
bilga	obliged	x_1 is bound/obliged to/has the duty to do/be x_2 in/by standard/agreement x_3; x_1 must do x_2
bilma	ill	x_1 is ill/sick/diseased with symptoms x_2 from disease x_3
binxo	become	x_1 becomes/changes/converts/transforms into x_2 under conditions x_3
bi'o	ordered interval	non-logical interval connective: ordered from ... to ...
birje	beer	x_1 is made of/contains/is a amount of beer/ale/brew brewed from x_2
birka	arm	x_1 is a/the arm [body-part] of x_2
birti	certain	x_1 is certain/sure/positive/convinced that x_2 is true
blabi	white	x_1 is white / very light-coloured
bo	short scope link	short scope joiner; joins various constructs with shortest scope and right grouping
boi	end number or lerfu	elidable terminator: terminate numeral or letteral string
botpi	bottle	x_1 is a bottle/jar/urn/flask/closable container for x_2, made of material x_3 with lid x_4
bredi	ready	x_1 is ready/prepared for x_2 (event)
bridi	predicate	x_1 (text) is a predicate relationship with relation x_2 among arguments (sequence/set)
briju	office	x_1 is an office/bureau/work-place of worker x_2 at location x_3
bruna	brother	x_1 is brother of/fraternal to x_2 by bond/tie/standard/parent(s) x_3; [not necess. biological]
budjo	Buddhist	x_1 pertains to the Buddhist culture/religion/ethos in aspect x_2
burna	embarassed	x_1 is embarrassed/disconcerted/flustered/ill-at-ease about/under conditions x_2 (abstraction)
bu'u	coincident with	location tense relation/direction; coincident with/at the same place as; space equivalent of ca
by	b	letteral for b
ca	during	time tense relation/direction: is [selbri]; during/simultaneous with [sumti]; present tense
cabdei	today	x_1 is today (cabna 'now' + djedi 'day')
cacra	hour	x_1 is x_2 hours in duration (default is 1 hour) by standard x_3
cadzu	walk	x_1 walks/strides/paces on surface x_2 using limbs x_3
cai	intense emotion	attitudinal: strong intensity attitude modifier
ca'o	continuative	interval event contour: during ...; continuative)
carna	turn	x_1 turns/rotates/revolves around axis x_2 in direction x_3
carvi	rain	x_1 rains/showers/[precipitates] to x_2 from x_3; x_1 is precipitation [not limited to 'rain']
casnu	discuss	x_1(s) (mass normally, but 1 individual/jo'u possible) discuss(es)/talk(s) about topic/subject x_2
catke	shove	x_1 [agent] shoves/pushes x_2 at locus x_3
catlu	look	x_1 looks at/examines/views/inspects/regards/watches/gazes at x_2 [compare with zgani]
catra	kill	x_1 (agent) kills/slaughters/murders x_2 by action/method x_3

ce	in a set with	non-logical connective: set link, unordered; 'and also', but forming a set
ce'o	in a sequence with	non-logical connective: ordered sequence link; 'and then', forming a sequence
certu	expert	x_1 is an expert/pro/has prowess in/is skilled at x_2 (event/activity) by standard x_3
ce'u	lambda	pseudo-quantifier binding a variable within an abstraction that represents an open place
cevni	god	x_1 is a/the god/deity of people(s)/religion x_2 with dominion over x_3 [sphere]; x_1 is divine
cfari	initiate	x_1 [state/event/process] commences/initiates/starts/begins to occur; (intransitive verb)
cfipu	confusing	x_1 (event/state) confuses/baffles x_2 [observer] due to [confusing] property x_3 (ka)
ci	3	digit/number: 3
cidja	food	x_1 is food/feed/nutriment for x_2; x_1 is edible/gives nutrition to x_2
cidjrkari	curry	x_1 is a quantity of curry
cidjrkebabi	kebab	x_1 is a kebab
cidro	hydrogen	x_1 is a quantity of/contains/is made of hydrogen (H)
cifnu	infant	x_1 is an infant/baby [helpless through youth/incomplete development] of species x_2
cilre	learn	x_1 learns x_2 (du'u) about subject x_3 from source x_4 (obj./event) by method x_5 (event/process)
cinba	kiss	x_1 (agent) kisses/busses x_2 at locus x_3
cinmo	emotion	x_1 feels emotion x_2 (ka) about x_3
cinri	interesting	x_1 (abstraction) interests/is interesting to x_2; x_2 is interested in x_1
cinse	sexual	x_1 in activity/state x_2 exhibits sexuality/gender/sexual orientation x_3 (ka) by standard x_4
cinta	paint	x_1 [material] is a paint of pigment/active substance x_2, in a base of x_3
cinynei	fancy	x_1 fancies x_2 (cinse 'sex' + nelci 'like')
cipni	bird	x_1 is a bird/avian/fowl of species x_2
cipra	test	x_1 (process/event) is a test for/proof of property/state x_2 in subject x_3 (individ./set/mass)
cirla	cheese	x_1 is a quantity of/contains cheese/curd from source x_2
ciska	write	x_1 inscribes/writes x_2 on display/storage medium x_3 with writing implement x_4; x_1 is a scribe
cisma	smile	x_1 smiles/grins (facial expression)
cismyfra	smile at	x_1 reacts/responds/answers by smiling to stimulus x_2 under conditions x_3 [cisma (smile) + frati (react)]
citka	eat	x_1 eats/ingests/consumes (transitive verb) x_2
citsi	season	x_1 is a season/is seasonal [cyclical interval], defined by interval/property x_2, of year(s) x_3
cizra	strange	x_1 is strange/weird/deviant/bizarre/odd to x_2 in property x_3 (ka)
ckafi	coffee	x_1 is made of/contains/is a quantity of coffee from source/bean/grain x_2

ckasu	ridicule	x_1 ridicules/mocks/scoffs at x_2 about x_3 (property/event) by doing activity x_4 (event)
ckire	grateful	x_1 is grateful/thankful to/appreciative of x_2 for x_3 (event/property)
ckule	school	x_1 is school/institute/academy at x_2 teaching subject(s) x_3 to audien./commun. x_4 operated by x_5
clani	long	x_1 is long in dimension/direction x_2 (default longest dimension) by measurement standard x_3
cladu	loud	x_1 is loud/noisy at observation point x_2 by standard x_3
clira	early	x_1 (event) is early by standard x_2
clite	polite	x_1 is polite/courteous/civil in matter x_2 according to standard/custom x_3
cliva	leave	x_1 leaves x_2 via route x_3
cmaci	mathematics	x_1 is a mathematics of type/describing x_2
cmalu	small	x_1 is small in property/dimension(s) x_2 (ka) as compared with standard/norm x_3
cmavo	structure word	x_1 is a structure word of grammatical class x_2, with meaning/function x_3 in usage (language) x_4
cmene	name	x_1 (quoted word(s)) is a/the name/title/tag of x_2 to/used-by namer/name-user x_3 (person)
cmila	laugh	x_1 laughs
cmima	member	x_1 is a member/element of set x_2; x_1 belongs to group x_2; x_1 is amid/among/amongst group x_2
cmoni	moan	x_1 utters moan/groan/howl/scream [non-linguistic utterance] x_2 expressing x_3 (property)
cnino	new	x_1 is new/unfamiliar/novel to observer x_2 in feature x_3 (ka) by standard x_4; x_1 is a novelty
cnita	beneath	x_1 is directly/vertically beneath/below/under/underneath/down from x_2 in frame of reference x_3
co'a	initiative	interval event contour: at the starting point of ...; initiative
co'e	unspecified selbri	elliptical/unspecified bridi relationship
coi	greetings	vocative: greetings/hello
co'o	partings	vocative: partings/good-bye
co'u	cessative	interval event contour: at the ending point of ... even if not done; cessative
cpedu	request	x_1 requests/asks/petitions/solicits for x_2 of/from x_3 in manner/form x_4
cpina	pungent	x_1 is pungent/piquant/peppery/spicy/irritating to sense x_2
cradi	radio	x_1 broadcasts/transmits [using radio waves] x_2 via station/frequency x_3 to [radio] receiver x_4
crane	front	x_1 is anterior/ahead/forward/(in/on) the front of x_2 which faces/in-frame-of-reference x_3
cremau	more expert	x_1 is more expert/pro/has prowess than x_2 in/is more skilled at x_3 by standard x_4 by amount/excess x_5 (certu 'expert' + zmadu 'more')
cribe	bear	x_1 is a bear/ursoid of species/breed x_2

