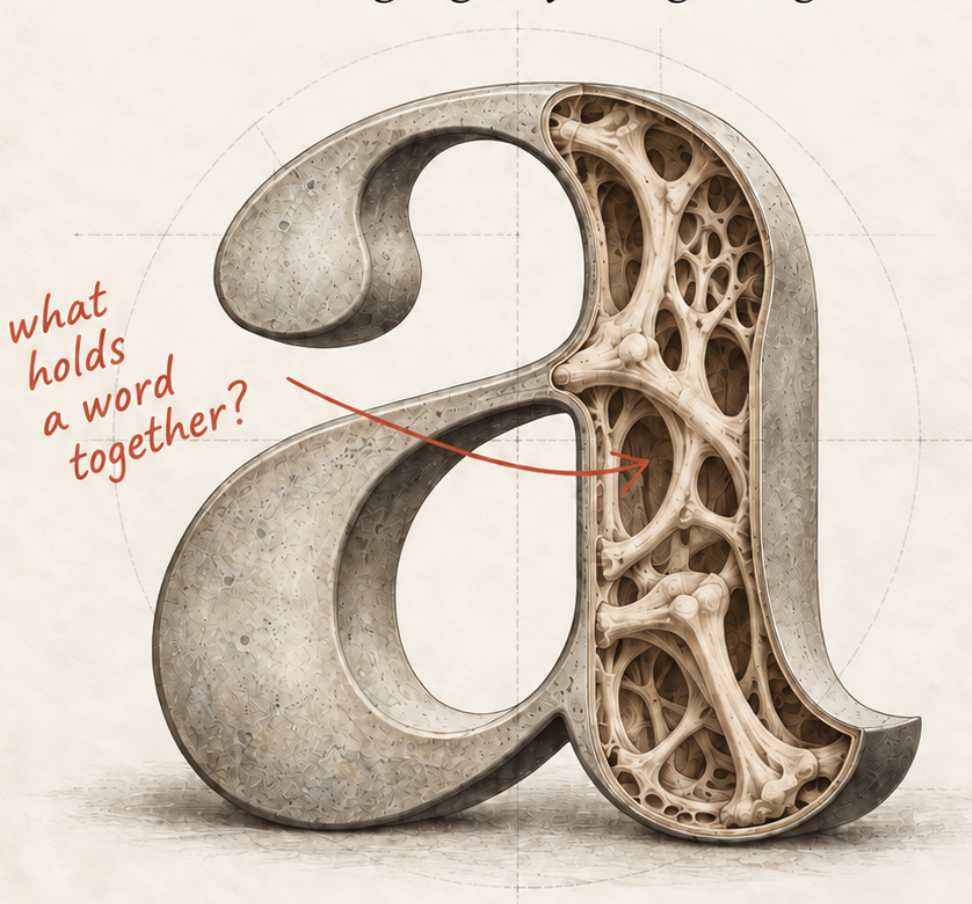


Words have bones

*How to look inside your own language
and learn languages by recognizing them*



Alejandro Toledo Martínez

2026

BASIC MANUAL OF ENDOLINGUISTICS

Words have bones

*How to look inside your own language
and learn languages by recognizing them*

$\Phi \cdot \Theta \cdot \Lambda$

Alejandro Toledo Martínez

2026

Words have bones. Basic Manual of Endolinguistics.

© 2026 Alejandro Toledo Martínez.

Endolinguistics was founded by Dr. Christiane S. Meulemans and Dr. José Ángel Elias Fernández y Cuevas. The OAS classes, psychophonology and qualic metaphysics are contributions by Alejandro Toledo Martínez within that tradition.

To learn more: www.endolinguistics.science

The books in the series: www.independentbooks.site

The etymologies and codes cited were checked against the research program's integrative corpus. The percentages of shared vocabulary come from the IE-CoR database. Adapted from the Spanish original, *Las palabras tienen hueso*.

Contents

Before You Begin	v
I Looking Inside	1
1 Your Words Are Very Old	2
2 Bone and Flesh	8
3 Seven Regions of the Mouth	15
4 The Code	21
II Using It to Learn Languages	29
5 Relatives on the Road	30
6 The Rules of the Road	38
7 Pocket Maps	48
8 The Method, Step by Step	56
9 When There Are No Relatives	64

Words have bones

III The Music of the Voice	71
10 Bone, Color, and Music	72
11 From Thought to Sound	80
IV Thinking Carefully	86
12 The Mirage	87
13 What We Don't Know Yet	96
Closing	103
To the Reader	103
Appendices	105
Appendix A. Quick Reference	105
Appendix B. Solutions	108
Appendix C. Glossary	113
Appendix D. Going Further	118

Before You Begin

This manual grew out of a question I've been asked many times, almost always by young people, almost always with a little suspicion: *so what is this endolinguistics thing actually good for?* It's a good question. I'll take it as my own. And the short answer is this: it's good for looking at words from the inside, and once you learn to look at them that way, you stop learning languages the way you'd haul rocks, one at a time. You start re-cognizing them.

The long answer is the rest of the book.

Where what you're about to read comes from

I didn't invent endolinguistics. It was founded in the mid-twentieth century by Dr. Christiane S. Meulemans and Dr. José Ángel Elias Fernández y Cuevas. By the age of 31, Dr. Elias spoke more than twenty languages and had studied pure mathematics, music, and cryptology. Later, as physicians, the two of them took up an older intuition, that of the Belgian neurologist Joseph Meulemans, who suspected that the right hemisphere of the brain does things with language that the science of his time didn't know how to see. I was a direct student of both of them. What I've done since then is research, organize, and write down what I learned, and add a few pieces of my own.

You should know from the start which pieces are mine, so you don't credit them to the wrong people. The **seven families of sounds**

you'll work with from chapter 3 on (the OAS classes) are my proposal, and so is the way of writing them with Greek symbols. So are psychophonology, which we'll talk about in Part III, and qualic metaphysics as I understand it, which shows up at the end. Whatever is solid in all this, I owe to my teachers. The mistakes you find are mine.

And there's a debt bigger than any other: the one I owe to **historical linguistics**, the science that has spent almost two hundred years reconstructing, link by link, the journey of words. Without its work there would be nothing to tell here. Endolinguistics doesn't compete with it. It takes what historical linguistics discovered and turns it into something you can discover on your own.

Who this manual is for

For you, if you're between fifteen and twenty and one of these three things is true:

1. You're learning a language (Spanish, most likely; maybe French, German, Italian, or Portuguese) and you feel like you memorize lists that are gone by the next day.
2. You like puzzles, secret codes, hidden patterns, and it never occurred to you that your own language was full of them.
3. You're curious about how the mind works: why one word sounds hard to you and another soft, why a "no" can be a door slamming shut or a plea.

You don't need to know linguistics, or Latin, or anything you don't already know. You need to speak English, which you've done since you were a baby, and you need to want to look carefully.

What this manual is and what it isn't

It's a **practical manual**. It has explanations, examples, exercises, and challenges. It's meant to be read with a pencil in your hand and, every now and then, out loud.

It isn't a linguistics textbook. When I need a technical term I'll explain it, and when linguistics says something more precisely than there's room for here, I'll tell you.

It isn't a book of magic tricks either. From the very first chapter you'll find warnings. Some of them will seem like killjoys. They're there because the tool you're about to learn is powerful, and anything powerful can be misused. The same ability that will let you see that *father* and *padre* are the same word can lead you to believe that *much* and *mucho* are too. (They aren't. You'll see why in chapter 12, and it'll surprise you.)

How it's put together

The manual has four parts.

- **Part I. Looking Inside.** You learn to pull the skeleton out of a word, to recognize the seven families of sounds, and to read a code.
- **Part II. Using It to Learn Languages.** You learn to tell true relatives from misleading look-alikes, the rules by which words change from one language to another, and a method for studying.
- **Part III. The Music of the Voice.** Vowels, rhythm, accent, and what the voice says without words.

- **Part IV. Thinking Carefully.** How not to fool yourself, and which questions are still open.

Throughout the text you'll find boxes:

Try it A short exercise to do right then. Almost always out loud.

Watch out A common trap, and how not to fall into it.

Challenge A harder exercise. It's fine if you don't get it the first time.

Going further Something you don't need in order to keep going, but that might interest you.

The solutions to the exercises are at the end, in Appendix B. I ask just one thing: try each exercise before you look at the solution. Chapter 8 explains why that isn't a quirk of mine but the way memory works.

One last thing, about the tone

This manual doesn't want to convince you of anything. It wants you to look. If by the end you hear your own language with a little strangeness (the way you feel when you learn a secret about someone you've known all your life), it will have done its job. And if, on top of that, Spanish or French or German stops looking like a wall and starts looking like a distant relative with a different accent, even better.

Alejandro Toledo Martínez

PART I

Looking Inside

Your Words Are Very Old

Three scenes

First scene. It's Monday, the first Spanish class of the semester. Your teacher hands out a list: *padre*, father; *pie*, foot; *pez*, fish. You have to know it by Friday. You repeat it, cover one column with your hand, repeat it again. By Tuesday you've forgotten half. Nobody told you *why* father is *padre* and not *blorp*. You got a handful of loose facts, dealt out like cards, and were left alone with them.

Second scene. You're texting someone, fast, one-handed: *thx, pls, msg me tmrw*. Nobody ever taught you to do that, but you know how. And look at what you're doing: you strip most of the vowels out of the words and keep most of the consonants. Never the other way around. Nobody writes *a*, *ea* to say "thanks, please." Without anyone explaining it, you know the message survives without its vowels and doesn't survive without its consonants.

Third scene. Line up four words that mean the same thing in four languages:

English	Spanish	German	Latin
father	padre	Vater	pater

They sound different. They're spelled differently. But now do what you do when you text: take out the vowels.

English	Spanish	German	Latin
f · th · r	p · d · r	v · t · r	p · t · r

Something shows up. The four words shrink to almost the same thing: three consonants, always in the same order. And the differences that are left have a family resemblance. *P*, *f*, and *v* are all made with the lips (German writes *Vater* but says *FAH-ter*: the spelling lies to you, the mouth doesn't). *D*, *t*, and English *th* are all made with the tip of the tongue at the teeth. And the *r* is an *r* in all four.

Three scenes, one problem. The list in the first scene looks like a pile of facts with no seams. The second scene says you already know, without knowing it, that consonants are what hold a word up. And the third suggests that if you look at the consonants carefully, the list stops being a pile: *padre* isn't a foreign word to memorize, it's *father* said with a different accent, an accent that has rules.

This manual is about that accent with rules, and about what lies underneath it.

A family of languages the size of half the world

How can *father* and *padre* be the same word, if Spanish comes from Latin and English doesn't?

The answer is that Latin and the ancestor of English were themselves siblings. Some five or six thousand years ago, somewhere between eastern Europe and western Asia, there lived a people whose language left no writing at all. Not one tablet, not one carved stone,

not even its name. Scholars call it **Proto-Indo-European**, for lack of anything better. *Proto* means “first”; *Indo-European* means its descendants spread from India to Europe.

Those descendants are many. From the same trunk came Latin (and from it Spanish, Portuguese, Italian, French, Catalan, Romanian), the Germanic languages (English, German, Dutch, Swedish), Greek, the Slavic languages (Russian, Polish), the Celtic ones (Irish, Welsh), Persian, Hindi, and many more. Almost half of humanity speaks a language from this family today.

Look at what happened to a single word, the number three, in a few of these relatives:

language	three
English	three
Spanish	tres
German	drei
Ancient Greek	treís
Lithuanian	trỹs

Five languages that split apart thousands of years ago, in places that had no contact with each other, and they all kept the same thing: a tooth consonant followed by an *r*.

Watch out When you see a word with an asterisk, like **tréyes*, it means that word **isn’t written down in any document**. It’s a reconstruction: what linguists work out must have been said, by comparing all the descendants. The asterisk is an honest way of saying “we didn’t see this; we inferred it.”

Nobody wrote down Proto-Indo-European. Everything those peo-

ple said traveled from a mouth to an ear, over hundreds of generations, changing a little at every step. And yet something of what they said is still alive in your mouth every time you count to three.

What survived the journey?

Here is the question that holds up this whole manual. If a word traveled from mouth to mouth for five thousand years, changing shape in every generation, how can anyone seriously claim (not as poetry, but as knowledge) that *three* and *tres* are the same word?

To claim that, something had to survive the journey. Something tougher than fashions, more stubborn than centuries.

Historical linguistics found out what it was in the nineteenth century, and it's one of the great quiet achievements of science. It discovered that the sounds of a language don't change at random: they change by **rules**. Where Latin had *p*, the Germanic languages put *f*, and not in one word but in hundreds, all at once. Where Latin had *t*, English put *th*. If you know the rule, you can follow a word through the centuries even if it has changed clothes ten times.

In this manual you'll learn several of those rules. But I'm not going to hand them to you as a list to memorize. You're going to discover them yourself, by looking at words. That difference matters more than it seems.

Endo: inside

And endolinguistics? What does it add to all this?

The word makes sense in pieces. *Endo*, in Greek, means "inside." Endolinguistics studies what languages carry **inside**: not what they

say, but how they're organized underneath what they say.

It helps to separate two layers right away:

1. **The exolanguage** is language as it appears: the words you hear and say, the grammar, the spelling, what's in the dictionary. It's the outer layer.
2. **The endolanguage** is the deep organization that holds up the outer one: patterns of consonants that repeat, that travel from language to language, and that orient the meaning of words without anyone noticing.

Endolinguistics calls those patterns **codes**. A code is, roughly, the consonant skeleton of a word seen in a special way. You'll learn to read them over the next three chapters.

And they have a very concrete use. A code is what *father* and *padre* share underneath the disguise. If you learn to see it, each new word in a language related to yours stops arriving alone. It arrives connected to something you already know. That changes how a language is learned, and chapter 8 explains why.

What this chapter doesn't say

Before we go on, two clarifications, because misreadings start early.

First: not all words in all languages are related. *Father* and *padre* are; that's documented. But some words look extremely alike and aren't relatives, and learning to tell them apart is half the work. (That they aren't relatives doesn't mean their resemblance means nothing; you'll see that in chapter 12.)

Second: a code isn't a word's "secret meaning." That idea is tempting and it's false. What a code is, then, you'll see in chapter 4. For now, keep this: the code doesn't tell you what a word means; it tells you where to look.