crida	fairy	x_1 is a fairy/elf/gnome/brownie/pixie/goblin/kobold [mythical humanoid] of mythos/religion x_2
crino	green	x_1 is green
crisa	summer	x_1 is summer/summertime [hot season] of year x_2 at location x_3
critu	autumn	x_1 is autumn/fall [harvest/cooling season] of year x_2 at location x_3
ctebi	lip	x_1 is a/the lip [body-part]/rim of orifice x_2 of body x_3; (adjective:) x_1 is labial
ctuca	teach	x_1 teaches audience x_2 ideas/methods/lore x_3 (du'u) about subject(s) x_4 by method x_5 (event)
cu	selbri separator	elidable marker: separates selbri from preceding sumti, allows preceding terminator elision
cu'i	neutral emotion	attitudinal: neutral scalar attitude modifier
cukta	book	x_1 is a book about subject/theme/story x_2 by author x_3 for audience x_4 preserved in medium x_5
culno	full	x_1 is full/completely filled with x_2
cupra	produce	x_1 produces x_2 [product] by process x_3
curmi	let	x_1 (agent) lets/permits/allows x_2 (event) under conditions x_3; x_1 grants privilege x_2
cusku	express	x_1 expresses/says x_2 for audience x_3 via expressive medium x_4
cu'u	as said by	cusku modal, 1st place (attribution/quotation) as said by source ...; used for quotation
cy	c	letteral for c
da	something #1	logically quantified existential pro-sumti: there exists something #1 (usually restricted)
dable'a	conquer	x_1 conquers/siezes x_2 from x_3 ('war-take')
da'i	supposing	discursive: supposing – in fact
dai	empathy	attitudinal modifier: marks empathetic use of preceding attitudinal; shows another's feelings
danfu	answer	x_1 is the answer/response/solution/[reply] to question/problem x_2
dansu	dance	x_1 (individual, mass) dances to accompaniment/music/rhythm x_2
dansydi'u	disco	x_1 is a disco (dansu 'dance' + dinju 'building')
dapma	curse	x_1 curses/damns/condemns x_2 to fate (event) x_3
daptutra	hell	x_1 is the territory of damnation by x_2 (dapma 'curse' + tutra 'territory')
darxi	hit	x_1 hits/strikes/[beats] x_2 with instrument [or body-part] x_3 at locus x_4
dasni	wear	x_1 wears/is robed/garbed in x_2 as a garment of type x_3
dau	10	digit/number: hex digit A
de	something #2	logically quantified existential pro-sumti: there exists something #2 (usually restricted)
de'i	dated	detri modal, 1st place (for letters) dated ... ; attaches date stamp
denpa	wait	x_1 awaits/waits/pauses for/until x_2 at state x_3 before starting/continuing x_4 (activity/process)

detri	date	x_1 is the date [day,{week},{month},year] of event/state x_2, at location x_3, by calendar x_4
di	something #3	logically quantified existential pro-sumti: there exists something #3 (usually restricted)
dicra	interrupt	x_1 (event) interrupts/stops/halts/[disrupts] x_2 (object/event/process) due to quality x_3
dikca	electric	x_1 is electricity [electric charge or current] in/on x_2 of polarity/quantity x_3 (def. negative)
dilnu	cloud	x_1 is a cloud/mass of clouds of material x_2 in air mass x_3 at floor/base elevation x_4
dinske	economics	x_1 is economics based on methodology x_2 (jdini 'money' + **saske** 'science')
dirba	dear	x_1 is dear/precious/darling to x_2; x_1 is emotionally valued by x_2
djacu	water	x_1 is made of/contains/is a quantity/expanse of water; (adjective:) x_1 is aqueous/[aquatic]
djedi	full day	x_1 is x_2 full days in duration (default is 1 day) by standard x_3; (adjective:) x_1 is diurnal
djica	want	x_1 desires/wants/wishes x_2 (event/state) for purpose x_3
djuno	know	x_1 knows fact(s) x_2 (du'u) about subject x_3 by epistemology x_4
do	you	pro-sumti: you listener(s); identified by vocative
doi	vocative marker	generic vocative marker; identifies intended listener; elidable after COI
dotco	German	x_1 reflects German/Germanic culture/nationality/language in aspect x_2
draci	drama	x_1 is a drama/play about x_2 [plot/theme/subject] by dramatist x_3 for audience x_4 with actors x_5
drani	correct	x_1 is correct/proper/right/perfect in property/aspect x_2 (ka) in situation x_3 by standard x_4
drata	other	x_1 isn't the-same-thing-as/is different-from/other-than x_2 by standard x_3; x_1 is something else
du	same identity as	identity selbri; = sign; x_1 identically equals x_2, x_3, etc.; attached sumti refer to same thing
du'e	too many	digit/number: too many
dukse	excess	x_1 is an excess of/too much of x_2 by standard x_3
dunda	give	x_1 [donor] gives/donates gift/present x_2 to recipient/beneficiary x_3 [without payment/exchange]
dunku	anguish	x_1 is anguished/distressed/emotionally wrought/stressed by x_2
dunli	equal	x_1 is equal/congruent to/as much as x_2 in property/dimension/quantity x_3
dunra	winter	x_1 is winter/wintertime [cold season] of year x_2 at location
du'u	bridi abstract	abstractor: predication/bridi abstractor; x_1 is predication [bridi] expressed in sentence x_2
dy	d	letteral for d
dzena	elder	x_1 is an elder/ancestor of x_2 by bond/tie/degree x_3; x_1's generation precedes x_2's parents
fa	1st sumti place	sumti place tag: tag 1st sumti place
fa'a	towards point	location tense relation/direction; arriving at/directly towards ...

facki	discover	x_1 discovers/finds out x_2 (du'u) about subject/object x_3; x_1 finds (fi) x_3 (object)
fagri	fire	x_1 is a fire/flame in fuel x_2 burning-in/reacting-with oxidizer x_3 (default air/oxygen)
fai	extra sumti place	sumti place tag: tag a sumti moved out of numbered place structure; used in modal conversions
falcru	drop	x_1 allows x_2 to fall/drop to x_3 in gravity well/frame of reference x_4
fange	alien	x_1 is alien/foreign/[exotic]/unfamiliar to x_2 in property x_3 (ka)
fanva	translate	x_1 translates x_2 to language x_3 from language x_4 with translation-result x_5
fanza	annoy	x_1 (event) annoys/irritates/bothers/distracts x_2
farlu	fall	x_1 falls/drops to x_2 from x_3 in gravity well/frame of reference x_4
farna	direction	x_1 is the direction of x_2 (object/event) from origin/in frame of reference x_3
fasnu	event	x_1 (event) is an event that happens/occurs/takes place; x_1 is an incident/happening/occurrence
fatci	fact	x_1 (du'u) is a fact/reality/truth/actuality, in the absolute
fa'u	and respectively	non-logical connective: respectively; unmixed ordered distributed association
fau	in the event of	fasnu modal, 1st place (non-causal) in the event of ...
fe	2nd sumti place	sumti place tag: tag 2nd sumti place
fei	11	digit/number: hex digit B
fekpre	crazy	x_1 is an insane, crazy person (fenki 'crazy' + prenu 'person')
fengu	angry	x_1 is angry/mad at x_2 for x_3 (action/state/property)
fenki	crazy	x_1 (action/event) is crazy/insane/mad/frantic/in a frenzy (one sense) by standard x_2
fe'o	over and out	vocative: over and out (end discussion)
fi	3rd sumti place	sumti place tag: tag 3rd sumti place
fi'e	created by	finti modal, 1st place (creator) created by ...
fi'i	hospitality	vocative: hospitality – inhospitality; you are welcome/ make yourself at home
finpe	fish	x_1 is a fish of species x_2 [metaphorical extension to sharks, non-fish aquatic vertebrates]
finti	invent	x_1 invents/creates/composes/authors x_2 for function/purpose x_3 from existing elements/ideas x_4
fi'u	fraction slash	digit/number: fraction slash; default "/n" $\rightarrow$ 1/n, "n/" $\rightarrow$ n/1, or "/" alone $\rightarrow$ golden ratio
fo	4th sumti place	sumti place tag: tag 4th sumti place
fo'a	it #6	pro-sumti: he/she/it/they #6 (specified by goi)
fo'e	it #7	pro-sumti: he/she/it/they #7 (specified by goi)
fo'i	it #8	pro-sumti: he/she/it/they #8 (specified by goi)
fonxa	telephone	x_1 is a telephone transceiver/modem attached to system/network x_2
fo'o	it #9	pro-sumti: he/she/it/they #9 (specified by goi)
fo'u	it #10	pro-sumti: he/she/it/they #10 (specified by goi)
fraso	French	x_1 reflects French/Gallic culture/nationality/language in aspect x_2

frati	react	x_1 reacts/responds/answers with action x_2 to stimulus x_3 under conditions x_4; x_1 is responsive
frumu	frown	x_1 frowns/grimaces (facial expression)
fu	5th sumti place	sumti place tag: tag 5th sumti place
fusra	rotten	x_1 rots/decays/ferments with decay/fermentation agent x_2; x_1 is rotten/decayed/fermented
fy	f	letteral for f
ga	fore or	logical connective: forethought all but tanru-internal or
gacri	cover	x_1 is a cover/[lid/top] for covering/concealing/sheltering x_2
gai	12	digit/number: hex digit C
gairgau	cover	x_1 [person/agent] places x_2 as a cover/[lid/top] on x_3 (gacri 'cover' + gasnu 'do')
galfi	modify	x_1 (event) modifies/alters/changes/transforms/converts x_2 into x_3
ganai	fore only if	logical connective: forethought all but tanru-internal conditional/only if
ganlo	closed	x_1 (portal/passage/entrance-way) is closed/shut/not open, preventing passage/access to x_2 by x_3
gasnu	do	x_1 [person/agent] is an agentive cause of event x_2; x_1 does/brings about x_2
ge	fore and	logical connective: forethought all but tanru-internal and
ge'i	fore conn?	logical connective: forethought all but tanru-internal connective question
gerku	dog	x_1 is a dog/canine/[bitch] of species/breed x_2
gerna	grammar	x_1 is the grammar/rules/defining form of language x_2 for structure/text x_3
gi	connective medial	logical connective: all but tanru-internal forethought connective medial marker
gi'a	bridi or	logical connective: bridi-tail afterthought or
gi'e	bridi and	logical connective: bridi-tail afterthought and
gi'enai	bridi but not	logical connective: bridi-tail afterthought x but not y
gi'i	bridi conn?	logical connective: bridi-tail afterthought connective question
gi'o	bridi iff	logical connective: bridi-tail afterthought biconditional/iff/if-and-only-if
gi'onai	bridi xor	logical connective: bridi-tail afterthought exclusive or
gismu	root word	x_1 is a (Lojban) root word expressing relation x_2 among argument roles x_3, with affix(es)
gi'u	bridi whether	logical connective: bridi-tail afterthought whether-or-not
glare	hot	x_1 is hot/[warm] by standard x_2
gleki	happy	x_1 is happy/gay/merry/glad/gleeful about x_2 (event/state)
gletu	copulate	x_1 copulates/mates/has coitus/sexual intercourse with x_2
glico	English	x_1 is English/pertains to English-speaking culture in aspect x_2
go	fore iff	logical connective: forethought all but tanru-internal biconditional/iff/if-and-only-if
go'i	last bridi	pro-bridi: preceding bridi; in answer to a yes/no question, repeats the claim, meaning yes
goi	pro-sumti assign	sumti assignment; used to define/assign ko'a/fo'a series pro-sumti

gonai	fore xor	logical connective: forethought all but tanru-internal exclusive or
grana	rod	x_1 is a rod/pole/staff/stick/cane [shape/form] of material x_2
gu	fore whether	logical connective: forethought all but tanru-internal whether-or-not
gu'a	fore or	logical connective: forethought all but tanru-internal or
gu'anai	fore only if	logical connective: forethought all but tanru-internal conditional/only if
gubni	public	x_1 is public/un-hidden/open/jointly available to/owned by all among community x_2 (mass)
gu'e	fore and	logical connective: forethought all but tanru-internal and
gugde	country	x_1 is the country of peoples x_2 with land/territory x_3; (people/territory relationship)
gu'i	fore conn?	logical connective: forethought all but tanru-internal connective question
gunjubme	desk	x_1 is a desk of worker x_2 (gunka 'work' + jubme 'table')
gunka	work	x_1 [person] labors/works on/at x_2 [activity] with goal/objective x_3
gunro	roll	x_1 rolls/trundles on/against surface x_2 rotating on axis/axle x_3; x_1 is a roller
gunta	attack	x_1 (person/mass) attacks/invades/commits aggression upon victim x_2 with goal/objective x_3
guntrusi'o	Communism	x_1 is a notion of communism (gunka 'work' + turni 'govern' + sidbo 'idea')
gu'o	fore iff	logical connective: forethought all but tanru-internal biconditional/iff/if-and-only-if
gu'onai	fore xor	logical connective: forethought all but tanru-internal exclusive or
gusni	illumine	x_1 [energy] is light/illumination illuminating x_2 from light source x_3
gusta	restaurant	x_1 is a restaurant/cafe/diner serving type-of-food x_2 to audience x_3
gu'u	fore whether	logical connective: forethought all but tanru-internal whether-or-not
gy	g	letteral for g
ja	tanru or	logical connective: tanru-internal or
jai	modal conversion	convert tense/modal (tagged) place to 1st place; 1st place moves to extra FA place (fai)
jalge	result	x_1 (action/event/state) is a result/outcome/conclusion of antecedent x_2 (event/state/process)
jamfu	foot	x_1 is a/the foot [body-part] of x_2
jamna	war	x_1 (person/mass) wars against x_2 over territory/matter x_3; x_1 is at war with x_2
janco	shoulder	x_1 is a/the shoulder/hip/joint [body-part] attaching limb/extremity x_2 to body x_3
jarbu	suburb	x_1 is a suburban area of city/metropolis x_2
jarco	show	x_1 (agent) shows/exhibits/displays/[reveals]/demonstrates x_2 (property) to audience x_3

jatna	captain	x_1 is captain/commander/leader/in-charge/boss of vehicle/domain x_2
jau	13	digit/number: hex digit D
jbena	born	x_1 is born to x_2 at time x_3 [birthday] and place x_4 [birthplace]; x_1 is native to (fo)
jbonunsalci	Logfest	x_1 is an event of celebrating/recognizing/honoring Lojban with activity/[party] x_2
jdima	price	x_1 [amount] is the price of x_2 to purchaser/consumer x_3 set by vendor x_4
jdini	money	x_1 is money/currency issued by x_2; (adjective:) x_1 is financial/monetary/pecuniary/fiscal
je	tanru and	logical connective: tanru-internal and
jecta	polity	x_1 is a polity/state governing territory/domain x_2; [government/territory relationship]
jecyga'ibai	revolutionary	x_1 revolts against/deposes regime x_2 (jecta 'polity' + galfi 'modify' + bapli 'force')
je'e	roger	vocative: roger (ack) – negative acknowledge; used to acknowledge offers and thanks
je'i	tanru conn?	logical connective: tanru-internal connective question
jelca	burn	x_1 burns/[ignites/is flammable/inflammable] at temperature x_2 in atmosphere x_3
jemna	gem	x_1 is a gem/polished stone/pearl of type x_2 from gemstone/material/source x_3
jenai	tanru but not	logical connective: tanru-internal x but not y
jgari	grasp	x_1 grasps/holds/clutches/seizes/grips/[hugs] x_2 with x_3 (part of x_1) at locus x_4 (part of x_2)
jgira	pride	x_1 (person) feels/has pride in/about x_2 (abstraction)
jgita	guitar	x_1 is a guitar/violin/fiddle/harp [stringed musical instrument] with actuator/plectrum/bow x_2
jgitrgitara	guitar	x_1 is a guitar
jgitrviolino	violin	x_1 is a violin
ji	sumti conn?	logical connective: sumti afterthought connective question
ji'a	in addition	discursive: additionally
jikca	socialize	x_1 interacts/behaves socially with x_2; x_1 socializes with/is sociable towards x_2
jimpe	understand	x_1 understands/comprehends fact/truth x_2 (du'u) about subject x_3; x_1 understands (fi) x_3
jinvi	opine	x_1 thinks/opines x_2 [opinion] (du'u) is true about subject/issue x_3 on grounds x_4
jipci	chicken	x_1 is a chicken/[hen/cock/rooster]/small fowl [a type of bird] of species/breed x_2
jisra	juice	x_1 is made of/contains/is a quantity of juice/nectar from-source/of-type x_2
jmina	add	x_1 adds/combines x_2 to/with x_3, with result x_4; x_1 augments x_2 by amount x_3
jmive	live	x_1 lives/is alive by standard x_2; x_1 is an organism/living thing