Try it Write down five words you use every day, the first ones that come to mind. Now take out the vowels, the way you do when you text. Can you still recognize them? Does any of them become unrecognizable? Keep the list: we'll use it in the next chapter.

Going further Look up a map of the Indo-European languages online. Find English, Spanish, Hindi, and Russian. You'll notice that English is closer to Hindi than it is to, say, Nahuatl, the language of the Aztecs: Nahuatl belongs to another family, Uto-Aztecan, which has no documented kinship with Indo-European. What connects Nahuatl to English is something else, and you'll see it in chapter 9.

In the next chapter you'll learn the first operation of the whole method, the simplest one: separating bone from flesh.

Bone and Flesh

Two kinds of sound

Every word is made of two kinds of sound, and it's worth feeling the difference in your mouth before explaining it.

Say *aaah*. You can hold it for as long as your breath lasts. Your mouth is open, the air flows out freely, and your voice sounds. That's a **vowel**.

Now say *p*. You can't hold it: it's an instant. You closed your lips, the air built up behind them, and it burst out. Say *t*: the tip of your tongue blocked the way against your teeth and let go. Say *s*: you didn't block anything, but you squeezed the passage until the air hissed. Those are **consonants**. A consonant is something you do to the air: you cut it off, you squeeze it, you send it through your nose.

That's why consonants are like an outline and vowels like a color. The consonant draws an edge; the vowel fills the space between the edges. We'll come back to this image in Part III, because it goes deeper than it looks. For now, we stay with the edges.

Why bone lasts longer than flesh

A word is like a body: it has flesh and it has bone. Vowels are the flesh. They're soft; they change from one country to another, from one neighborhood to another, from one generation to the next, and hardly anyone notices. Consonants are the bone. They change too (nothing in a language is eternal), but they change more slowly and, above all, **they change by rules.**

There's plenty of evidence for this, and you already know some of it.

- **Your phone.** You saw it in the last chapter: *thx, pls, msg*. You drop vowels, never consonants.
- **English accents.** The word *tomato* is something like *to-MAY-to* in the United States and *to-MAH-to* in England. The vowels change. The *t*, the *m*, and the other *t* stay put.
- **Semitic scripts.** Arabic and Hebrew have been written for thousands of years mostly by noting down the consonants. Vowels are added as optional little marks, or not at all. Whoever knows the language fills them in. Whole cultures bet that the bone is enough.

Try it Read this sentence out loud: *Cnsnnts r wht hld th wrd p*. Could you? Now try it the other way around, with only the vowels: *ooa ae a o e o u*. It's the same sentence. The first one can be read; the second is an impossible riddle.

Pulling out the skeleton: the bone comes from the sound

We'll call the set of consonants in a word, in order, its **skeleton**. We write it with little dots between the consonants, to show they're separate pieces:

word	skeleton
father	f · th · r
desk	d · s · k
lemon	l · m · n

Looks easy, and it almost always is. But there's one rule that changes everything, and you need it clear from day one:

The skeleton comes from the sound, not from the letters.

Spelling is a recent invention, full of whims and historical leftovers. The mouth is much older. When spelling and mouth disagree, the mouth wins. And English spelling disagrees with the mouth a lot. Here are the traps.

1. **Silent letters don't count.** *Knight, write, lamb*: the *k*, the *w*, the *b* are written but not pronounced. The skeletons are *n · t*, *r · t*, *l · m*. (The *gh* of *knight* is silent too.)
2. **One sound, several spellings.** The *k* sound is written *c* (*cat*), *k* (*kit*), *ck* (*back*) or *q* (*queen*). It's always *k*. The *f* sound is written *f*, *ph* (*phone*) or even *gh* (*laugh*). It's always *f*.
3. **One letter, two sounds.** The *x* of *box* sounds *ks*: that's two consonants.

4. **Two letters, one sound.** *Th* (*think, that*) is a single sound. So are *sh* (*ship*), *ch* (*church*), and *ng* (*sing*). Each counts once.
5. **Double letters, one sound.** The *tt* of *butter* and the *ss* of *miss* are single consonants. They count once.
6. **The *r* after a vowel depends on your accent.** In most of the United States, the *r* of *car*, *heart*, or *mother* is pronounced. In much of England, it isn't. More on this in a moment.
7. **The *y* of *yes*.** It sits right on the border between vowel and consonant, and researchers still debate where to put it. For now, mark it in parentheses: *yes* → (*y*) · *s*. Chapter 3 explains why we leave it aside instead of forcing a decision.

Watch out You'll also be pulling skeletons out of Spanish words, so learn Spanish's traps too. The *h* is always silent (*hielo, hacer, hijo*). The *j*, and the *g* before *e* or *i*, sound like a strong English *h* (*jirafa, gente*). *Ll* and *y* (*llave, yo*) are the same borderline sound as English *y*: put them in parentheses. The *c* before *e* or *i*, and the *z*, sound *s* in Latin America and *th* in Spain, so *pez* has the skeleton *p* · *s* in Mexico City and *p* · *th* in Madrid. Both are correct. And the *i* and *u* of Spanish diphthongs (*tierra, rueda, bueno*) are vowels: the skeleton of *tierra* is *t* · *r*.

Your skeleton depends on your accent

That last point deserves a moment, because it matters more than it seems. If the skeleton comes from the sound, and the sound depends on where you speak, then **the same word can have different skeletons depending on who says it**.

That isn't a problem with the method. It's a fact. It tells you something real about language: it isn't a still object, it's a river with many

branches. You'll come across differences like this several times in this manual, and each time they'll teach you something.

English is full of them. Look at these three words:

word	how it sounds	skeleton
know	<i>noh</i>	n
mother, in England	<i>MUH-thuh</i>	m · th
mother, in the United States	<i>MUH-ther</i>	m · th · r

The *k* of *know* is written but not pronounced. A thousand years ago it was: in Old English the word was *cnāwan*, and the *c* sounded *k*. The spelling kept the letter like a fossil, but the mouth dropped it. And the final *r* of *mother* is pronounced across most of the United States and not in much of England. If you speak with an American accent, your skeleton of *mother* has three consonants; with a British accent, two.

Try it Pull the skeleton out of these words. Remember: the sound wins, not the letter.

knight · phone · laugh · write · lamb · box · cherry · thumb

(Solutions: Appendix B, exercise 2.1.)

The central bone: the root

There's one last thing to learn in this chapter, and it's the one you'll use most.

Many words are built from pieces. *Act*, *actor*, *action*, *react*: all four share a piece, *act-*, that carries the meaning. The rest are add-ons that say whether it's a verb or a noun, who does it, whether it happens again. We call the piece that carries the meaning the **root**, and the

pieces stuck to it **affixes**: the ones in front are **prefixes** (*re-*, *un-*, *dis-*), the ones behind are **suffixes** (*-tion*, *-er*, *-ly*, *-ness*).

For working with codes, what matters is the skeleton of the root. If you take the skeleton of the whole word, the add-ons slip in consonants that aren't part of the central bone: the *r* of *actor* belongs to the suffix *-or*; the *n* of *action* belongs to *-tion*.

word	full skeleton	root	root skeleton
act	k · t	act-	k · t
actor	k · t · r	act-	k · t
action	k · sh · n	act-	k · sh
react	r · k · t	-act-	k · t

(Notice *action*: inside the word, the *t* of *act-* turned into a *sh* sound. That has a history too, but you don't need it now.)

How do you know which part is the root? Common sense is usually enough: look for other words in the same family and see which piece they share. When you're not sure, a dictionary that gives etymologies will tell you. Good free ones in English are the Online Etymology Dictionary and Wiktionary; for Spanish words, the *Diccionario de la lengua española* of the Real Academia Española says at the top of each entry where the word comes from.

Watch out Don't obsess over the exact root. To start, it's enough to remove the most obvious add-ons: *-s* and *-es*, *-ed*, *-ing*, *-er*, *-ly*, *-tion*, *-ness*; and in Spanish, the infinitive endings (*-ar*, *-er*, *-ir*), *-ción*, *-mente*, *-dad*. That gets you most of the way.

What the skeleton isn't

The skeleton is a tool, not a discovery about the word. We pull it out ourselves so we can compare. It's like an X-ray: it shows you the bone with a clarity a regular photo doesn't have, but nobody mistakes a person for their X-ray. The word's music, its tone, its social life, what you feel when you say it, are all left out. We'll get them back in Part III.

Challenge Go back to the list of five words you wrote at the end of chapter 1. Pull out their skeletons with the rules in this chapter, and then the skeleton of the root. Did anything change from what you did by eye?

In the next chapter we're going one step further in, literally: into your mouth. You'll find out that all those consonants, which seem so many, live in just seven regions.

Seven Regions of the Mouth

A small country

This chapter is meant to be read out loud. If you're somewhere you can't make noise, save it for later.

Say these slowly, one after another: *p*, *b*, *f*, *v*. Notice where they happen. All four happen in the same place: the lips. For *p* and *b* the lips close and pop open; for *f* and *v* the lower lip touches the upper teeth and the air slips through. Different sounds, same region.

Now say *t*, *d*. The tip of your tongue touches just behind your upper teeth. The *th* of *think* and *that* lives here too: the tongue between the teeth.

Say *k*, *g*, and the *h* of *house*. These happen at the back, where the tongue rises against the soft palate, near the throat.

Say *s*, and hold it: *sssss*. And *sh*, the way you shush a room: *shhhh*. And the *ch* of *church*. Those are hisses: the air comes out squeezed and makes noise.

Say *l*, *r*. The tongue doesn't block the air: it lets it go around the sides, or it curls and lets it slide. The air flows.

Say *mmmm* with your mouth closed. You feel the hum in your lips and your nose.

Words have bones

And say *nnnn*. It also hums through your nose, but now your mouth is open and your tongue is up.

You just crossed a small country with seven regions. Every consonant you use, and almost every one in the languages you’re going to learn, lives in one of them.

The seven classes

Endolinguistics calls these regions **classes**, and gives each one a Greek symbol. Here’s the whole map:

symbol	said	region	consonants that live there
Φ	phi	the lips	p, b, f, v, w (at the start of a syllable)
Θ	theta	the teeth	t, d, th
X	chi (<i>kai</i>)	the back	k, g, h, Spanish <i>j</i>
Σ	sigma	the hiss	s, z, sh, ch, j (as in <i>judge</i>)
Λ	lambda	the flowing ones	l, r
M	san	the closed hum	m
Ξ	xi (<i>ksai</i>)	the open hum	n, ng, Spanish <i>ñ</i>

This is the table you’ll use most in the whole manual. It’s repeated in Appendix A so you always have it handy.

A letter is a disguise; the family is the person

Here’s the first important technical idea, and also the most freeing one.

When you compare *father* with *padre*, the first letter is different: *f* in one, *p* in the other. If you compare letters, they’re different words.

But both consonants live in the same region, the lips. If you compare classes, both words start the same way: with Φ .

word	skeleton	classes
father	f · th · r	$\Phi \cdot \Theta \cdot \Lambda$
padre	p · d · r	$\Phi \cdot \Theta \cdot \Lambda$
Vater	f · t · r	$\Phi \cdot \Theta \cdot \Lambda$
pater	p · t · r	$\Phi \cdot \Theta \cdot \Lambda$

What were four different words in the table of letters are, in the table of classes, one single sequence repeated four times. The *f* and the *p* are two disguises of the same person. That's why the kinship between *father* and *padre* is invisible to someone comparing letters and obvious to someone comparing classes.

And why Greek symbols, instead of just the letters P, T, K? Because letters belong to particular languages. *Th* is English; *ñ* is Spanish. If we wrote the lip class with a *P*, sooner or later someone would think the *f* of *father* is a badly pronounced *p*, and that's false. The classes aren't letters of any language. They deserve a name that belongs to no one.

Try it Turn these words into classes. First pull out the skeleton (with the rules from chapter 2), then swap each consonant for its symbol. Say them aloud before you decide.

mother · table · stone · lamp · king · fish

(Solutions: Appendix B, exercise 3.1.)

Three fine points

Classifying is almost always immediate. But three cases confuse people at first.

1. The hiss is only the hiss. *F* also makes an airy noise, and so does *th*, and so does *h*. But none of them is Σ . Why? Because the class is decided by **where** the sound happens, not **how**. *F* happens at the lips, so it's Φ . *Th* happens at the teeth, so it's Θ . *H* happens at the back, so it's X . Only true hisses go in Σ : *s*, *z*, *sh*, *ch*.

2. *Ch* and *j* are read by how they end. Say *ch* very slowly and you'll notice it starts like a *t* and ends like a hiss: *t-sh*. The *j* of *judge* does the same thing: *d-zh*. They're transition sounds. The rule is to read them by where they end, so both are Σ .

3. The border case of *y*. In the last chapter I asked you to put the *y* of *yes* in parentheses. The reason is that this sound sits right on the line between vowel and consonant: in some mouths it's almost an *ee*, in others almost a consonant. Spanish *ll* and *y* (*llave*, *yo*) are the same kind of sound. When we studied it carefully, we saw that forcing it into a class threw errors into everything else. So for now it stays as a **borderline case**: you note it, you see it, and you don't force it into a class. That's a good lesson in method. When something doesn't fit, it's better to leave it marked than to hide the doubt.

Watch out English *h* (*house*, *heart*) is pronounced: it's a puff of air from the back of the throat, so it's X . But Spanish *h* is silent, so it has no class at all: it just isn't there. Spanish *hijo* starts with a vowel sound; the *j* in the middle is the one that sounds like your *h*.

What a class is

So far I've presented the classes as regions of the mouth, and that's the right place to start. But it isn't the whole story, and I owe you the rest.

The seven classes are called **OAS**, for *Originating Affective Sounds*. The name says something important. A class isn't a sound. It's the

feeling that certain sounds produce in whoever says them and whoever hears them. That feeling is anchored in the body, in the region of the mouth where the sound is made, but it isn't the same thing as the sound.

You can notice it yourself. Say *mmm* with your mouth closed: there's something inward about it, closed, staying put. Say *pah!*: something comes out, bursts open. Say *t*: something stops short. Say *sss*: something escapes, continuous. Say *lll*: something runs, glides. Say *k* hard: something gathers at the back and pushes. Say *nnn*: something resonates inside.

Each class has something like a character. Endolinguistics studies it carefully. And that's exactly why I now have to give you the most important warning in all of Part I.

Watch out A class's character is not a meaning. The lip class doesn't mean "father," or "strength," or anything else. A class on its own means nothing and predicts nothing. It's like a color on a palette before anyone paints: it has its tone, but it isn't a painting yet.

This warning exists because the temptation is huge. It seems natural to think: "if *m* feels like closing and *t* like a limit, then a word with *m* and *t* means 'a closing with a limit'." That reasoning is called **adding up classes**, and it's forbidden in this method. Not on a whim, but because it doesn't work: it produces made-up meanings that sound deep and don't survive any test. Anyone who turns the feelings of sounds into the meanings of words has stopped doing endolinguistics. They're doing something else, something close to numerology.

So what are classes for? They're for **seeing**: for recognizing that *father* and *padre* are the same sequence under two disguises. And they're pieces of something bigger. Meaning, when it shows up, doesn't show

up in loose classes. It shows up when classes combine in a certain order and that combination repeats across many words in many languages. We call that combination a **code**, and it's the subject of the next chapter.

A class belongs to a family of languages

One last precision. The seven classes in this chapter are the ones I proposed for our family of languages, Indo-European. Mouths everywhere have the same lips, the same teeth, and the same back, so the physical regions are the same everywhere. But the feeling a group of sounds produces, and how sounds group together, can change from one family of languages to another. A sound that feels like force in our family may feel different in another. That's why the classes don't simply carry over to languages of other families, like Nahuatl, Arabic, or Japanese. We'll come back to this in chapter 9.

Challenge Classify the consonants of these Spanish words. Pronounce them properly before you classify (if you're not sure how they sound, look them up in an online dictionary with audio).

jirafa · queso · cena · guerra · llave · hielo

(Solutions: Appendix B, exercise 3.2.)

Going further Linguists have their own system for classifying sounds, much more detailed: the **International Phonetic Alphabet** (IPA). It distinguishes, for example, the *t* of *top* from the *t* of *stop*, which sound different in English even if you've never noticed. The OAS classes don't compete with that alphabet. They're a different kind of instrument: the IPA describes sounds with total precision; the classes group sounds by the region and the feeling they share. One is a magnifying glass; the other, a map.

The Code

Putting the object together

You now have all the pieces. Reading a word endolingustically means making three moves in a row:

- 1. **Remove what isn't root:** endings, prefixes, suffixes (chapter 2).
- 2. **Pull out the skeleton** of the root: its consonants, as they sound, in order (chapter 2).
- 3. **Turn it into classes:** each consonant to its region (chapter 3).

What's left is a very short sequence: almost always two or three classes, in an order. That, exactly that, is an **endolingustic code**. If it has two classes we call it **binary**; if it has three, **ternary**.

word	root	skeleton	code
father	father-	f · th · r	$\Phi \cdot \Theta \cdot \Lambda$
mother (US)	mother-	m · th · r	$M \cdot \Theta \cdot \Lambda$
terrain	terr-	t · r	$\Theta \cdot \Lambda$
act	act-	k · t	$X \cdot \Theta$

The idea of the code is the heart of endolinguistics, and it comes from its founders, Meulemans and Elias. Comparing dozens of languages, they discovered that certain patterns of consonants repeat over and over, cross centuries and borders, and gather around them words whose meanings have something in common. The classes we use here to write those patterns are my way of organizing them.

Order matters

Now a detail that looks minor and is the soul of the whole thing.

21 isn't the same as 12, even though it uses the same digits. Codes work the same way: $\Theta \cdot \Lambda$ is **not the same as** $\Lambda \cdot \Theta$. Same two classes, different order, different code.

To talk about this precisely we need two words.

- The **nucleus** of a code is its set of classes, regardless of order. It's written in curly brackets: the nucleus of $\Theta \cdot \Lambda$ is $\{\Theta, \Lambda\}$, and so is the nucleus of $\Lambda \cdot \Theta$.
- The **code** is the sequence **with** its order. $\Theta \cdot \Lambda$ and $\Lambda \cdot \Theta$ have the same nucleus, but they're different codes.

When two codes have the same nucleus in reverse order, we say one is the **inversion** of the other.

An inversion you can hear

Read these two lists out loud, one after the other.

$\Theta \cdot \Lambda$	$\Lambda \cdot \Theta$
terrain	rotate
territory	rotation
terrace	Spanish <i>rueda</i> (wheel)
Spanish <i>tierra</i> (earth)	Spanish <i>rodar</i> (to roll)

(In *rueda*, the *u* is the vowel of a diphthong, so it doesn't count: the skeleton is *r · d*.)

On one side, words of ground, of settling, of what stays put. On the other, the same pair of classes reversed: words of turning, of going around, of motion. The same two notes; played in one order they sound like rest, in the other they sound like movement.

Now comes the honest part, and it matters as much as the pretty one.

Terrain and *rotate* **aren't relatives**. *Terrain* comes (through French) from the Latin *terra*, which goes back to a Proto-Indo-European root meaning "dry." *Rotate* comes from the Latin *rota*, "wheel," from a different root meaning "to run, to roll." Two separate histories. No etymological dictionary connects them.

So what did you just hear? Not a kinship: an **endolinguistic reading**. It's the observation that words with different histories carry the same nucleus in reverse order, and that their fields of meaning (settling, turning) also seem to be related. Endolinguistics proposes that this isn't entirely by chance: that the order of the classes orients meaning. But that's a proposal, not a proven fact, and it has to be treated as one.

Challenge Say the English word *earth* in an American accent: *urth*. Its skeleton is *r · th*: the code is $\Lambda \cdot \Theta$, the order of the wheel, not of the ground. (The German word, *Erde*, has the same order.) Does that knock down the reading in the table above? Think about it before you read on. There's no closed answer; what matters is how you reason.

A hint for the challenge. One example that doesn't fit doesn't destroy a proposal on its own, but it can't be hidden either. What decides whether a reading holds is counting: how many words fit it and how many don't, in many languages, compared with what pure chance would produce. Two or three pretty examples prove nothing, and one ugly one refutes nothing. That's why, in this manual, every time I show you a reading like this I'll tell you it's a reading. That habit is the difference between a method and a collection of coincidences.

A code doesn't mean: it orients

If, reading the table of *terrain* and *rotate*, you thought "so $\Theta \cdot \Lambda$ means ground," this is the moment to brake. That thought is natural, and it's the wrong door.

A dictionary tells you what a word means. A code doesn't do that. A code **orients**: it points to a zone ("words that carry me tend to live around here") without saying what's in the zone.

It's the difference between a treasure map and a compass. The map promises the chest. The compass only swears where north is; what's up north, the terrain will tell you.

There's an example that shows this better than any explanation. Look at these words:

word	language	meaning	root code	where it comes from
calorie	English	unit of heat	$X \cdot \Lambda$	Latin <i>calor</i> , from the root <i>cal-</i> "to be hot"
caliente	Spanish	hot	$X \cdot \Lambda$	the same root <i>cal-</i> (+ suffix <i>-iente</i>)
caldo	Italian	hot	$X \cdot \Lambda \cdot \Theta$	root <i>cald-</i> : Latin <i>calidus</i> , from the same root <i>cal-</i> as <i>calorie</i> ; in Italian the old suffix fused into the root
gélido	Spanish	icy cold	$X \cdot \Lambda$	root <i>gel-</i> (+ suffix <i>-ido</i>): Latin <i>gelidus</i> , from <i>gelu</i> "frost"
cold	English	cold	$X \cdot \Lambda \cdot \Theta$	the same root as <i>gelu</i>
kalt	German	cold	$X \cdot \Lambda \cdot \Theta$	the same root as <i>gelu</i>

There are two families here. *Calorie*, *caliente*, and *caldo* belong to one: the Latin root *cal-*. *Gélido*, *cold*, and *kalt* belong to another: they're relatives of each other (*gélido* is, in fact, the Spanish cousin of your *cold*), and they come from a root that meant cold. The two families **aren't related**. *Calorie*, *caliente*, and *gélido* begin their root with the same pair $X \cdot \Lambda$.

And here's the finest part: Italian *caldo*, which means "hot," and your English *cold* have exactly the same code, $X \cdot \Lambda \cdot \Theta$. They come from two unrelated families, and each one sits at an end of the same axis: temperature. German *kalt*, the sibling of *cold*, carries $X \cdot \Lambda \cdot \Theta$ too.

One nuance, to be honest about it. In Latin, the *d* of *calidus* belonged to the suffix, not to the root. In Italian the suffix fused, and today that *d* is part of the root *cald-*. We didn't do that when we took the word apart: the language did it by itself.

Does the code contradict itself, showing up in both hot and cold? Only if we expected it to mean something. If we understand that it orients, the apparent contradiction becomes information. That code points to an axis (temperature) and each word walks that axis to a different end. A compass that marks the north-south axis isn't disproved because one traveler goes north and another goes south.

(This last part, again, is a reading. What's documented is that *gélido*, *cold*, and *kalt* are relatives and that *calorie*, *caliente*, and *caldo* belong to another family. That *caldo* and *cold* meet in the whole code $X \cdot \Lambda \cdot \Theta$, and the two families on the axis, is the endolinguistic observation.)

Use is the referee

If the code doesn't say what a word means, who does? **Use**. The real sentences a word lives in, what people actually do with it.

The code tells you *where to look*; use tells you *what you see*. That division of labor is the most important rule of the method, and whoever flips it (whoever first decides what a code "means" and then forces words to obey) is no longer observing the language. They're dictating to it.

How not to read a code

Back to the trap from chapter 3, because with codes it becomes even more tempting.

Take the word *star*. Its code is $\Sigma \cdot \Theta \cdot \Lambda$. Someone might reason like this: “ Σ is the hiss, which feels like going out; Θ is the limit; Λ is what flows. So a star is something that goes out, gets defined, and flows: a star!”

That reasoning is wrong, and it’s worth understanding why, because the problem isn’t just that the conclusion is doubtful.

1. **It treats each class as if it had a fixed meaning.** We already saw it doesn’t.
2. **It adds up the pieces**, as if the code were a phrase made of three words. But classes don’t add up: they **bond**, and the result depends on the whole and on the order, the same way water looks like neither hydrogen nor oxygen.
3. **It closes what the code opens.** A code points to a wide field; a two-word gloss shuts it inside a label. If a reading fits in two words, it was almost certainly built by adding up.

What’s the right way, then? Go to the words. *Star* has documented relatives: Latin *stella*, which gave Spanish *estrella*, and German *Stern*. What those words share, and what people do with them in real sentences, is what tells you which field that code orients. Meaning is read from the **relationships between words**, not from the pieces of the code.

Try it Pull out the root code of these words. Then find the pairs that have the same nucleus in reverse order.

pat · tap · net · ten · pan · nap · mug · gum

(Solutions: Appendix B, exercise 4.1.)

Watch out In that exercise you'll find inversions between words that have nothing to do with each other: *mug* and *gum*, for instance. Finding an inversion is incredibly easy. The hard part, and the interesting one, is knowing whether it means anything. Word-game inversions are good training for the eye; they aren't discoveries.

Summary of Part I

With this you have the complete instrument. Let's review:

- The **skeleton** is the set of consonants in a word, taken from the sound (chapter 2).
- The **root** is the piece that carries the meaning; the code comes from it (chapter 2).
- The **classes** are seven regions of the mouth, each with its own feeling; on their own they mean nothing (chapter 3).
- The **code** is the sequence of classes in the root, in order; the **nucleus** is the same set without order; **inversion** changes the order and keeps the nucleus (this chapter).
- The code **orients**, it doesn't mean. **Use** is the referee.

In Part II you'll use all this for what I promised at the start: learning languages. And the first thing you need to know is who your real relatives are.

PART II

Using It to Learn Languages

Relatives on the Road

Three ways to look alike

Two words from different languages can look alike for three reasons, and half the art of learning languages with this method is telling them apart.

First reason: inheritance. Both words descend from one old word, and each language reshaped it in its own way. *Father* and *padre* are like that: both come, by separate roads, from the same Proto-Indo-European word. Nobody lent it to anybody. They're like cousins who inherited the same great-grandfather's nose.

Second reason: the loan. One language took the word from another, ready-made. *Tomato* is like that: English took it from Spanish *tomate*, and Spanish had taken it from Nahuatl *tomatl*. *Chocolate* came the same way, from Nahuatl *chocolātl*. There's no common ancestor here; there's a trip from one language to another.

Third reason: coincidence. The two words share no history and borrowed nothing from each other, and still they look alike. Like two strangers who look alike on the street. Not being relatives doesn't mean the resemblance doesn't matter: in chapter 12 you'll see that endolinguistics takes it very seriously.

From the outside, all three look the same. That's why you need to

learn to look inside them, and to ask history.

Co-derivatives

Linguists call words of the first kind **cognates**: words “born together.” In endolinguistics we prefer another name, **co-derivatives**, because it underlines what matters to us. A co-derivative is a word that, descending from a common source, **keeps the code**. We don’t care about etymology in the abstract; we care about the bone that survived the trip.

Co-derivatives are where this method pays off most, and where it’s most honest. When you learn *padre* knowing it’s *father* with another accent, you’re not inventing a connection to help you remember: you’re seeing a connection that exists, that’s documented, that linguistics has checked with hundreds of examples. That’s why the golden rule of working with codes to learn languages is this:

Try it Before you go on, learn the golden rule by heart. Say it out loud twice: **the game is played with co-derivatives**. Not with any word that happens to sound similar.

Loans travel too

Loans aren’t relatives, but they have their own history, and sometimes it’s more adventurous than a co-derivative’s.

Look at the journey of *sugar*. It started in India, in Sanskrit, as *śárkarā*. From there it went into Middle Persian, *šakar*. From Persian into Arabic, *sukkar*. From Arabic it moved into the languages of Europe, passing from hand to hand until it reached English. Several languages, more than one family, thousands of miles. The word changed hands like merchandise, and in fact it traveled with the merchandise.