jo	tanru iff	logical connective: tanru-internal biconditional/iff/if-and-only-if
joi	in a mass with	non-logical connective: mixed conjunction; 'and' meaning 'mixed together', forming a mass
jonai	tanru xor	logical connective: tanru-internal exclusive or
ju	tanru whether	logical connective: tanru-internal whether-or-not
jubme	table	x_1 is a table/flat solid upper surface of material x_2, supported by legs/base/pedestal x_3
ju'i	attention	vocative: attention – at ease – ignore me
jukpa	cook	x_1 cooks/prepares food-for-eating x_2 by recipe/method x_3 (process)
jundi	attentive	x_1 is attentive towards/attends/tends/pays attention to object/affair x_2
jungo	Chinese	x_1 reflects Chinese [Mandarin, Cantonese, Wu, etc.] culture/nationality/language in aspect x_2
junri	serious	x_1 (person) is serious/earnest/has gravity about x_2 (event/state/activity)
ju'o	certainty	attitudinal modifier: certainly – uncertain – certainly not
ka	property abstract	abstractor: property/quality abstractor (-ness); x_1 is quality/property exhibited by [bridi]
kabri	cup	x_1 is a cup/glass/tumbler/mug/vessel/[bowl] containing contents x_2, and of material x_3
kakne	able	x_1 is able to do/be/capable of doing/being x_2 (event/state) under conditions x_3 (event/state)
kanla	cup	x_1 is a/the eye [body-part] of x_2; [metaphor: sensory apparatus]; (adjective:) x_1 is ocular
kansa	with	x_1 is with/accompanies/is a companion of x_2, in state/condition/enterprise x_3 (event/state)
karbi	compare	x_1 [observer] compares x_2 with x_3 in property x_4 (ka), determining comparison x_5 (state)
karce	car	x_1 is a car/automobile/truck/van [a wheeled motor vehicle] for carrying x_2, propelled by x_3
karni	journal	x_1 is a journal/periodical/magazine/[newspaper] with content x_2 published by x_3 for audience x_4
kau	indirect question	discursive: marks word serving as focus of indirect question
ke	start grouping	start grouping of tanru, etc; ... type of ... ; overrides normal tanru left grouping
ke'a	relativized it	pro-sumti: relativized sumti (object of relative clause)
ke'e	end grouping	elidable terminator: end of tanru left grouping override (usually elidable)
kei	end abstraction	elidable terminator: end abstraction bridi (often elidable)
kensa	outer space	x_1 is outer space near/associated with celestial body/region x_2
ke'o	please repeat	vocative: please repeat
kerfa	hair	x_1 is a/the hair/fur [body-part] of x_2 at body location x_3
ki'a	textual confusion	attitudinal question: confusion about something said
ki'e	thanks	vocative: thanks – no thanks to you
kijno	oxygen	x_1 is a quantity of/contains/is made of oxygen (O)
ki'o	number comma	digit/number: number comma; thousands

kisto	Pakistani	x_1 reflects Pakistani/Pashto culture/nationality/language in aspect x_2
ki'u	because of reason	krinu modal, 1st place (justified by) justifiably; because of reason ...
klaji	street	x_1 is a street/avenue/lane/drive/cul-de-sac/way/alley/[road] at x_2 accessing x_3
klaku	weep	x_1 weeps/cries tears x_2 about/for reason x_3 (event/state)
klama	come	x_1 goes/comes to x_2 from x_3 via x_4 by means x_5
ko	imperative	pro-sumti: you (imperative); make it true for you, the listener
ko'a	it #1	pro-sumti: he/she/it/they #1 (specified by goi)
ko'e	it #2	pro-sumti: he/she/it/they #2 (specified by goi)
ko'i	it #3	pro-sumti: he/she/it/they #3 (specified by goi)
ko'o	it #4	pro-sumti: he/she/it/they #4 (specified by goi)
ko'u	it #5	pro-sumti: he/she/it/they #5 (specified by goi)
krasi	origin	x_1 (site/event) is a source/start/beginning/origin of x_2 (object/event/process)
kratrsenatore	senator	x_1 is a senator representing x_2 in senate x_3
krinu	reason	x_1 (event/state) is a reason/justification/explanation for/causing/permitting x_2 (event/state)
krixa	cry out	x_1 cries out/yells/howls sound x_2; x_1 is a crier
ku	end sumti	elidable terminator: end description, modal, or negator sumti; often elidable
kucli	curious	x_1 is curious/wonders about/is interested in/[inquisitive about] x_2 (object/abstract)
ku'i	however	iscursive: however/but/in contrast
kukte	delicious	x_1 is delicious/tasty/delightful to observer/sense x_2 [person, or sensory activity]
kumfa	room	x_1 is a room of/in structure x_2 surrounded by partitions/walls/ceiling/floor x_3 (mass/jo'u)
kunti	empty	x_1 [container] is empty/vacant of x_2 [material]; x_1 is hollow
ku'o	end relative clause	elidable terminator: end NOI relative clause; always elidable, but preferred in complex clauses
kurji	take care of	x_1 takes-care-of/looks after/attends to/provides for/is caretaker for x_2 (object/event/person)
ky	k	letteral for k
kybu	q	letteral for q
la	that named	name descriptor: the one(s) called ... ; takes name or selbri description
la'a	probability	discursive: probably – improbably
lacpu	pull	x_1 pulls/tugs/draws/drags x_2 by handle/at locus x_3
ladru	milk	x_1 is made of/contains/is a quantity of milk from source x_2; (adjective:) x_1 is lactic/dairy
la'e di'u	last utterance it	pro-sumti: the referent of the last utterance; the state described
la'e	the referent of	the referent of (indirect pointer); uses the referent of a sumti as the desired sumti
la'i	the set of named	name descriptor: the set of those named ... ; takes name or selbri description
lai	the mass of named	name descriptor: the mass of individual(s) named ... ; takes name or selbri description

lamji	adjacent	x_1 is adjacent/beside/next to/in contact with x_2 in property/sequence x_3 in direction x_4
lanli	analyze	x_1 analyzes/examines-in-detail x_2 by method/technique/system x_3 [process/activity]
lanme	sheep	x_1 is a sheep/[lamb/ewe/ram] of species/breed x_2 of flock x_3
lante	can	x_1 is a can/tightly sealed/pre-sealed container for perishable contents x_2, made of x_3
la'o	the non-Lojban named	delimited non-Lojban name; the resulting quote sumti is treated as a name
le	the described	non-veridical descriptor: the one(s) described as ...
lebna	take	x_1 takes/gets/gains/obtains/seizes/[removes] x_2 (object/property) from x_3 (possessor)
le'e	the stereotypical	non-veridical descriptor: the stereotype of those described as ...
le'i	the set described	non-veridical descriptor: the set of those described as ..., treated as a set
lei	the mass described	non-veridical descriptor: the mass of individual(s) described as ...
lerci	late	x_1 (event) is late by standard x_2
le'u	end error quote	end quote of questionable or out-of-context text; not elidable
li	the number	the number/evaluated expression; convert number/operand/evaluated math expression to sumti
lidne	precede	x_1 precedes/leads x_2 in sequence x_3; x_1 is former/preceding/previous; x_2 is latter/following
lifri	experience	x_1 [person/passive/state] undergoes/experiences x_2 (event/experience); x_2 happens to x_1
lindi	lightning	x_1 is lightning/electrical arc/thunderbolt striking at/extending to x_2 from x_3
lo	that which really is	veridical descriptor: the one(s) that really is(are) ...
lo'e	the typical	veridical descriptor: the typical one(s) who really is(are) ...
logji	logic	x_1 [rules/methods] is a logic for deducing/concluding/inferring/reasoning to/about x_2 (du'u)
lo'i	the set which really is	veridical descriptor: the set of those that really are ..., treated as a set
loi	the mass which really is	veridical descriptor: the mass of individual(s) that is(are) ...
lojbo	Lojbanic	x_1 reflects [Loglandic]/Lojbanic language/culture/nationality/community in aspect x_2
lo'o	end mex sumti	elidable terminator: end math expression (mex) sumti; end mex-to-sumti conversion; usually elidable
lo'u	error quote	start questionable/out-of-context quote; text should be Lojban words, but needn't be grammatical
lu'a	the individuals of	the members of the set/components of the mass; converts another description type to individuals
lujvo	affix compound	x_1 (text) is a compound predicate word with meaning x_2 and arguments x_3 built from metaphor x_4
lunra	lunar	x_1 is Earth's moon (default); x_1 is a major natural satellite/moon of planet x_2