Arabic gave English more than sugar. *Alcohol* comes from Arabic *al-kuḥl*, and *algebra* from *al-jabr*, "the resetting of broken parts." Notice the *al-* at the start: it's the Arabic word for "the," and it came along glued to the noun. Spanish is full of words like that, because Arabic was spoken in Spain for centuries: *almohada* (pillow), *aceite* (oil, from *az-zayt*, "the oil"), *azúcar* (sugar). Many Spanish words that start with *al-* or *az-* come from that trip. Many, not all: *alto* and *alma* come from Latin, so you have to check each one.

Watch out Being a loan doesn't make a word any less yours. *Tomato* is as English as *father*. What changes is the kind of connection you can use to learn. A loan connects you with the language it came from, not with that language's relatives.

Sometimes loan and inheritance cross. Spanish *ganso* and English *goose* are relatives: they come from the same Germanic word. But Spanish didn't inherit it from Latin; it borrowed it from Gothic, the language of one of the Germanic peoples who arrived in Spain about fifteen hundred years ago. A relative who came to visit and stayed.

False friends

Here's where it gets delicate. A **false friend** is a word in another language that looks like one of yours but doesn't mean the same thing. Everyone who studies Spanish meets a few. The problem is that there are **two kinds** of false friends, and almost nobody tells you.

Kind 1: relatives who changed jobs

Some false friends **are** relatives. They come from the same word, but in each language the meaning drifted until it landed somewhere dif-

ferent.

English	Spanish	what it means in Spanish	the story
actual	actual	current, present-day	both from Latin <i>actualis</i> , "active"
exit	éxito	success	both from Latin <i>exitus</i> , "a going out"; in Spanish it slid to "outcome," then to "good outcome"
library	librería	bookstore	both from Latin <i>liber</i> , "book"
carpet	carpeta	folder	related words that went separate ways
embarrassed	embarazada	pregnant	see below

The *embarazada* case is the best one, and you've probably been told it wrong. A lot of people say *embarrassed* and *embarazada* have nothing to do with each other and that the resemblance is a coincidence. It isn't. English took *embarrass* from French *embarrasser*, and French took it from Spanish or Portuguese *embaraçar*, which meant "to tangle, to hamper." That word came from *baraço*, "cord, noose," which in turn came from Arabic *marasa*, "rope." The two words are relatives. Deep down, both talk about something that tangles you up, that gets in your way. In English the hindrance became shame; in Spanish it became pregnancy.

The lesson matters: **kinship doesn't guarantee meaning**. Two co-derivatives can travel so far that they no longer mean the same thing.

The code helps you remember the word; usage tells you what it means. If you trust only the code, you'll tell someone in Spanish that you're *embarazada* when you meant something quite different.

Kind 2: strangers who look alike

Other false friends have no kinship at all, and sometimes they look astonishingly alike. The most striking case for an English speaker is *much* and Spanish *mucho*: same meaning, almost the same sound, the same code... and no kinship. You'll look at it calmly in chapter 12, because it teaches two things at once: the limits of this method and one of its most interesting mysteries.

The two layers of English

And now one of the most useful things this manual can give you for learning Spanish.

English has, for many ideas, **two words from two different worlds**. One is the everyday word, inherited through the Germanic branch: short, old, homely. The other is a learned word, borrowed from Latin or from French, the language of law, school and science: longer, fancier, a bit formal. Look:

everyday English (Germanic)	learned English (Latin/French)	everyday Spanish
father	paternal	padre
mother	maternal	madre
night	nocturnal	noche
tooth	dental	diente
eye	ocular	ojo
hound	canine	can (literary: "dog")
foot	pedestrian	pie
hair	capillary	cabello
son	filial	hijo
iron	ferrous	hierro
story	fable	hablar ("to speak")

Do you see what happens? Your fancy words are Spanish's everyday words. The Latin words that English kept for formal occasions are, in Spanish, the words people use at breakfast. Spanish wore them down with centuries of use (*nocturnal* and *noche* share their bone; *ocular* and *ojo* too, though *ojo* lost most of it on the road), but the family is the same. That's why **your learned English vocabulary is a direct door into Spanish**. When you meet a Spanish word you don't know, ask whether it might be the everyday twin of a fancy word you already own.

A detail worth noticing: in some rows the everyday English word is a relative too (*father*, *mother*, *night*, *tooth*, *eye*, *hound*, *foot* all share a Proto-Indo-European ancestor with the other two). In others (*hair*, *son*, *iron*, *story*) the everyday word comes from a different root altogether. Either way, the learned word is your bridge.

(Some rows are subtler than others. *Hablar* and *fable* both come from Latin *fabula*, “a telling”; Spanish turned “to tell stories” into plain “to speak.” *Hijo* and *hierro* lost their first letter on the way, and chapter 6 tells you exactly why.)

Watch out Don't get overconfident. You've already seen that *actual*, *library* and *embarrassed* are learned words, or nearly, and they're false friends. The door exists, but you have to go through it asking questions. Chapter 8 gives you a practical way to do it.

The false-friend test

Before you accept a connection between two words from different languages, ask yourself these four questions:

1. **Do they sound alike inside?** Take the skeleton of the root and the code of both. If they don't even share the nucleus, there's probably no useful connection.
2. **Do they share a history?** Look it up. An etymological dictionary will tell you in a minute. If you don't have one at hand, an English dictionary with etymologies and the Spanish *Diccionario de la lengua española* online are good places to start.
3. **Do they mean the same today?** Even if they're relatives, check how they're used in real sentences in the other language. Usage is the referee.
4. **Is it inheritance or a loan?** That tells you what kind of connection you can use.

It sounds like a lot of work. At first it is. But with practice it becomes a two-second gesture, a small deliberate doubt before you store

a word in memory: *is this real kinship, or a chance echo?* That gesture is what separates people who learn fast from people who make mistakes fast.

Challenge Sort these pairs into three groups: (a) co-derivatives with the same meaning, (b) co-derivatives that changed meaning, (c) loans. Use a dictionary.

three / tres · exit / éxito · tomato / tomate · night / noche · goose / ganso · actual / actual

(Solutions: Appendix B, exercise 5.1.)

In the next chapter you'll discover that languages don't change words at random: they follow rules. And those rules can be learned the way you learn a magic trick, once, to use a thousand times.

The Rules of the Road

A trick you learn once

Imagine someone hands you a list of forty words in a language you don't know and says, "Learn these." Now imagine that instead they give you a single rule and say, "With this you can guess thirty of the forty." Which would you rather have?

Related languages don't change words at random. They change them by rules, and each rule applies to hundreds of words at once. Linguists call these rules **correspondences**: where one language has this sound, the other has that one. Learning a correspondence is learning a trick once and using it a thousand times.

This chapter teaches you several. But I'm not going to hand them over as a list. I'll put the words in front of you and you'll see the rule yourself. It works better that way: what you discover, you remember.

The *h* that used to be an *f*

Let's start with Spanish, the language you're most likely learning. Look at these words in four languages that come from Latin, and in Latin itself:

Spanish	Portuguese	Italian	French	Latin
hacer	fazer	fare	faire	facere
hijo	filho	figlio	fil	filius
hierro	ferro	ferro	fer	ferrum
harina	farinha	farina	farine	farina
hilo	fio	filo	fil	filum
hoja	folha	foglia	feuille	folium
horno	forno	forno	—	furnus

(They mean "to do," "son," "iron," "flour," "thread," "leaf," and "oven.") Look at the first letter of each column. What do you see?

Where Latin, Portuguese, Italian and French have *f*, Spanish has *h*. And that *h* is silent. In other words: Spanish **lost** the Latin initial *f*. Not in one word, but in all of these and many more.

So why is the *h* still written? Because it's the footprint of the *f*. In Old Spanish, some eight hundred years ago, people still said *fazer*, *fijo*, *fierro*, *forno*. Little by little the *f* softened into a puff of breath, written *h*, and then the breath disappeared too. Spelling kept the letter, the way you keep a photo of a relative who's gone.

And here's the good news for you as an English speaker: **your learned English words kept the *f***. English borrowed them from Latin or French, where the *f* never went away. So every time a Spanish word starts with a silent *h*, try putting an *f* back and see whether an English word lights up:

Spanish (lost the <i>f</i>)	English learned word (kept it)	Latin
hacer ("to do, make")	fact	facere
hijo ("son")	filial	filius
hierro ("iron")	ferrous	ferrum
hablar ("to speak")	fable	fabula
horno ("oven")	furnace	fornax / furnus
hoja ("leaf")	foliage	folium

Try it Knowing this rule, how do you think Portuguese says *hijo*? And how does Italian say *humo* ("smoke")? Write down your guess before looking it up. (Solutions: Appendix B, exercise 6.1.)

The rule has rules of its own

Now look at these Spanish words: *fuego* (fire), *fuerte* (strong), *flor* (flower), *frente* (forehead). They come from Latin *focus*, *fortis*, *flos*, *frons*, and they kept their *f*. Do they break the rule?

Not really. Look at what comes after the *f*: in *fuego* and *fuerte*, the diphthong *ue*; in *flor* and *frente*, a flowing consonant, *l* or *r*. In those positions the *f* held on. (It wasn't always easy: for a while people also said *huego*, and in the end the *f* form won.) A rule whose exceptions have their own explanation isn't a broken rule. It's a more precise one.

What happens to the code

This has a consequence for the code. When Spanish loses the *f*, the code loses a class: *filius* started with Φ ; *hijo* doesn't. Portuguese *filho*, Italian *figlio* and English *filial* keep it. If you want to find the original code of a Spanish word that starts with a silent *h*, it often pays to look

at its cousins: they kept what Spanish lost.

What Spanish did with *cl*, *pl* and *fl*

Another table. This time the Latin word starts with two consonants together.

Latin	Spanish	Portuguese	Italian	French
clavis	llave	chave	chiave	clé
pluvia	lluvia	chuva	pioggia	pluie
flamma	llama	chama	fiamma	flamme
plenus	lleno	cheio	pieno	plein

(They mean "key," "rain," "flame," and "full.") Four languages, four different solutions to the same problem. French kept the clusters *cl*, *pl*, *fl*. Spanish turned them into *ll*. Portuguese into *ch* (pronounced *sh* in Portuguese). Italian swapped the *l* for an *i*: *chi*, *pi*, *fi*.

English, again, often kept the Latin clusters in its learned words: *flame* (from *flamma*), *plenty* (from *plenus*), *clamor* (from the same root as Spanish *llamar*, "to call"). So when a Spanish word starts with *ll*, try *cl*, *pl* or *fl* and see what you find: *llama* → *flame*, *lleno* → *plenty*, *llamar* → *clamor*.

What it did with *ct*

One more. This time the Latin cluster is in the middle of the word.

Latin	Spanish	Portuguese	Italian	French	English
noctem	noche	noite	notte	nuit	night
octo	ocho	oito	otto	huit	eight
lactem	leche	leite	latte	lait	—

The Latin cluster *ct* became *ch* in Spanish, *it* in Portuguese, *tt* in Italian. And look at the last column: English *night* and *eight* don't come from Latin but from the Germanic branch, yet they're co-derivatives of *noche* and *ocho*. They all come from the same Proto-Indo-European words. (English *milk*, by the way, is **not** a relative of *leche*: it comes from a different root. That's why the cell is empty.)

Watch out You already know *latte*: the coffee drink. In Italian, *latte* simply means "milk." When you order a *latte*, you're literally ordering a milk.

Grimm's law: where English has *f*, Spanish has *p*

Now for the trip that matters most to you: the one that separates English from Spanish.

More than two thousand years ago, the Germanic languages — English, German, Dutch, Swedish — went through a chain reaction in their consonants. It was described in 1822 by Jacob Grimm, the same Grimm of the Brothers Grimm fairy tales, which is why it's called **Grimm's law**. Latin didn't go through that change. So if you compare English words (Germanic) with Spanish words (from Latin), you can watch the law at work.

Look at these groups. In each one, find which English consonant matches which Spanish consonant.

Group 1.

English	Spanish
father	padre
foot	pie
fish	pez
full	lleno (Latin <i>plenus</i>)

Group 2.

English	Spanish
tooth	diente
two	dos
ten	diez

Group 3.

English	Spanish
heart	corazón
horn	cuerno
hundred	cien (Latin <i>centum</i>)
hound ("hunting dog")	can ("dog," in literary Spanish)
who	quién

Group 4.

English	Spanish
three	tres

Group 5.

English	Spanish
cold	gélido ("icy")
know (once <i>cnāwan</i>)	conocer (Latin <i>cognoscere</i>)

Did you find them? Where English has **f**, Spanish (Latin) has **p**. Where English has **t**, Spanish has **d**. Where English has **h**, Spanish has **k** (written *c* or *qu*). Where English has **th**, Spanish has **t**. Where English has **k** (written *c* or *k*, even if it's silent now in *know*), Spanish has **g**.

Watch out Group 3 has a trap from modern Spanish. *Cien* is pronounced with an *s* (or a *th* in Spain), not a *k*. But in Latin, *centum* was pronounced *KEN-tum*. The Latin *c* before *e* and *i* sounded like *k*, and Spanish changed it later. So when you compare with English, sometimes you have to think about how the Latin word sounded.

Why this is good news for the code

Here's the best part. Look at which pairs of sounds Grimm's law swaps:

- *f* and *p*: both belong to the lips class, Φ .
- *t* and *d*, *th* and *t*: all three belong to the teeth class, Θ .
- *h* and *k*, *k* and *g*: all belong to the back class, X .

Grimm's law almost never moves a sound out of its class! It changes the costume, not the person. That's why the code of *father* and the code of *padre* are identical, $\Phi \cdot \Theta \cdot \Lambda$, even though the letters differ. And that's why the classes are such a good instrument for seeing

kinship between English and Spanish: they're built so that the biggest change separating the two languages stays, almost entirely, inside each class.

From English to German

If you want to learn German, you have an advantage: German is much closer to English than Spanish is. But German went through a second chain reaction that English didn't.

English	German
ten	zehn
two	zwei
tongue	Zunge
heart	Herz
water	Wasser
apple	Apfel
pepper	Pfeffer
make	machen
book	Buch
bread	Brot

Where English has *t* at the start, German has *z* (pronounced *ts*). Where English has *t* in the middle, German often has *ss*. Where English has *p*, German has *pf* or *ff*. Where English has *k*, German has *ch*. Where English has *d*, German has *t*.

Here, unlike Grimm's law, some changes **do** move a sound out of its class: the *t* of *ten* (Θ) became the *ts* of *zehn*, which ends in a hiss

(Σ). When that happens, the code changes. That's not a failure of the method: it's information. It tells you this change was more drastic.

From Spanish to French

One last one, short. Look:

Spanish	French
cantar ("to sing")	chanter
campo ("field")	champ
caballo ("horse")	cheval
cabra ("goat")	chèvre
casa ("house")	chez

Where Spanish has *ca*, French often has *cha* or *che* (with an *sh* sound). And English borrowed some of these straight from French: your word *chant* comes from French *chanter*, which comes from Latin *cantare*, the same word as Spanish *cantar*. The last row is my favorite. French *chez* means "at the home of": *chez moi*, at my place. It comes from Latin *casa*, the same word as Spanish *casa*. It wore down so much that it ended up as a preposition.

Rules aren't iron laws

Everything you've seen in this chapter is a **tendency with reasons**, not an absolute law. There are exceptions. Some are explained by a finer rule (like the *f* in *fuego*). Others by a loan: a word that arrived after the rule had already acted, so it never went through it. Others still have no explanation.

Teaching you correspondences as if they were absolute would plant a false confidence. The right way to use them is as an **informed bet**: they help you guess, and then you check.

Challenge Using Grimm's law, what Spanish word would you expect to be a co-derivative of *foot*? Of *tooth*? Of *horn*? Now the other way: *foot* has a learned co-derivative in your own English that isn't *foot*. Hint: it's a long word for someone who goes on foot, and it came from Latin. (Solutions: Appendix B, exercise 6.2.)

Going further In 1875 the Danish linguist Karl Verner explained why some words seemed to break Grimm's law: it depended on where the stress fell in the ancient word. It was one of the great moments in the science of language, because it turned a list of exceptions into a deeper rule. If you're curious, look up "Verner's law."

In the next chapter you'll find these rules gathered by language, like a pocket map for each language you might want to learn.

Pocket Maps

This chapter isn't meant to be read straight through. It's a toolbox: a short map for each language you're likely to want to learn. Go straight to the one you need, and come back when you start another.

Each map has four parts: how far that language is from English, the rules that pay off most, a trap, and a pronunciation tip.

How far is each language?

Before the maps, a number that helps you calibrate what's ahead. Linguists have gathered, for many languages, how to say about 170 basic concepts: things like *hand, water, sleep, red, night*. They're words every language has and that rarely get borrowed. With that list you can measure what percentage of those basic words are co-derivatives between two languages: the same inherited word, with another accent.

Here are the numbers for English, calculated on an expert database called IE-CoR:

language	basic vocabulary shared with English by inheritance
Dutch	59%
German	56%
Swedish	51%
Danish	51%
Icelandic	49%
Romanian	21%
Spanish	20%
French	20%
Italian	20%
Portuguese	20%
Russian	17%

Reading this table correctly saves you frustration. With German or Dutch, more than half of the basic words are yours with another accent: your job is to learn the rules of the accent. With Spanish, only one in five. Does that mean Spanish is hopeless for an English speaker? Not at all. It means two things. First: for Spanish *basic* vocabulary you'll have to memorize more, and Grimm's law helps you with the fifth that is shared inheritance. Second: this table only measures basic inherited words. It doesn't count the thousands of learned words English took from Latin and French, which are exactly the ones you saw in chapter 5. In learned vocabulary, Spanish, French, Italian and Portuguese are much closer to you than this 20% suggests.

Watch out A high percentage doesn't mean a language is easy to **speak**. German shares more than half of your basic words, but its pronunciation has sounds you don't have. The work moves from memory to the ear.

Map of Spanish

Distance: far in basic vocabulary (20%), very close in learned vocabulary.

Rules that pay off most:

1. **The learned-layer bridge** (chapter 5): Spanish everyday words are often your fancy words. *Padre* ↔ *paternal*, *noche* ↔ *nocturnal*, *diente* ↔ *dental*, *ojo* ↔ *ocular*, *pie* ↔ *pedestrian*, *cabello* ↔ *capillary*.
2. **Grimm's law** (chapter 6), read backwards: where English has *f*, Spanish has *p* (*father/padre*, *fish/pez*); where English has *t*, Spanish has *d* (*tooth/diente*, *ten/diez*); where English has *h*, Spanish has *k* (*heart/corazón*, *horn/cuerno*); where English has *th*, Spanish has *t* (*three/tres*).
3. **Silent h = lost f** (chapter 6): *hacer* ↔ *fact*, *hijo* ↔ *filial*, *hierro* ↔ *ferrous*, *hablar* ↔ *fable*, *horno* ↔ *furnace*.
4. **An e before s + consonant.** Spanish doesn't start words with *s* followed by a consonant, so it adds an *e*: *school* ↔ *escuela*, *state* ↔ *estado*, *special* ↔ *especial*, *student* ↔ *estudiante*.
5. **Regular endings.** *-tion* → *-ción* (*nation* ↔ *nación*), *-ty* → *-dad* (*university* ↔ *universidad*), *-ous* → *-oso* (*famous* ↔ *famoso*).
6. **Simpler spelling.** *ph* → *f* (*philosophy* ↔ *filosofía*), *th* → *t* (*theater* ↔ *teatro*).

Trap: false friends of kind 1, relatives who changed jobs: *embarazada* (pregnant, not embarrassed), *actual* (current, not actual), *éxito* (success, not exit), *librería* (bookstore, not library), *carpeta* (folder,

not carpet). And the strangers of kind 2, which aren't relatives even though they look like twins: *mucho* doesn't come from *much*, nor *haber* from *have*, nor *día* from *day*. (Chapter 12 tells you why that resemblance still matters.)

Pronunciation: Spanish has five pure vowels, always pronounced the same, and a rhythm that gives each syllable about the same time: *ca-ra-me-lo*, four even beats. English squeezes unstressed syllables; Spanish doesn't, and that's the first thing your accent will give away. The *r* between vowels is a quick tap (*pero*, "but"), the *rr* is a trill (*perro*, "dog"). *B* and *v* sound the same. The *h* is silent. The *j* sounds like a strong English *h*, made further back.

Map of French

Distance: 20% in basic vocabulary, but English has been soaking up French words since the Norman conquest of 1066. Much of your learned vocabulary is French.

Rules that pay off most:

1. **The lost s.** Many French words lost an *s* that English kept, and French marks the loss with a hat on the vowel (^) or with *é*: *forest* ↔ *forêt*, *hospital* ↔ *hôpital*, *beast* ↔ *bête*, *school* ↔ *école*, *state* ↔ *état*. When you see a circumflex, try putting an *s* after the vowel.
2. **Latin *ca* → French *cha/che*:** *chant* ↔ *chanter*; Spanish *cantar*, *campo*, *caballo*, *casa* ↔ French *chanter*, *champ*, *cheval*, *chez*.
3. **The *f* stays:** French *faire*, *fil*, *fer*, *fil* sit next to your *fact*, *filial*, *ferrous*.
4. **Latin *ct* → *it*:** *nuit*, *huit*, *lait* (night, eight, milk).

Trap: French writes many consonants it no longer pronounces, especially at the end. If you take the skeleton from the spelling, it will come out longer than the one in the mouth. *Front* is written with five letters and said roughly *frō*: its skeleton is *f · r*. Remember the rule of chapter 2: sound rules.

Pronunciation: rounded vowels English doesn't have (the *u* of *lune*, the *eu* of *feu*), nasal vowels, and an *r* made at the back of the throat. Listen a lot before you speak.

Map of German

Distance: the closest of the big languages (56%). Many of your everyday words are German words with another accent.

Rules that pay off most:

1. **The second shift** (chapter 6): *ten/zehn*, *two/zwei*, *tongue/Zunge*, *heart/Herz*, *water/Wasser*, *apple/Apfel*, *pepper/Pfeffer*, *make/machen*, *book/Buch*, *bread/Brot*.
2. **Spelling vs sound.** German *v* sounds like *f*: *Vater* is said *fah-ter*. German *w* sounds like *v*: *Wasser* is *vasser*. Take the skeleton from the sound.
3. **What German shares with you, it shares with Spanish differently.** German *Vater*, *Fisch*, *voll*, *drei* line up with your *father*, *fish*, *full*, *three*, and all of them line up with Spanish *padre*, *pez*, *lleno*, *tres* through Grimm's law.

Trap: *Gift* in German means poison, not present (though it really is a relative of your *gift*: the old word meant "something given," and

German used it as a polite way of saying "poison"). *Rat* means advice, not rat.

Pronunciation: German has a soft *ch* (as in *ich*) and a rough one (as in *Buch*), vowels with umlauts (*ü, ö, ä*), and a very clear way of separating words. It's a language that makes more sense read aloud than read silently.

Map of Italian

Distance: 20% in basic vocabulary, very close in learned vocabulary, and very close to Spanish.

Rules that pay off most:

1. **The *f* stays:** *fare, figlio, fumo* (smoke), *farina* (flour), next to your *fact, filial, fume*.
2. **Latin *cl, pl, fl* → *chi, pi, fi*:** *chiave* (key), *pieno* (full; your plenty), *fiamma* (your flame), *chiamare* (to call; your clamor).
3. **Latin *ct* → *tt*:** *notte, otto, latte*.
4. **Double consonants.** Italian pronounces many consonants double (*notte, latte, fiamma*). When you take the skeleton, count each double consonant once.

Trap: *burro* in Italian is butter. *Caldo* means hot (and here's the compass from chapter 4 again: the same code as English *cold*, X·Λ·Θ, on the hot side). *Salire* means to go up, not to leave.

Pronunciation: Italian has clear vowels and a rhythm close to Spanish. The new thing for you is the double consonants, which are

held for an extra instant: *pala* (shovel) isn't *palla* (ball). Train them from the start.

Map of Portuguese

Distance: 20% from English, but 84% from Spanish. If you already know some Spanish, Portuguese is the cheapest next language there is.

Rules that pay off most:

1. **The *f* stays:** *fazer, filho, ferro, falar* (to speak), *forno*.
2. **Latin *cl, pl, fl* → *ch*** (said *sh*): *chave* (key), *chuva* (rain), *chamar* (to call), *chama* (flame), *cheio* (full).
3. **Latin *ct* → *it*:** *noite, oito, leite*.

Trap: *puxar* looks like Spanish *empujar* ("to push"), but in Portuguese it means **pull**. Both come from Latin *pulsare*, "to push": relatives that ended up meaning opposite things.

Pronunciation: the hard part of Portuguese isn't understanding it on paper, it's hearing it. It has nasal vowels (*canção*, song; *mão*, hand) and open and closed vowels that tell words apart (*avó*, grandmother; *avô*, grandfather).

Challenge Choose the language from this chapter that interests you most. Find ten words in that language you don't know, in any text (a song, a news story, a menu). For each one, try to guess its meaning using only the rules on its map. Then check. Write down how many you got right. Keep the number: in chapter 8 I'll tell you what to do with it.

Going further The numbers in the table at the start come from a research project that aims to build, for each pair of languages, a “learn by decoding” manual: instead of learning the new language from scratch, you learn the transformation that turns your language into the other one. Manuals like that already exist for several pairs of languages. The Spanish-to-Portuguese one opens with a line that says, more or less: you already know Spanish, and that’s your cheat sheet.

The Method, Step by Step

Why memory loves connections

Go back to the scene at the start of this manual: the Spanish list that's gone by the next day. It's not that you have a bad memory. It's that human memory isn't built to store loose facts. It's built to store **relationships**.

Memory research has been studying this for over a century, and the results agree. Three of them matter to you:

1. **What connects, sticks.** What you process deeply, what you link to something you already know, is remembered much better than what you repeat in a vacuum. Psychologists call it *deep processing*.
2. **What you produce sticks better than what you read.** If you generate an answer yourself, even by guessing, you remember it better than if someone hands it to you. It's called the *generation effect*.
3. **What you review spaced out sticks better than what you cram.** Ten minutes a day for five days works better than fifty minutes in one night. It's called the *spacing effect*.

Working with codes uses all three at once. When you discover that *pie* is *foot* through Grimm's law, you're not reading a fact: you're **gen-**

erating it from something you already knew. And the rule you used ($f \leftrightarrow p$) then serves you for *fish/pez, father/padre, full/lleno*. Each new word arrives connected to an old one and to a rule. It no longer arrives alone.

The central idea of this chapter fits in one sentence: **speed doesn't come from learning each word faster, but from no longer learning them one at a time.**

Six moves

What follows are six techniques. I give them to you as tools, not as dogma. Each comes with its warning, because a method that only lists its virtues is lying.

1. Start with what you almost know

Don't start with the thousand most frequent words of the new language. Start with the **co-derivatives**: the words you almost know without knowing it. Take their skeleton and set them next to their twin in English, whether that twin is an everyday word or a learned one.

Warning: this is where false friends lurk. The fertile ground and the minefield are the same field. Use the test from chapter 5.

2. Learn ladders, not steps

Don't memorize *pie = foot*. Memorize the correspondence $f \leftrightarrow p$ and let it open the door to *pez/fish, padre/father, lleno/full*. One rule, many words.

Warning: correspondences have exceptions. If you treat them as absolute, you'll invent words that don't exist. Use them to bet, and then check.

3. Hang the vowels on the skeleton

When you learn a new word, fix its consonants first, since they're the stable part, and then adjust the vowels. Remembering a frame and hanging the vowels on it is easier than remembering a whole string of letters.

Warning: in some languages vowels do grammatical work. In German, *singen, sang, gesungen* (sing, sang, sung) have the same skeleton and only the vowels change, just like in English. If you ignore the vowels, you lose the verb's tense.

4. Let usage decide

When a word could mean two things, don't decide yourself. Look for it in real sentences: songs, shows with subtitles, the news. The code tells you where to look; usage tells you what's there.

Warning: this is the hardest technique and the most important. Without it, the game turns into guessing.

5. Doubt for one second

Before you store a connection in memory, ask yourself: *is this real kinship, or a chance echo?* One second of deliberate doubt.

Warning: it slows down your enthusiasm, and enthusiasm is good. But without this brake, enthusiasm leads you to store very convincing mistakes.

6. Come back to the rule days later

Come back to the same correspondence in new contexts: today with three words, in three days with three others, in a week with three more.

That way the rule becomes structure and not a one-day trick.