lu'o	the mass composed of	the mass composed of; converts another description type to a mass composed of the members
ly	l	letteral for l
ma	sumti?	pro-sumti: sumti question (what/who/how/why/etc.); appropriately fill in sumti blank
ma'a	we with you	pro-sumti: me/we the speaker(s)/author(s) and you the listener(s) and others unspecified
mabla	derogative	x_1 is a derogative connotation/sense of x_2 used by x_3; x_3 derogates/'curses at' x_2 in form x_1
malglico	derogatorily English	x_1 is English/pertains to English-speaking culture in aspect x_2, and is derogatorily viewed by x_3 (mabla 'derogative' + glico 'English')
malrarbau	derogatorily natural language	x_1 is a natural language, and is derogatorily viewed by x_2 (mabla 'derogative' + rarna 'natural' + bangu 'languge')
mamta	mother	x_1 is a mother of x_2; x_1 bears/mothers/acts maternally toward x_2; [not necessarily biological]
manci	wonder	x_1 feels wonder/awe/marvels about x_2
manku	dark	x_1 is dark/lacking in illumination
mansa	satisfy	x_1 satisfies evaluator x_2 in property (ka)/state x_3
masti	month	x_1 is x_2 months in duration (default is 1 month) by month standard x_3
matcrflokati	*flokati* rug	x_1 is a *flokati* rug
mau	exceeded by	zmadu modal, 1st place (a greater) exceeded by ... ; usually a sumti modifier
me	sumti to selbri	convert sumti to selbri/tanru element; x_1 is specific to [sumti] in aspect x_2
mebri	brow	x_1 is a/the brow/forehead [projecting flat/smooth head/body-part] of x_2
melbi	beautiful	x_1 is beautiful/pleasant to x_2 in aspect x_3 (ka) by aesthetic standard x_4
menli	mind	x_1 is a mind/intellect/psyche/mentality/[consciousness] of body x_2
mensi	sister	x_1 is a sister of/sororal to x_2 by bond/tie/standard/parent(s) x_3; [not necessarily biological]
merko	American	x_1 pertains to USA/American culture/nationality/dialect in aspect x_2
mi	me	pro-sumti: me/we the speaker(s)/author(s); identified by self-vocative
mi'a	we, not you	pro-sumti: me/we the speaker(s)/author(s) and others unspecified, but not you, the listener
mi'e	self-introduction	self vocative: self-introduction – denial of identity; identifies speaker
mikce	doctor	x_1 doctors/treats/nurses/[cures]/is physician/midwife to x_2 for ailment x_3 by treatment/cure x_4
milxe	mild	x_1 is mild/non-extreme/gentle/middling/somewhat in property x_2 (ka); x_1 is not very x_2
minra	reflect	x_1 reflects/mirrors/echoes x_2 [object/radiation] to observer/point x_3 as x_4; x_2 bounces on x_1

mintu	same	x_1 is the same/identical thing as x_2 by standard x_3; (x_1 and x_2 interchangeable)
mi'o	me and you	pro-sumti: me/we the speaker(s)/author(s) and you the listener(s)
misno	famous	x_1 (person/object/event) is famous/renowned/is a celebrity among community of persons x_2 (mass)
mlatu	cat	x_1 is a cat/[puss/pussy/kitten] [feline animal] of species/breed x_2; (adjective:) x_1 is feline
mo	bridi?	pro-bridi: bridi/selbri/brivla question
mo'i	space motion	mark motions in space-time
moi	ordinal selbri	convert number to ordinal selbri; x_1 is (n)th member of set x_2 ordered by rule x_3
morji	remember	x_1 remembers/recalls/recollects fact(s)/memory x_2 (du'u) about subject x_3
morsi	dead	x_1 is dead/has ceased to be alive
mo'u	completive	interval event contour: at the natural ending point of ...; completive
mrilu	mail	x_1 mails/posts [transfer via intermediary service] x_2 to x_3 from x_4 by carrier/network/system x_5
mrobi'o	die	x_1 dies under conditions x_2 (morsi 'dead' + binxo 'become')
mu	5	digit/number: 5
mu'i	because of motive	mukti modal, 1st place because of motive ...
mukti	motive	x_1 (action/event/state) motivates/is a motive/incentive for action/event x_2, per volition of x_3
mulno	complete	x_1 (event) is complete/done/finished; x_1 (object) has become whole in property x_2 by standard x_3
munje	universe	x_1 is a universe/cosmos [complete and ordered entirety] of domain/sphere x_2 defined by rules x_3
mu'o	over	vocative: over (response OK) – more to come
mupli	example	x_1 is an example/sample/specimen/instance/case/illustration of common property(s) x_2 of set x_3
mutce	much	x_1 is much/extreme in property x_2 (ka), towards x_3 extreme/direction; x_1 is, in x_2, very x_3
mu'u	exemplified by	mupli modal, 1st place exemplified by ...
my	m	letteral for m
na.a	sumti only if	logical connective: sumti afterthought conditional/only if
na	bridi negator	bridi contradictory negator; scope is an entire bridi; logically negates in some cmavo compounds
nabmi	problem	x_1 (event/state) is a problem to/encountered by x_2 in situation/task/inquiry x_3
na'e	scalar contrary	contrary scalar negator: other than ...; not ...; a scale or set is implied
nagi'a	bridi only if	logical connective: bridi-tail afterthought conditional/only if
nai	negate last word	attached to cmavo to negate them; various negation-related meanings
naja	tanru only if	logical connective: tanru-internal conditional/only if
namcu	number	x_1 (li) is a number/quantifier/digit/value/figure (noun); refers to the value and not the symbol

nanba	bread	x_1 is a quantity of/contains bread [leavened or unleavened] made from grains x_2
nanca	year	x_1 is x_2 years in duration (default is 1 year) by standard x_3; (adjective:) x_1 is annual
nandu	difficult	x_1 is difficult/hard/challenging for x_2 under conditions x_3; x_1 challenges (non-agentive) x_2
nanmu	man	x_1 is a man/men; x_1 is a male humanoid person [not necessarily adult]
narju	orange	x_1 is orange [color adjective]
ne'a	next to	location tense relation/direction; approximating/next to ...
ne'i	within	location tense relation/direction; within/inside of/into ...
nelci	fond	x_1 is fond of/likes/has a taste for x_2 (object/state)
nenri	in	x_1 is in/inside/within x_2; x_1 is on the inside/interior of x_2 [totally within the bounds of x_2]
ni	amount abstract	abstractor: quantity/amount abstractor; x_1 is quantity/amount of [bridi] measured on scale x_2
ni'a	below	location tense relation/direction; downwards/down from ...
nibli	necessitate	x_1 logically necessitates/entails/implies action/event/state x_2 under rules/logic system x_3
nicte	night	x_1 is a nighttime of day x_2 at location x_3; (adjective:) x_1 is at night/nocturnal
ni'i	because of logic	nibli modal, 1st place logically; logically because ...
nimre	citrus	x_1 is a quantity of citrus [fruit/tree, etc.] of species/strain x_2
ninmu	woman	x_1 is a woman (any female humanoid person, not necessarily adult)
ninpe'i	meet	x_1 meets x_2 for the first time at location x_3 (cnino 'new' + penmi 'meet')
ni'o	new topic	discursive: paragraph break; introduce new topic
nitcu	need	x_1 needs/requires/is dependent on/[wants] necessity x_2 for purpose/action/stage of process x_3
ni'u	negative number	digit/number: minus sign; negative number); default any negative
no	0	digit/number: 0
nobli	noble	x_1 is noble/aristocratic/elite/high-born/titled in/under culture/society/standard x_2
no'e	scalar midpoint not	midpoint scalar negator: neutral point between je'a and to'e; 'not really'
noi	incidental clause	non-restrictive relative clause; attaches subordinate bridi with incidental information
no'u	incidental identity	non-restrictive appositive phrase marker: which incidentally is the same thing as ...
nu	event abstract	abstractor: generalized event abstractor; x_1 is state/process/achievement/activity of [bridi]
nu'e	promise	vocative: promise – promise release – un-promise
nupre	promise	x_1 (agent) promises/commits/assures/threatens x_2 (event/state) to x_3 [beneficiary/victim]
ny	n	letteral for n
pa	1	digit/number: 1