Warning: it's boring. It goes against the thrill of the "aha!" Do it anyway.

Hidden access points

There's a resource almost nobody uses that can save you a lot of work. Sometimes a word in the new language isn't a co-derivative of your everyday word, but it **is** a co-derivative of another word of yours that you use less: a learned word, a technical one, a formal one. That other word is an **access point**: a hook you already have in your head.

For an English speaker learning Spanish, the learned layer of English is full of them:

Spanish everyday word	your everyday word	your access point
padre	father	paternal
madre	mother	maternal
noche	night	nocturnal
diente	tooth	dental, dentist
ojo	eye	ocular
pie	foot	pedestrian
cabello	hair	capillary
hijo	son	filial
hierro	iron	ferrous
hablar	speak	fable
can (literary)	dog	canine

Try it Spanish *pie* doesn't look like *foot*, but it has an access point in your learned English. You already found it in the challenge of chapter 6. What was it? Now find one for Spanish *cabello* (hair). Hint: think of the tiniest blood vessels, as thin as a hair. (Solutions: Appendix B, exercise 8.1.)

Bridge sentences

A **bridge sentence** is your own language bent toward the other one. You take real words from your language, sometimes less common ones, chosen so the sentence lines up almost word for word with the language you're learning. It's not the most natural way to say it, but it lets you cross into the other language in the shortest possible step.

It works in three lines: the sentence in the new language, the bridge sentence, and the natural sentence. Two examples from Spanish:

Try it Read the three lines aloud, in order.

Spanish: *El profesor explica la lección con paciencia.*

Bridge: *The professor explicates the lesson with patience.*

Natural: *The teacher explains the lesson patiently.*

Spanish: *Mi familia habita una casa antigua.*

Bridge: *My family inhabits an antique house.*

Natural: *My family lives in an old house.*

See what happens? The bridge sentence uses words you have but rarely use (*explicate*, *inhabit*, *antique*), and with them the Spanish becomes transparent. *Explica* and *explicate* come from the same Latin word; so do *habita* and *inhabit*, *antigua* and *antique*, *paciencia* and *patience*. The bridge sentence doesn't just teach you words: it teaches you to move with the rhythm and order of the other language.

Challenge Build a bridge sentence from Spanish to English yourself. Pick a simple Spanish sentence with at least two words of Latin origin (for example with *visitar, familia, problema, importante*). Write the bridge and the natural version. Watch out for false friends: the bridge has to say the same thing as the original.

A one-week plan

Twenty minutes a day. No more. What counts is consistency, not heroics.

day	what you do
Monday	Pick one rule from your language's map (chapter 7) and find ten words that follow it. Write them with their skeleton.
Tuesday	Conversion: cover the new-language column and try to produce each word from English, using the rule. Then check.
Wednesday	Listening: find the ten words in audio (an online dictionary, a song, a video) and repeat them aloud.
Thursday	Usage: find at least three of the ten in real sentences. Write the sentence down.
Friday	Bridge sentence: build one or two with the week's words.
Saturday	Rest. Seriously.
Sunday	Test without scaffolding: see the next section.

The following week, pick another rule, but on Tuesday and Thursday also go back to three words from the week before. That way your review is spaced out without you having to think about it.

Is it working, or do I just feel good?

It's a serious question, and you have to ask it. Feeling that a language has order is very motivating, and motivation helps you learn. But it can also fool you: you can feel you're making progress without making it.

There's a simple way to tell. It's called **taking away the scaffolding**. On Sunday, without looking at your notes and without thinking about the rule, try to say or write the week's words in the new language, starting from English. If they come, there was real learning: the structure stayed even after you took the support away. If they don't, what you had was suggestion: the feeling of understanding without the ability to use.

Write down how many come to you each Sunday. If you did the challenge in chapter 7, you already have a first number to compare. That number is yours, and it's more honest than any promise this manual can make.

What this method isn't

It doesn't replace practice. Working with codes isn't at war with traditional teaching. You also need memory, repetition, talking with people, making mistakes out loud. The code gives you a structure to hang all that on; it doesn't do the work for you.

It doesn't require you to know history. To *speak* a language, it's enough to play at learning it. You don't need to know what Proto-Indo-European is or what each law is called. Some students want to speak, not to know, and that's completely valid. Take from this manual the amount of history that helps you, and not an ounce more. Depth is

a luxury for those who want it and a burden for those who don't. The method serves the learner, not the other way around.

It doesn't work the same with every language. It works better the more related the language is to yours. With German it's almost a shortcut for everyday words; with Spanish it's a serious help, especially through your learned vocabulary. And with languages that aren't relatives of English at all? That's the subject of the next chapter.

Going further If you're a teacher reading this: the order that works best is first **recognizing** and then **producing**. Teach the consonant rules first, which let students decode what they hear and read; then practice active conversion. Teach false friends explicitly, as the failures of the rules. And set one reference accent from day one. Where you don't know the history of a word, say so: a declared mystery is better than an invented etymology.

When There Are No Relatives

Farther than you think

Before we talk about the languages that are not related to English, it's worth noticing how far the ones that *are* related reach. Look at this table:

Spanish	Persian (Iran)	Sanskrit (ancient India)	Russian
padre	pedar	pitr̥	—
madre	mādar	mātr̥	mat'
tres	—	tri	tri
noche	—	—	noch'
nuevo	—	—	novyj

Persian is spoken thousands of miles from Madrid or Mexico City. And yet its word for *father* has exactly the same skeleton as the Spanish one: $p \cdot d \cdot r$. Its *mother*, too: $m \cdot d \cdot r$. That's no accident and no loan. It's inheritance: Persian, Sanskrit, Russian, Spanish, and your own English are branches of the same Indo-European tree.

So the method in this manual doesn't stop at Spanish and German. It reaches, with more effort, to Russian, Hindi, Persian. The farther away the branch, the fewer co-derivatives there are and the more worn

down they look, but the map is still the same map.

The edge of the map

Now the real question: what about Nahuatl, Arabic, Japanese, Chinese, Maya? None of these languages belongs to the Indo-European family. Each belongs to a different family, with thousands of years of history of its own.

Endolinguistics calls each of these great families, seen as a system, a **macrosystem**. Indo-European is one macrosystem. Semitic (the family of Arabic and Hebrew) is another. Uto-Aztecan (the family of Nahuatl) is another. Sino-Tibetan (the family of Chinese) is another.

And there's a rule that doesn't bend: **macrosystems don't get mixed**. You don't compare an English code with an Arabic one as if they belonged to the same language, because they don't. There are two reasons.

The first is history. Between English and Arabic there are no inherited co-derivatives. If you find an Arabic word that looks like an English one, either it's a loan (like *sugar* or *algebra*, which you'll meet in a moment), or it's a coincidence with no shared history: what chapter 12 will call a convergence. Inherited kinship there is none.

The second reason goes deeper. In chapter 3 I told you that classes belong to a family of languages: the regions of the mouth are the same all over the world, but the sensation a group of sounds produces, and how sounds group together, can change from one macrosystem to another. When this research program measured whether the field of meaning of an Indo-European code also shows up in other families, it matched very rarely: less than one time in ten. What *is* shared across

families is something more basic: that languages organize meaning with patterns of consonants. How they do it, each family does in its own way.

Watch out If someone tells you that a Japanese word and an English word “have the same code, so deep down they mean the same thing,” be suspicious. They’re mixing macrosystems. The resemblance may be real and worth writing down, but it isn’t kinship, and on its own it doesn’t prove the words mean the same thing.

Loans that crossed the edge

Words, however, do travel across the edge of the map, even when languages aren’t related. They travel as loans, and English is full of them.

Take *sugar*. It started in India, in Sanskrit, as *śárkarā*. From there it passed into Middle Persian, *šakar*; from Persian into Arabic, *sukkar*; and from Arabic, through Italian and French, into English. Four language families’ worth of hands, and the word traveled with the goods. *Alcohol* comes from the Arabic *al-kuḥl*, and *algebra* from the Arabic *al-jabr*, “the resetting of broken parts.” Notice the *al-* at the start of those two: it’s the Arabic word for “the,” which came along stuck to the noun.

These are loans, not co-derivatives. They connect English to Arabic by a road, not by a family tree.

What does travel: the way of looking

So is this manual useless for these languages? No, but it works differently. What doesn’t travel is the specific codes and their fields. What does travel is **the way of looking**: finding the skeleton, asking what is root and what is added on, suspecting that behind a list of words

there's an order, and looking for that order **inside** the new language's own system, not inside yours.

Here are two examples.

Arabic: a language of skeletons

Arabic is the best proof that the idea of a skeleton isn't something this manual invented. In Arabic, many words are built from a **root** of three consonants, and the meaning is shaped by putting vowels and add-ons around them. Look at the root *k-t-b*, which has to do with writing:

Arabic word	what it means	how it's built
kataba	he wrote	the root with the vowels <i>a-a-a</i>
kātib	writer, the one who writes	the root in the "one who does it" mold
kitāb	book	the root in another mold
maktab	office, desk: the place where you write	<i>ma-</i> + the root: the "place" mold
maktaba	library, bookstore	the place of writing, with another ending

They all carry *k · t · b* in the same order. The vowels and the *ma-* at the front aren't part of the root: they're molds, pieces of grammar, and each mold says something (the one who does it, the place where it's done). Anyone learning Arabic soon learns to see the three consonants underneath, and every new root opens up a whole family of words.

That's why Arabic and Hebrew are written mostly with consonants, as you saw in chapter 2. For someone who speaks the language,

the skeleton carries the meaning, and grammar supplies the vowels.

Does this mean $k \cdot t \cdot b$ has something to do with some English word with those consonants? No. Arabic is another macrosystem. What you take away from Arabic isn't a code, but confirmation that looking at the bone works there too, with the bones of *that* system.

Nahuatl: what came to you through Spanish

Nahuatl, the language of the Aztecs, still spoken by more than a million people in Mexico, isn't related to English or to Spanish. But it has lived next to Spanish for five hundred years, and through Spanish it left a gift in your kitchen:

Classical Nahuatl	Spanish	English
tomatl	tomate	tomato
chocolātl	chocolate	chocolate
āhuacatl	aguacate (later <i>avocado</i>)	avocado

These are loans, and they made a double journey: from Nahuatl into Spanish, and from Spanish into English. Look at the endings. The Nahuatl words end in *-tl*; the Spanish words end in *-te*. That's no accident: *-tl* is a very common noun ending in Nahuatl, and Spanish, which doesn't have that sound at the end of words, always adapted it the same way. It's a loan rule: a correspondence, like the ones in chapter 6, only between languages that aren't related. English then took the Spanish words and adapted them once more: *-te* became *-to* in *tomato*.

If you ever study Nahuatl, it's useful to know that the *-tl* isn't part of the root: it's an add-on, like the plural *-s* in English. *Toma-*, *chocolā-*, *āhuaca-* are what's left once you take it off. From there, what you have

to learn are the structures of Nahuatl, from inside Nahuatl.

Try it Look up the words *chocolate*, *coyote*, and *avocado* in an English dictionary that gives word origins. Where does each come from? Which Nahuatl word does the dictionary give as the source? Can you see the *-tl* ending, or what became of it on the way through Spanish? (Solutions: Appendix B, exercise 9.1.)

Learning a system from the inside

When there are no co-derivatives to anchor you, the work changes shape. It's no longer about recognizing your own words in another accent. It's about learning **how the system thinks**: how it builds words, which parts are root and which are molds, which sounds it groups together, which distinctions it cares about. In Arabic, three-consonant roots and molds. In Chinese, tone, which is part of the word (you'll see it in the next chapter). In Nahuatl, the endings and the habit of joining roots together into long words.

Those structures can also be discovered by studying that system's codes: its skeletons, its roots, its repetitions. But they're discovered **inside** it.

And here's a question with no easy answer, which I'll leave open for you. When an English speaker studies how a language from another macrosystem "thinks," how can they know they're discovering something about that language, and not projecting their own way of thinking onto it? Deciphering another people's thought and laying your own on top of it look far too much alike. The only thing that helps is humility: asking the people who have spoken that language since childhood, checking, and not confusing what seems true to you with what is.

Going further There are an enormous number of language families in the world. In Mexico alone, 68 Indigenous languages grouped into eleven different families are spoken, according to Mexico's National Institute of Indigenous Languages (INALI). In the United States and Canada there are dozens of Native American language families too. Nahuatl is just one of them. Each is a macrosystem with its own way of organizing meaning, and almost all of them are still waiting for someone to study them carefully from this point of view.

In Part III we leave the skeleton for a while and go to the flesh: the vowels, the rhythm, the tone, everything the voice says besides the consonants.

PART III

The Music of the Voice

Bone, Color, and Music

What the skeleton leaves out

For nine chapters we've worked with the bone. It was worth it: with skeletons and classes you can see kinships that used to be invisible. But every method focuses, and in focusing it leaves things out. Someone who looks only at the skeleton of a word can stop hearing its music: its tone, its rhythm, the feeling it's said with.

This part of the manual brings back what we left out. The discipline that studies it is called **psychophonology**: the study of the sound of language as something that happens in three places at once, in structure, in time, and in the mind. It's a proposal of mine, and it works in alliance with endolinguistics. Endolinguistics studies the bone; psychophonology studies the flesh and the voice.

One "no," three times

Let's start with an experiment you can do right now. Say the word *no* in three ways:

1. A dry, hard, short *no*. A door slamming shut.
2. A long *no* that hesitates, that rises and falls. A no that's still making up its mind.

3. A small, soft, almost whispered *no*. A no that's half a plea.

It's the same word: an *n* and an *o*. For grammar, all three are identical. And yet whoever hears you knows perfectly well which one you said, and knows something about you that the word itself doesn't say.

Where is the difference? Psychophonology says that every sound of language lives on **three planes at once**:

1. **The plane of structure**: which sounds they are, in what order. Here the three *no*'s are the same.
2. **The plane of music**: rhythm, length, the melody of the voice, where it rises and where it falls. Here all three are different.
3. **The plane of the mind**: the intention, the emotion, the tension of the person speaking, and what it stirs in the person listening. This is where the difference comes from.

The three planes aren't layers you can peel apart and study separately. They're three ways of looking at a single act. When someone says *no*, they say all three things at once, and the listener receives all three at once.