pagbu	part	x_1 is a part/component/piece/portion/segment of x_2 [where x_2 is a whole/mass]; x_2 is partly x_1
pai	pi	digit/number: pi (approximately 3.1416...)
palci	evil	x_1 is evil/depraved/wicked [morally bad] by standard x_2
patlu	potato	x_1 is a potato [an edible tuber] of variety/cultivar x_2
pavbudjo	first Buddhist	x_1 is the first Buddhist (pa '1' + budjo 'Buddhist')
pe	restrictive phrase	restrictive relative phrase marker: which is associated with ...; loosest associative/possessive
pe'i	I opine	evidential: I opine (subjective claim)
pei	emotion?	attitudinal: attitudinal question; how do you feel about it? with what intensity?
pelxu	yellow	x_1 is yellow/golden [color adjective]
pencu	touch	x_1 (agent) touches x_2 with x_3 [a locus on x_1 or an instrument] at x_4 [a locus on x_2]
pendo	friend	x_1 is/acts as a friend of/to x_2 (experiencer); x_2 befriends x_1
penmi	meet	x_1 meets/encounters x_2 at/in location x_3
pensi	police	x_1 thinks/considers/cogitates/reasons/is pensive about/reflects upon subject/concept x_2
pesxu	paste	x_1 is paste/pulp/dough/mash/mud/slurry [soft, smooth-textured, moist solid] of composition x_2
pe'u	please	vocative: please
pi so'e	most of	number: most of of; used to refer to a greater portion of something
pi	decimal point	digit/number: radix (number base) point; default decimal
pi'e	digit separator	digit/number:separates digits for base >16, not current standard, or variable (e.g. time, date)
pilno	use	x_1 uses/employs x_2 [tool, apparatus, machine, agent, acting entity, material] for purpose x_3
pinsi	pencil	x_1 is a pencil/crayon/stylus applying lead/marking material x_2, frame/support [of material] x_3
pinxe	drink	x_1 (agent) drinks/imbibes beverage/drink/liquid refreshment x_2 from/out-of container/source x_3
pi'o	used by	pilno modal, 1st place used by ...
pipno	piano	x_1 is a piano/harpsichord/synthesizer/organ; a keyboard musical instrument
plise	apple	x_1 is an apple [fruit] of species/strain x_2
pluja	complicated	x_1 is complex/complicated/involved in aspect/property x_2 (ka) by standard x_3
po	is specific to	restrictive relative phrase marker: which is specific to ...; normal possessive physical/legal
po'e	which belongs to	restrictive relative phrase marker: which belongs to ... ; inalienable possession
poi	restrictive clause	restrictive relative clause; attaches subordinate bridi with identifying information to a sumti
ponse	possess	x_1 possesses/owns/has x_2 under law/custom x_3; x_1 is owner/proprietor of x_2 under x_3
po'u	restrictive identity	restrictive appositive phrase marker: which is the same thing as

prami	love	x_1 loves/feels strong affectionate devotion towards x_2 (object/state)
prenu	person	x_1 is a person/people (noun) [not necessarily human]; x_1 displays personality/a persona
preti	question	x_1 (quoted text) is a question/query about subject x_2 by questioner x_3 to audience x_4
pritu	right	x_1 is to the right of x_2 facing x_3
pu	before	time tense relation/direction: did [selbri]; before/prior to [sumti]; default past tense
pulji	police	x_1 is a police officer/[enforcer/vigilante] enforcing law(s)/rule(s)/order x_2
pu'o	anticipative	interval event contour: in anticipation of ...; until ... ; inchoative
purci	past	x_1 is in the past of/earlier than/before x_2 in time sequence; x_1 is former; x_2 is latter
purlamcte	last night	x_1 is the night preceding x_2 (purci 'past' + lamji 'adjacent' + nicte 'night')
py	p	letteral for p
ra	recent sumti	pro-sumti: a recent sumti before the last one, as determined by back-counting rules
ractu	rabbit	x_1 is a rabbit/hare/[doe] of species/breed x_2
rafsi	affix	x_1 is an affix/suffix/prefix/combining-form for word/concept x_2, form/properties x_3, language x_4
rarna	natural	x_1 is natural/spontaneous/instinctive, not [consciously] caused by person(s)
rasyjukpa	fry	x_1 fries x_2 (grasu 'grease' + jukpa 'cook')
re	2	digit/number: 2
rectu	meat	x_1 is a quantity of/contains meat/flesh from source/animal x_2
re'i	ready to receive	vocative: ready to receive – not ready to receive
rei	14	digit/number: hex digit E
remna	human	x_1 is a human/human being/man (non-specific gender-free sense); (adjective:) x_1 is human
ri	last sumti	pro-sumti: the last sumti, as determined by back-counting rules
ri'a	because of cause	rinka modal, 1st place (phys./mental) causal because ...
rinka	cause	x_1 (event/state) effects/physically causes effect x_2 (event/state) under conditions x_3
rinsa	greet	x_1 (agent) greets/hails/[welcomes/says hello to]/responds to arrival of x_2 in manner x_3 (action)
rirni	parent	x_1 is a parent of/raises/rears x_2; x_1 mentors/acts parental toward child/protege x_2
ri'u	on the right of	location tense relation/direction; rightwards/to the right of ...
ro	each	digit/number: each, all
rokci	rock	x_1 is a quantity of/is made of/contains rock/stone of type/composition x_2 from location x_3
ru	earlier sumti	pro-sumti: a remote past sumti, before all other in-use backcounting sumti
ru'e	weak emotion	attitudinal: weak intensity attitude modifier

rufsu	rough	x_1 is rough/coarse/uneven/[grainy/scabrous/rugged] in texture/regularity
rupnu	dollar	x_1 is measured in major-money-units (dollar/yuan/ruble) as x_2 (quantity), monetary system x_3
ry	r	letteral for r
sa	erase utterance	erase complete or partial utterance; next word shows how much erasing to do
sabji	provide	x_1 (source) provides/supplies/furnishes x_2 [supply/commodity] to x_3 [recipient]
sa'e	precisely speaking	discursive: precisely speaking – loosely speaking
sai	strong emotion	attitudinal: moderate intensity attitude modifier
sakta	sugar	x_1 is made of/contains/is a quantity of sugar [sweet edible] from source x_2 of composition x_3
salci	celebrate	x_1 celebrates/recognizes/honors x_2 (event/abstract) with activity/[party] x_3
sanga	sing	x_1 sings/chants x_2 [song/hymn/melody/melodic sounds] to audience x_3
sanli	stand	x_1 stands [is vertically oriented] on surface x_2 supported by limbs/support/pedestal x_3
sanmi	meal	x_1 (mass) is a meal composed of dishes including x_2
saske	science	x_1 (mass of facts) is science of/about subject matter x_2 based on methodology x_3
sazri	operate	x_1 operates/drives/runs x_2 [apparatus/machine] with goal/objective/use/end/function x_3
se ba'i	instead of	basti modal, 2nd place instead of ...
se cau	without	claxu modal, 2nd place (lacking) without ...
se du'u	sentence abstract	compound abstractor: sentence/equation abstract; x_1 is text expressing [bridi] which is x_2
se ja'e	results because	jalge modal, 2nd place (event causal) results because of ...
se pa'u	as a part of	pagbu modal, 2nd place (whole) partially; as a part of ...
se si'u	assisting	sidju modal, 2nd place assisting ... (in doing/maintaining something)
se	2nd conversion	2nd conversion; switch 1st/2nd places
se'i	self-oriented	attitudinal modifier: self-oriented – other-oriented
selbri	predicate relation	x_2 (text) is a predicate relationship with relation x_1 among arguments (sequence/set) (= se bridi)
selpeicku	manifesto	x_1 is a manifesto about topic x_2 by author x_3 for audience x_4 preserved in medium x_5 (pensi 'thought' + cukta 'book')
sepli	apart	x_1 is apart/separate from x_2, separated by partition/wall/gap/interval/separating medium x_3
si	erase word	erase the last Lojban word, treating non-Lojban text as a single word
sidbo	idea	x_1 [person] labors/works on/at x_2 [activity] with goal/objective x_3
sidju	help	x_1 helps/assists/aids object/person x_2 do/achieve/maintain event/activity x_3
simlu	seem	x_1 seems/appears to have property(ies) x_2 to observer x_3 under conditions x_4

simsa	similar	x_1 is similar/parallel to x_2 in property/quantity x_3 (ka/ni); x_1 looks/appears like x_2
simxu	mutual	x_1 (set) has members who mutually/reciprocally x_2 (event [x_1 should be reflexive in 1+ sumti])
si'o	concept	abstractor: idea/concept abstractor; x_1 is x_2's concept of [bridi]
sisku	seek	x_1 seeks/searches/looks for property x_2 among set x_3 (complete specification of set)
sisti	cease	x_1 ceases/stops/halts activity/process/state x_2 [not necessarily completing it]
skapi	pelt	x_1 is a pelt/skin/hide/leather from x_2
skicu	describe	x_1 tells about/describes x_2 (object/event/state) to audience x_3 with description x_4 (property)
skori	cord	x_1 is cord/cable/rope/line/twine/cordage/woven strands of material x_2
slabu	familiar	x_1 is old/familiar/well-known to observer x_2 in feature x_3 (ka) by standard x_4
sluni	onion	x_1 is a quantity of/contains onions/scallions of type/cultivar x_2
smagau	quieten	x_1 acts so that x_2 is quiet/silent/[still] at observation point x_3 by standard x_4 (smaji 'quiet' + gasnu 'do')
smaji	quiet	x_1 (source) is quiet/silent/[still] at observation point x_2 by standard x_3
snanu	south	x_1 is to the south/southern side of x_2 according to frame of reference x_3
snuti	accidental	x_1 (event/state) is an accident/unintentional on the part of x_2; x_1 is an accident
so	9	digit/number: 9
so'a	almost all	digit/number: almost all (digit/number)
sodva	soda	x_1 is made of/contains/is a quantity of a carbonated beverage/soda of flavor/brand x_2
so'e	most	digit/number: most
so'i	many	digit/number: many
soi	reciprocal sumti	discursive: reciprocal sumti marker; indicates a reciprocal relationship between sumti
sonci	soldier	x_1 is a soldier/warrior/fighter of army x_2
so'o	several	digit/number: several
so'u	few	digit/number: few
spaji	surprise	x_1 (event/action abstract) surprises/startles/is unexpected [and generally sudden] to x_2
spati	plant	x_1 is a plant/herb/greenery of species/strain/cultivar x_2
spebi'o	marry	x_1 marries x_2; x_1 becomes a spouse of x_2 under law/custom/tradition/system/convention x_3 (speni 'spouse' + binxo 'become')
speni	married	x_1 is married to x_2; x_1 is a spouse of x_2 under law/custom/tradition/system/convention x_3
spita	hospital	x_1 is a hospital treating patient(s) x_2 for condition/injuries/disease/illness x_3

spoja	explode	x_1 bursts/explodes/violently breaks up/decomposes/combusts into pieces/energy/fragments x_2
spuda	reply	x_1 answers/replies to/responds to person/object/event/situation/stimulus x_2 with response x_3
sruma	reply	x_1 assumes/supposes that x_2 (du'u) is true about subject x_3
stali	remain	x_1 remains/stays at/abides/lasts with x_2
stedu	head	x_1 is a/the head [body-part] of x_2
stela	lock	x_1 is a lock/seal of/on/for sealing x_2 with/by locking mechanism x_3
su'e	at most	digit/number: at most (all); no more than
su'i	plus	n-ary mathematical operator: plus; addition operator; [(((a + b) + c) + ...)]
sumti	argument	x_1 is a/the argument of predicate/function x_2 filling place x_3 (kind/number)
su'o	at least	at least some); no less than
sutra	fast	x_1 is fast/swift/quick/hastes/rapid at doing/being/bringing about x_2 (event/state)
su'u	unspecified abstract	abstractor: generalized abstractor (how); x_1 is [bridi] as a non-specific abstraction of type x_2
sy	s	letteral for s
ta	that there	pro-sumti: that there; nearby demonstrative it; indicated thing/place near listener
ta'a	interruption	vocative: interruption
tadni	study	x_1 studies/is a student of x_2; x_1 is a scholar; (adjective:) x_1 is scholarly
tamne	cousin	x_1 is cousin to x_2 by bond/tie x_3; [non-immediate family member, default same generation]
ta'o	by the way	discursive: by the way – returning to the subject
tarci	star	x_1 is a star/sun with stellar properties x_2
tartcita	star label	x_1 is a star-shaped label/tag of x_2 showing information x_3 (tarci 'star' + tcita 'label')
tarti	behave	x_1 behaves/conducts oneself as/in-manner x_2 (event/property) under conditions x_3
tavla	talk	x_1 talks/speaks to x_2 about subject x_3 in language x_4
tcadu	city	x_1 is a town/city of metropolitan area x_2, in political unit x_3, serving hinterland/region x_4
tcetoi	try hard	x_1 tries hard to do/attain x_2 (event/state/property) by actions/method x_3 (mutce 'much' + troci 'try')
tcica	deceive	x_1 (event/experience) misleads/deceives/dupes/fools/cheats/tricks x_2 into x_3 (event/state)
tcidu	talk	x_1 [agent] reads x_2 [text] from surface/document/reading material x_3; x_1 is a reader
tcika	time of day	x_1 [hours, {minutes}, {seconds}] is the time/hour of state/event x_2 on day x_3 at location x_4
tcita	label	x_1 is a label/tag of x_2 showing information x_3
te me'e	as a name used by	cmene modal, 3rd place as a name used by ...

te	3rd conversion	3rd conversion; switch 1st/2nd places
telgau	lock	x_1 (agent) makes x_2 be a lock/seal of/on/for sealing x_3 with/by locking mechanism x_4 (stela 'lock' + gasnu 'do')
terdi	earth	x_1 is the Earth/the home planet of race x_2; (adjective:) x_1 is terrestrial/earthbound
ti	this here	pro-sumti: this here; immediate demonstrative it; indicated thing/place near speaker
ti'a	behind	location tense relation/direction; rearwards/to the rear of ...
tigni	perform	x_1 performs x_2 [performance] for/before audience x_3
tinbe	obey	x_1 obeys/follows the command/rule x_2 made by x_3; (adjective:) x_1 is obedient
tirna	hear	x_1 hears x_2 against background/noise x_3; x_2 is audible; (adjective:) x_1 is aural
tirse	iron	x_1 is a quantity of/contains/is made of iron (Fe)
ti'u	associated with time	tcika modal, 1st place (for letters) associated with time ... ; attach time stamp
tivni	television	x_1 [broadcaster] televises programming x_2 via media/channel x_3 to television receiver x_4
to	start parenthesis	left parenthesis; start of parenthetical note which must be grammatical Lojban text
to'e	polar opposite	polar opposite scalar negator
toi	end parenthesis	elidable terminator: right parenthesis/end unquote; seldom elidable except at end of text
to'o	away from point	location tense relation/direction; departing from/directly away from ...
traji	superlative	x_1 is superlative in property x_2 (ka), the x_3 extreme (ka; default ka zmadu) among set/range x_4
trene	train	x_1 is a train [vehicle] of cars/units x_2 (mass) for rails/system/railroad x_3, propelled by x_4
troci	try	x_1 tries/attempts/makes an effort to do/attain x_2 (event/state/property) by actions/method x_3
tu	that yonder	pro-sumti: that yonder; distant demonstrative it; indicated thing far from speaker and listener
tu'a	the bridi implied by	extracts a concrete sumti from an unspecified abstraction; equivalent to le nu/su'u [sumti] co'e
tu'e	start text scope	start of multiple utterance scope; used for logical/non-logical/ordinal joining of sentences
tugni	agree	x_1 [person] agrees with person(s)/position/side x_2 that x_3 (du'u) is true about matter x_4
turni	govern	x_1 [person] labors/works on/at x_2 [activity] with goal/objective x_3
tutra	territory	x_1 is territory/domain/space of/belonging to/controlled by x_2
tu'u	end text scope	elidable terminator: end multiple utterance scope; seldom elidable
ty	t	letteral for t
va	there at	location tense distance: near to ... ; there at ...; a medium/small distance from ...
vai	15	digit/number: hex digit F