Consonants draw, vowels color

In chapter 2 I told you that consonants are like an outline and vowels like a color. Now we can take that image seriously.

A consonant is an **event**: a cut, an edge, an instant. That's why consonants can be counted and combined, and why codes are built from them. A vowel is a **state**: the mouth held open in a shape, sustained, sounding. Vowels don't cut the air: they color it.

And vowels can move without jumps. Between *ee* and *ah* there are endless in-between positions; you can glide from one to the other without a break. Between *p* and *t*, on the other hand, there's nothing: either your lips close or they don't. Consonants are like the keys of a piano; vowels are like the sound of a violin, which can slide up little by little.

That's why psychophonology says the vowel is an **operator of quality**. It doesn't change a word's skeleton: it gives it a color. Three vowels mark the corners of that color space, and they're the same three at the corners of every vowel chart linguists use (written here as they sound in Spanish or Italian):

- **A** (as in *father*): the mouth at its widest. Amplitude, openness, outward.
- **I** (as in *see*): the tongue high and forward, the mouth nearly closed. The small, the sharp, the precise.
- **U** (as in *moon*): the tongue high and back, the lips rounded. The deep, the dark, the round.

All the other vowels live between those three.

Bouba or kiki?

That vowels have color isn't only an endolinguistic idea. It's one of the most solid findings in the experimental psychology of language.

Try it Picture two shapes. One is round and soft, like a cloud or an ink blot with smooth edges. The other is spiky, full of points, like a shattered star. One is called *bouba* and the other *kiki*. Which is which?

You almost certainly said the round one is *bouba* and the spiky one is *kiki*. You're not alone: people who speak very different languages, and people of very different ages, give the same answer in the vast majority of cases. The round, open vowels of *bouba* go with roundness; the *i* and *k* of *kiki*, with sharpness.

There's an older experiment. In 1929 the linguist Edward Sapir invented two words, *mil* and *mal*, and told people that both were names of tables: one big and one small. Which one is big? Most people picked *mal* for the big table and *mil* for the small one. The open *a* goes with big; the closed *i*, with small.

Now look at two word-pieces you surely know, from Greek: *macro* (big, large-scale) and *micro* (small). They have the same skeleton, *m · k · r*. Only the vowel changes, and the vowel seems to carry the size: *a* for big, *i* for small.

Watch out *Macro* and *micro* **are not relatives**. In ancient Greek, *makrós* (long) and *mikrós* (small) come from different roots. So it isn't that one word split into two with different vowels. What they show is something else: two words with different histories and the same skeleton share out their meaning just the way the color of the vowels predicts. It's a coincidence that points in the direction of a real tendency, one confirmed by experiments. Put that way, without exaggerating, it's a good example.

These tendencies aren't laws. They're leanings: you notice them when you look at many words and many people, and there are plenty of exceptions. But they're real, and they say something important: in the deepest layer of language, where the body makes the sounds, sound and sense aren't completely separate.

Rhythm decides what gets heard

Let's go from the color of a single vowel to the music of a whole sentence.

Languages have different rhythms. Spanish tends to give each syllable roughly the same time: *ca-ra-me-lo* sounds like four even beats. English tends to squeeze the unstressed syllables between the stressed ones: *caramel* gets compressed, and one vowel nearly disappears. The same bone, put into a different rhythm, sounds different.

That's why, when you speak Spanish with an English rhythm, even if you pronounce every sound correctly, people can tell. You squeeze syllables where Spanish keeps them even; you swallow vowels Spanish wants you to say in full. What we call an **accent** isn't just putting a vowel wrong here or a consonant wrong there. It's that your inner rhythm, the rhythm of your first language, keeps sounding underneath the new one.

Endolinguistics calls that inner rhythm **endorhythm**. It isn't the rhythm you can record with a microphone, but the underlying disposition all your rhythms come from: a tempo, a way of moving through time, as personal as the timbre of your voice. You carry it with you from one sentence to the next and from one language to another.

When the music is the word

In some languages the music doesn't accompany the word: **it is** part of the word. They're called **tonal languages**. In Mandarin Chinese, the syllable *ma* said on a high, level tone means "mom"; with a rising tone, "hemp"; with a tone that dips and rises, "horse"; with a sharply falling tone, "to scold." Four different words with the same sounds. What a

consonant or a vowel would do in English, the pitch of the voice does in Mandarin.

And here's a beautiful discovery from historical linguistics. Many tones were born when a language lost a consonant. The consonant disappeared, but the difference it used to mark wasn't lost: it moved into the melody of the vowel next to it. It's called **tonogenesis**, the birth of tone. It's as if the bone, wearing away, had turned into music.

Going further Mexico is home to many tonal languages: Mixtec, Zapotec, Mazatec, Otomi, and others. In some Mazatec communities in Oaxaca people even practice a "whistled speech": they hold conversations by whistling the melody of words, with no consonants or vowels, and they understand each other. If you ever wondered whether the music of a language can carry meaning on its own, there's your answer.

What the voice says without words

There's an even finer level: the small tremors of the voice, the uneven pauses, the throat tightening a little, the almost imperceptible hurry. Psychophonology calls it **micromusicality**. It sits below what we consciously notice, and yet we read it instantly.

Think of a trembling voice. If the person is cold, the tremor is even, mechanical, rhythmic: the body shivering. If the person is holding back tears, the tremor is different: irregular, with uneven pauses, with tension gathering in the throat. You can hear both. Both are tremors. And they mean opposite things. The difference isn't in any word or any sound: it's in the micromusicality.

Try it Say *sorry* in three ways: clipped and curt, like someone who doesn't mean it; slow and heartfelt, like someone who does; bright and overdone, like someone being sarcastic. Record yourself on your phone and listen back. The consonants and vowels are the same in all three. Where's the difference?

What to do with all this when you learn a language

This part may sound theoretical, but it has very practical consequences.

1. **Pick a reference accent** and stick with it at first. Don't mix the Spanish of Madrid with the Spanish of Mexico City in the same week. Your ear needs a stable model.
2. **Listen before you speak.** The rhythm and melody of a language are learned by ear, not by eye. Play audio in the language even if you don't understand all of it: your body is learning the other language's endorhythm.
3. **Shadow.** Play a recorded sentence and repeat it on top of it, almost at the same time, imitating the melody, not just the sounds. It's called *shadowing*.
4. **Exaggerate the music.** At first, exaggerate the rises and falls of the new language, as if you were acting. Your English rhythm will keep pulling you toward squeezed, swallowed syllables; with Spanish, practice giving every syllable its full, even beat.
5. **Listen in parallel.** Use the bridge sentences from chapter 8: hear the sentence in the new language and then the English bridge, one right after the other. You're not just training words: you're training the switch in rhythm.

Watch out Psychophonology **is not a therapy**. It studies how thought and emotion become sound, but it doesn't cure anything or promise to. If someone offers to "reprogram your mind" with sounds, that doesn't come from this manual.

In the next chapter we go to the deepest question of this part: how a thought, which makes no sound, becomes a voice.

From Thought to Sound

The threshold

Think of something you want to say and haven't said yet. There it is, in your head. It makes no sound. It has no letters. Maybe it doesn't even have words yet: it's an intention, an image, an urge. And a second from now, if you decide to say it, it will leave your mouth as vibrating air, with consonants, vowels, rhythm, and a tone that gives away how you feel.

What happened in that second? Something that makes no sound became sound. Something inside became something outside, something another person can hear.

Psychophonology calls that passage a **threshold**. A threshold is the place where you cross from one space into another, like a doorway. It doesn't fully belong to either room. The **phonic threshold** is the passage between thought and sound, and it's the deepest question in this whole part of the manual: *how does thought agree to become voice?*

I'm not going to give you a closed answer, because there isn't one. But I can show you what the passage looks like from several sides.

Four levels

Endolinguistics distinguishes four levels at which language works on the inside. They aren't four different languages. They're four depths of the same one.

1. **Speaking.** The level of the body making sounds: the mouth, the air, the muscles, the patterns of movement you learned as a baby. When you say *hello*, what happens at this level is a sequence of movements.
2. **Saying.** The level of shared meaning: what a word means to a community, with its history and its culture. When you say *hello*, at this level you are greeting someone, with everything a greeting means where you live.
3. **Thinking.** The level of reasoning: logical relations, the structures that let you combine ideas, compare, deduce.
4. **Intuiting.** The deepest level, where something is understood before it can be explained: resonance, the sense of what the other person means beyond what they say. According to endolinguistics, this is also the level where language touches ethics: responsibility for what is said.

The codes you learned in Part I live mostly between the first and second levels: in the body that produces the sounds and in the meaning a community gives them. But endolinguistics holds that their influence reaches further down, all the way to the fourth. That, like almost everything in this part, is a proposal under study, not a proven fact.

How a language becomes yours

There's one way to watch the threshold at work, and that's to look at how a baby comes to speak.

We usually think a child starts talking around their first birthday, with their first words. But language starts much earlier, and it starts with music.

This isn't poetry: it has been measured. Studies with newborns show that, a few days after birth, babies prefer their mother's voice to a stranger's, and prefer a passage they heard repeatedly before birth to one they didn't. They also tell their own language apart from others, mostly by rhythm. And some studies have found that the melody of a newborn's cry already carries something of the pattern of the language it heard inside the womb.

What does that mean? That before understanding a single word, the baby has already received the **rhythm** of its language. Through its mother's body it heard the melody, the pauses, the rises and falls. The first thing you learn about a language isn't its meaning: it's its way of moving through time. The endorhythm forms first; the codes crystallize later, inside it.

Psychophonology describes this process with three words:

- **Exolanguage:** language as it comes from outside. At first, for the baby, language is something that sounds all around: other people's voices.
- **Appropriation:** the long, slow work of making that outside language your own. The baby takes it, imitates it, plays with it, bends it, and by making it its own, transforms it.

- **Endolanguage:** the deep organization that results, which now belongs to that child and nobody else, even if it looks a lot like the language of the people around it.

Here's something worth noticing. The language that is most yours, the one you speak without thinking, started out as other people's language. Nobody invents their first language. You receive it, and in receiving it, you make it your own.

Playing with words

Some children grab a word and play with it: they say it backwards, rhyme it with other words, put it where it doesn't belong, invent a second meaning for it, turn it into a joke or a secret name. And there are others for whom each word stays nailed to its one use, unable to move.

Psychophonology proposes that this difference —being able to play with words or not— says something about how language was formed on the inside. When the first years come with good-enough care, the codes stay **mobile**: they can be inverted, recombined, moved around. When they don't, they can become **rigid**. This is a hypothesis, designed to be tested with studies that follow children for years; it is not a result. And it's nobody's diagnosis: the endolanguage keeps being remade all your life, and you can learn to play with words at any age.

But here's something you can observe for yourself. Tongue twisters, rhymes, freestyle rap, puns, the nicknames friends invent for each other, the secret languages kids make up: all of that is playing with codes. It's the same ability poets use. And it's the same one you're

going to use to learn a new language.

Try it English has a famous secret language: **Pig Latin**. You take the consonants at the start of a word, move them to the end, and add *ay*. *Hello* becomes *ellohay*. *Pig* becomes *igpay*. *Speak* becomes *eakspay*. Words that start with a vowel just get *way* or *yay* at the end. Now read this fast: *Oday ouyay eakspay igpay atinlay*? Did you get it? Notice what the game does: it pulls the first consonants off every word and sticks them on the end, and still you understand, because your ear learns to put them back. It's a game with the skeleton.

Your second language: a second appropriation

All of this has a direct consequence for you.

Learning a new language means doing again what you did as a baby: taking a language that comes to you from outside and making it yours. At first Spanish, or French, or German, is exolanguage: something that sounds, something that belongs to other people. With time, with play and with practice, part of it becomes yours.

It will never be exactly like your first language. Your English endorhythm will keep sounding underneath: that's your accent, and it isn't a flaw, it's a signature. But the endlanguage isn't formed once and then sealed. It keeps being remade all your life, with every relationship, every language, every group of friends that lends you its way of talking.

That's why the advice in the previous chapter—listen a lot, imitate the melody, shadow—isn't a set of tricks. It's the way your body learns the rhythm of another language, the same way it learned the first one: by ear, before meaning.

What this chapter doesn't say

Three cautions, so that none of this gets read as more than it is.

A language has no unconscious of its own. A language isn't a person: it doesn't feel, doesn't suffer, doesn't remember. The ones who feel and remember are the people who speak it. When we say a language "keeps" something, we mean that it's kept by the bodies that speak it and pass it on from generation to generation.

Not every detail of sound means something. A lot of what's in a voice is tiredness, noise, the mechanics of the body. The job of psychophonology is precisely to separate what means something from what doesn't. A science that found meaning everywhere would be no different from one that found it nowhere.

Not everything inside can be read. There are things in the mind that no analysis of the voice will ever recover. Knowing where the knowable ends is also part of knowing.

Going further One of the oldest ideas in this tradition comes from Joseph Meulemans, the neurologist I mentioned at the beginning: that the right hemisphere of the brain has language functions that aren't the classic ones—rhythm, the melody of the voice, the sense of what goes unsaid—and that codes might be processed there too. That hypothetical region is called the **Meulemans zone**. That the right hemisphere takes part in the melody and intention of speech is something neurology studies today. That codes are processed there is still a hypothesis.

In the last part of the manual we'll look straight at the biggest risk in everything you've learned: seeing what isn't there.

PART IV

Thinking Carefully

The Mirage

Faces in the clouds

It's happened to you. You look at a cloud and see a dog. You look at an outlet and see a scared little face. The front of a car seems to be smiling at you. The same number shows up three times in one day and you feel the universe is trying to tell you something.

This tendency to see connections and figures where there aren't any has a name: **apophenia**. It isn't an illness, and it isn't something only other people have. It's the price of having a mind that looks for patterns, which is to say, the price of having a mind. Our ancestors who saw a tiger in every shadow survived more often than those who saw none; we inherited from them a mind that would rather see too much than too little.

And here I have to be very honest with you: **apophenia isn't the opposite of what this manual teaches. It's its engine without brakes.** The same ability that lets you see that *father* and *padre* are relatives can lead you to see relatives where there's nothing. This chapter is about the brakes.

The best lesson I know

I promised you this at the beginning. Here it is.