vajni	important	x_1 (object/event) is important/significant to x_2 (person/event) in aspect/for reason x_3 (nu/ka)
valsi	word	x_1 is a word meaning/causing x_2 in language x_3; (adjective: x_1 is lexical/verbal)
vanbi	environment	x_1 (ind./mass) is part of an environment/surroundings/context/ambience of x_2
vanju	wine	x_1 is made of/contains/is a quantity of wine from fruit/grapes x_2
va'o	under conditions	vanbi modal, 1st place (conditions 1) under conditions ...; in environment ...
vau	end simple bridi	elidable: end of sumti in simple bridi; in compound bridi, separates common trailing sumti
ve	4th conversion	4th conversion; switch 1st/4th places
vecnu	sell	x_1 [seller] sells/vends x_2 [goods/service/commodity] to buyer x_3 for amount/cost/expense x_4
venfu	revenge	x_1 takes revenge on/retaliates against x_2 (person) for wrong x_3 (nu) with vengeance x_4 (nu)
vensa	spring	x_1 is spring/springtime [warming season] of year x_2 at location x_3; (adjective:) x_1 is vernal
vi	here at	location tense distance: here at ... ; at or a very short/tiny distance from ...
vi'irku'a	toilet	x_1 is a toilet in structure x_2 (vikmi 'excrete' + kumfa 'room')
vikmi	excrete	x_1 [body] excretes waste x_2 from source x_3 via means/route x_4
vimcu	remove	x_1 removes/subtracts/deducts/takes away x_2 from x_3 with/leaving result/remnant/remainder x_4
vinji	airplane	x_1 is an airplane/aircraft [flying vehicle] for carrying passengers/cargo x_2, propelled by x_3
vi'o	wilco	vocative: wilco (ack and will comply)
viska	see	x_1 sees/views/perceives visually x_2 under conditions x_3
vitke	guest	x_1 is a guest/visitor of x_2 at place/event x_3; x_1 visits x_2/x_3
vlipa	powerful	x_1 has the power to bring about x_2 under conditions x_3; x_1 is powerful in aspect x_2 under x_3
vo	4	digit/number: 4
vo'a	x_1 it	pro-sumti: repeats 1st place of main bridi of this sentence
vo'e	x_2 it	pro-sumti: repeats 2nd place of main bridi of this sentence
vofli	fly	x_1 flies [in air/atmosphere] using lifting/propulsion means x_2
vo'i	x_3 it	pro-sumti: repeats 3rd place of main bridi of this sentence
voksa	voice	x_1 is a voice/speech sound of individual x_2
vo'o	x_4 it	pro-sumti: repeats 4th place of main bridi of this sentence
vo'u	x_5 it	pro-sumti: repeats 5th place of main bridi of this sentence
vrude	virtue	x_1 is virtuous/saintly/[fine/moral/nice/holy/morally good] by standard x_2
vu	yonder at	location tense distance: far from ... ; yonder at ... ; a long distance from ...
vy	v	letteral for v
vybu	w	letteral for w
xa	6	digit/numeral: 6

xabju	dwell	x_1 dwells/lives/resides/abides at/inhabits/is a resident of location/habitat/nest/home/abode x_2
xadba	half	x_1 is exactly/approximately half/semi-/demi-/hemi- of x_2 by standard x_3
xadni	body	x_1 is a/the body/corpus/corpse of x_2; (adjective:) x_1 is corporal/corporeal
xajmi	funny	x_1 is funny/comical to x_2 in property/aspect x_3 (nu/ka); x_3 is what is funny about x_1 to x_2
xalfekfri	drunk	x_1 is inebriated, drunk (xalka 'alcohol' + fenki 'crazy' + lifri 'experience')
xalka	alcohol	x_1 is a quantity of/contains/is made of alcohol of type x_2 from source/process x_3
xamgu	good	x_1 is good/beneficial/acceptable for x_2 by standard x_3
xanka	nervous	x_1 is nervous/anxious about x_2 (abstraction) under conditions x_3
xanto	elephant	x_1 is an elephant of species/breed x_2
xatra	letter	x_1 is a letter/missive/[note] to intended audience x_2 from author/originator x_3 with content x_4
xe	5th conversion	5th conversion; switch 1st/5th places
xebni	hate	x_1 hates/despises x_2 (object/abstraction); x_1 is full of hate for x_2; x_2 is odious to x_1
xelso	Greek	x_1 reflects Greek/Hellenic culture/nationality/language in aspect x_2
xendo	kind	x_1 (person) is kind to x_2 in actions/behavior x_3
xindo	Hindi	x_1 reflects Hindi language/culture/religion in aspect x_2
xlali	bad	x_1 is bad for x_2 by standard x_3; x_1 is poor/unacceptable to x_2
xlura	influences	x_1 (agent) influences/lures/tempts x_2 into action/state x_3 by influence/threat/lure x_4
xo	number?	digit/number: number/digit/lerfu question
xrabo	Arabic	x_1 reflects Arabic-speaking culture/nationality in aspect x_2
xu	true–false?	discursive: true–false question
xukmi	chemical	x_1 is an instance of substance/chemical/drug x_2 (individual or mass) with purity x_3
xumske	chemistry	x_1 is chemistry based on methodology x_2 (xukmi 'chemical' + saske 'science')
xunre	red	x_1 is red/crimson/ruddy [color adjective]
xy	x	letteral for x
za	medium time	time tense distance: medium distance in time
zanru	approve	x_1 approves of/gives favor to plan/action x_2 (object/event)
zbasu	make	x_1 makes/assembles/builds/manufactures/creates x_2 out of materials/parts/components x_3
zdani	nest	x_1 is a nest/house/lair/den/[home] of/for x_2
zdile	amusing	x_1 (abstract) is amusing/entertaining to x_2 in property/aspect x_3; x_3 is what amuses x_2 about x_1
ze	7	digit/number: 7
ze'a	medium time interval	time tense interval: a medium length of time
ze'i	short time interval	time tense interval: an instantaneous/tiny/short amount of time

zekri	crime	x_1 (event/state) is a punishable crime/[taboo/sin] to people/culture/judges/jury x_2
zergle	sexual crime	x_1 copulates with x_2, which is a punishable crime to people/culture/judges/jury x_3 (zekri 'crime' + gletu 'copulate')
zerle'a	steal	x_1 takes/gets/gains/obtains/seizes/[removes] x_2 (object/property) from x_3 (possessor), which is a punishable crime/[taboo/sin] to people/culture/judges/jury x_4 (zekri 'crime' + lebna 'take')
ze'u	long time interval	time tense interval: a long amount of time
zgana	observe	x_1 observes/[notices]/watches/beholds x_2 using senses/means x_3 under conditions x_4
zgike	music	x_1 is music performed/produced by x_2 (event)
zi	short time	time tense distance: instantaneous-to-short distance in time
zi'e	relative clause joiner	joins relative clauses which apply to the same sumti
zirpu	purple	x_1 is purple/violet [color adjective]
ziryrai	purplest	x_1 is the most purple/violet [color adjective] among set/range x_2 (zirpu 'purple' + traji 'superlative')
zmadu	more	x_1 exceeds/is more than x_2 in property/quantity x_3 (ka/ni) by amount/excess x_4
zo	one-word quote	quote next word only; quotes a single Lojban word (not a cmavo compound or tanru)
zo'e	unspecified it	pro-sumti: an elliptical/unspecified value; has some value which makes bridi true
zoi	non-Lojban quote	delimited non-Lojban quotation; the result treated as a block of text
zo'o	humorously	attitudinal modifier: humorously – dully – seriously
zu	long time	time tense distance: long distance in time
zu'a	on the left of	location tense relation/direction; leftwards/to the left of ...
zutse	sit	x_1 sits [assumes sitting position] on surface x_2
zu'u	on the one hand	discursive: on the one hand – on the other hand
zvati	at	x_1 (object/event) is at/attending/present at x_2 (event/location)
zy	z	letteral for z