	English	Spanish
word	much	mucho
means	a lot	a lot
skeleton	m · ch	m · ch
code	M · Σ	M · Σ

Same meaning. Same skeleton. Same code. If there were ever two words in this whole manual that seemed to shout “we’re related!”, it’s these two.

And they aren’t.

Much comes from Old English *micel*, which meant “big.” *Mucho* comes from Latin *multus*, from a completely different Proto-Indo-European root. The two words traveled roads that never touch, and still they ended up sounding almost the same and meaning the same thing.

But the story has one more twist, and it’s the best part. If *much* isn’t related to *mucho*, who is it related to? To something you use all the time without thinking: Greek *mégas*, “great,” the one in **mega-**. *Megaphone*, *megabyte*, *megastar*: there’s the cousin of *much*. It’s also related to Latin *magnum*, the one in *magnitude* and *magnificent*. And does *mucho* have cousins in English? Yes: Latin *multus* lives in **multi-**. *Multitude*, *multiple*, *multimedia*.

word	its real relative in the other language
much (Old English <i>micel</i>)	Spanish <i>mega-</i> and <i>magno</i> ; English <i>mega-</i> , <i>magnitude</i>
mucho (Latin <i>multus</i>)	English <i>multi-</i> : <i>multitude</i> , <i>multiple</i>

See what happened? The eye saw *much* = *mucho* and thought it saw a family tie. That's where it went wrong, and that's the mirage: history says the real relatives were hiding where nobody would look for them, in a tech prefix and a math word.

There are more cases like this:

the resemblance	what history says
<i>day</i> and <i>día</i>	not related. <i>Día</i> comes from a root that meant "sky," the same one behind Spanish <i>dios</i> , "god." <i>Day</i> comes from another root, which meant "to burn."
<i>have</i> and <i>haber</i>	not related. <i>Have</i> comes from the same root as Latin <i>capere</i> , "to take": its Spanish cousin is <i>capturar</i> , and its English one is <i>capture</i> .

Watch out Notice that *much* and *mucho* have **the same code**. This matters a lot: **sharing a code doesn't prove kinship**. The code is a tool for seeing; it isn't proof. What proves a family tie is documented history, link by link.

A mirage, yes. But the resemblance is still there

So far history has answered one question: *are they related?* No, they aren't. But there's a second question history doesn't answer: *then why*

are they so alike? It's very easy to mix up the two, and you can go wrong in either direction.

1. **Believing they're related.** That's the mirage, and it really is one. We checked it with historical linguistics, and there's no way around it.
2. **Believing that, since they aren't related, there's nothing there.** This mistake is just as big, and it's the one almost nobody sees. *Much* and *mucho* are still practically the same thing: the same bone, the same code, the same meaning. So are *day* and *día*: a single tooth sound, and both name the day. That isn't an illusion. It's a fact anyone can check.

The illusion wasn't in the resemblance. It was in the explanation the eye attached to it: kinship. When history takes that explanation away, the resemblance doesn't vanish. It stays right there, unexplained.

And here endolinguistics does something historical linguistics, by its own method, doesn't do: **it records the coincidence as a relation.** When two words with different histories arrive at the same code and the same field of meaning, endolinguistics calls it a **convergence**. It isn't kinship, and it's recorded separately from kinship so the two are never confused. But it isn't thrown away either. You've already seen others in this manual: Italian *caldo* ("hot") and English *cold*, which come from unrelated families, have the same code X·Λ·Θ, and sit at the two ends of the same axis, temperature (chapter 4); *terrain* and *rotate*, with the same nucleus in reverse order.

Why do convergences happen? Nobody fully knows. There may be some chance in it: consonants are few and words are many, so some

encounters are to be expected, and that has to be counted before claiming anything. There may be something about how the body makes and feels sounds, as you saw with vowels in chapter 10. There may be something endolinguistics doesn't yet know how to name. Until we know, the honest place for *much* and *mucho* is an **open case**: a relation you can see, that you can check, and that doesn't have a complete explanation yet. You don't invent a kinship that doesn't exist, and you don't dismiss the resemblance with "it's pure coincidence," which closes the question without answering it.

That's the mystery of coincidence, and it's one of the most beautiful in this whole manual.

Challenge Find another English-Spanish pair that are very alike in sound and in meaning. Check their history in an etymological dictionary. If they turn out to be related, write it down as kinship. If they turn out not to be, don't erase it: write it down as a convergence, with its code and its meaning. At the end of the course, pool the whole group's convergences. How many did you find? Do they look like each other?

The referee

So what separates a finding from a mirage? Not the operation: both consist of linking what was separate. What separates them is the **referee**.

In the game of learning languages, the referee is history. The kinship of *father* and *padre* isn't an impression: it's documented link by link. The kinship of *much* and *mucho* doesn't exist, and an etymological dictionary tells you so in a minute. The whole method fits in a double gesture: **see the connection, and ask history what kind it is**. Seeing without asking is methodical delusion. Asking without seeing

is not playing at all.

But look carefully at what that referee decides. History tells you whether there's **kinship**. It doesn't tell you whether there's a **relation**. A convergence like *much* and *mucho* goes past the referee without kinship, and it's still a relation waiting to be explained.

Three registers

Things aren't as simple as "history yes = true, history no = false." There's a middle ground, and keeping quiet about it would be dishonest.

Endolinguistics distinguishes **three registers** of sense, three ways a connection between words can exist:

1. **Found sense.** The connection is already made; history guarantees it. *Father* and *padre*. It's a fact.
2. **Constructed sense.** History doesn't guarantee the connection, but it isn't a delusion either: someone builds it through an interpretation, **declares** it as an interpretation, and stands behind it.
3. **Projected sense.** Someone asserts a connection as if it were a fact, where nothing supports it. That's apophenia.

Only the third one is the mistake.

With *much* and *mucho* you can see all three registers at once. That they match in code and meaning is a fact: that's **found**. Saying they're related would be **projected**: history denies it. And any explanation someone offers for why they're so alike is, for now, **constructed**: it's worth something if it's declared as what it is.

Here's an example of the second register, constructed sense. There's a group of Spanish words that many people in this tradition are fond of: *casa* (house), *caer* (to fall), *caso* (case), *causa* (cause). You can read a thread running through them: the house as the place where you finally fall into rest; the case as what falls in front of you; the cause as the reason things fall one way and not the other. Is this a historical fact? No, and nobody serious presents it as one. It's a **reading**: a sense that is built, and that's worth exactly as much as its power to shed light on something.

The difference between a reading and a mirage isn't in the operation. It's in **the honesty of the gesture**. The mirage says "this *means* that." The reading says "this *can be read* this way," and takes responsibility for it.

Almost all poetry lives in the second register. The poet brings together words that language left close to each other and draws a new sense out of them. The poet's operation and the operation of someone who sees faces in clouds are the same. What sets them apart is that the poet knows they're building, and signs it as a construction.

Try it Find three words, in English or Spanish, that share a skeleton, and build a reading that connects them, like the one for *casa*, *caer*, *caso*, *causa*. Write it in two or three sentences. At the end, add one honest line: "this is a reading, not a documented kinship." Then look up the etymology of all three. Did any of them turn out to be real relatives?

When the mirage becomes history

One last twist, because reality is more interesting than rules.

English has a word, *crayfish*, for a small freshwater crustacean, something like a little lobster. It looks like a compound word: *cray*

+ *fish*. But the animal isn't a fish, and the word wasn't built that way. It comes from Old French *crevice*, which has nothing to do with fish. English speakers heard that ending, *-vice*, and it sounded to them like *fish*. They saw a connection that wasn't there. And since everyone saw it, the word changed: today we say *crayfish*.

This is called **folk etymology**. From the point of view of history, it was a mistake. But that mistake, shared by a whole community, re-made the word. The apophenia of many people, once it becomes habit, becomes history.

This teaches us something subtle. Saying "that's apophenia" is also a judgment, and every judgment has a scope. It's apophenia *with respect to the word's history*. It isn't *with respect to how its speakers use it today*. When you say something is a mirage, also say for whom, and at what scale.

Six questions before you believe a connection

Keep this list. It will serve you with languages, and beyond them.

1. **Did I check?** Did I look up the etymology in a dictionary, or am I trusting the resemblance?
2. **Is it the same family of languages?** If I'm comparing languages from different macrosystems, the connection isn't inheritance: it's a loan or a convergence.
3. **Am I adding up classes?** If my explanation says "this consonant means this and that one means that," I've left the method.
4. **Did I count the ones that don't fit?** Two pretty examples prove nothing. How many words with that code have nothing to do

with what I'm saying?

5. **Am I presenting it as a finding or as a reading?** If it's a reading, I say so. That's fine: readings are valuable, as long as they're presented as what they are.
6. **Does it survive someone who doesn't think like me?** If I explain it to a skeptic, what do they say?

Going further These six questions aren't just for words. They work for anything that reaches you in the shape of a pattern: a chain of coincidences on social media, a theory that "explains everything," a horoscope that's a little too accurate. The mind that sees patterns is the same in every case. So are the brakes.

That leaves the biggest question of all, the one you may have asked yourself at some point in this manual. If codes aren't meanings, if they aren't just history, if they aren't pure coincidence... what are they? The last chapter doesn't have the answer. But it tells you where to look.

What We Don't Know Yet

The question left hanging

We've reached the end with a question the manual has been circling without answering. You already know what a code **isn't**. It isn't a meaning: it orients, it doesn't say. It isn't just history: *terrain* and *rotate* aren't related and still they invert each other. It isn't proof of kinship: *much* and *mucho* share code and meaning, and they don't share a history. So what is it?

Are codes *in* languages, the way words are? Or do we put them there?

The answer endolinguistics gives is subtler than a yes and more interesting than a no. I'll give it to you with an image from astronomy.

The coordinates and the stars

Astronomers divide the sky with imaginary lines, a lot like the latitude and longitude lines on a globe. With those lines they can say exactly where a star is and follow its movement night after night. But those lines don't exist in the sky. No spaceship will ever cross them. They're an instrument, a human invention.

And yet without them you couldn't follow a single star. And the

stars, those really are there.

Something similar happens with codes. The code is an instrument: we extract it ourselves, with rules we decided on (the skeleton, the seven classes, the order). That's why it's written with symbols that belong to no language. But something that isn't the code really is there: something that traveled five thousand years inside *padre*, *father*, *Vater*, and Persian *pedar*; something that was kept while everything else changed. It isn't a word, because the words changed. It isn't a meaning, because the meanings moved. It isn't a sound, because even the sounds shifted. It's a continuity: a form that persists beneath the forms. The code doesn't create it. It **detects** it, the way a telescope detects a star without being the star.

And what is it, deep down, that persists? Here the manual reaches its limit, and says so without embarrassment: **we don't know yet**.

A direction: quality

What we do have is a direction. The search isn't moving blindly. It's oriented by a philosophical inquiry I've been developing for years, called **qualic metaphysics**. I'll tell you about it briefly, because it lies underneath everything you've read.

It starts with a distinction you already know, even if you've never named it: the difference between **quantity** and **quality**.

Think of red. A physicist can tell you the wavelength of red light: a number. That's quantity. But that number isn't what you see when you see red. What you see—red as it appears, as it feels—is something else, and no number exhausts it. That's quality. The same goes for the taste of a mango, the smell of rain on dry ground, what you feel when

someone says your name with affection. You can measure a lot around those experiences. The experience itself isn't measured: it's lived.

Qualic metaphysics takes that order of qualities seriously. It has three words worth knowing:

1. **Habence.** A term from the Mexican philosopher Agustín Basave Fernández del Valle (in Spanish, *habencia*). It means, roughly, the original "there is": before we can say *what* something is, before we measure it or name it, *there is*. Habence is that background of everything that appears.
2. **Qualo.** The smallest unit of that lived appearing: an instant of quality, prior to concepts and words. A qualo isn't a thing you can grab or measure. What we can grab are its **traces**: what it leaves behind as it passes. A sound, for example, is a trace.
3. **Logos.** The word, the concept, reason. And qualic metaphysics says something curious about it: that it **arrives late**. First there's experience; then comes the word that tries to say it. The logos works on the traces, not on the experience itself. That's why there's always something words can't reach.

And what does this have to do with codes? A lot. In endolinguistics there are two domains that can't be separated. One is what can be counted and combined: consonants, classes, codes, inversions. The other is quality: the vowels that color, rhythm, endorhythm, the felt character of each class. We call the first the **quantic domain** (from *quantity*: what gets counted). We call the second the **qualic domain** (from *quality*). Codes are the most countable thing in language. But the suspicion of qualic metaphysics is that what travels inside them belongs

to the other order: the order of qualities that are felt, not quantities that are added up.

Notice the symmetry, because it's a beautiful one. Philosophy does with our question exactly what the code does with words: it doesn't dictate the answer, it points where to look.

What a group shares without knowing it

There's one last idea from endolinguistics you need to know, because it's one of the most important and one of the easiest to misread.

If everyone who speaks a language shares its codes, its rhythm, its way of grouping sounds, and almost nobody knows they have them, then a group of speakers shares something it doesn't know it shares. Endolinguistics calls that the **shared unconscious**.

It's worth saying right away what this **isn't**. It isn't the "collective unconscious" of the psychologist Carl Jung, which would be universal, the same for all humanity. The shared unconscious is **relative to a macrosystem**. People who speak Indo-European languages share some structures; people who speak Semitic languages share others. And they nest like boxes inside boxes: English sits inside the Germanic languages, which sit inside Indo-European. Each box shares something with the ones outside it and has something of its own.

And there's one warning I can't leave out:

Watch out The shared unconscious **can't be used to say what a people "is like"**. Nothing in this manual entitles you to say that the speakers of some language are colder, more violent, happier or smarter because of the codes of their language. Codes are very deep and very slow structures; what a human group does at a given moment in its history depends on a thousand closer things: the economy, politics, wars, people's decisions. Explaining those things with codes isn't endolinguistics. It's a mistake, and sometimes a dangerous one.

What remains open

A science that already knows everything isn't a science: it's a catechism. That's why I want to end with the questions that are still open. They aren't the manual's debts; they're the work left to do, and someone has to do it. Maybe you.

1. **What are codes?** Are they discovered, the way a star is discovered? Are they built, the way a map is built? Or both at once, without our being able to say where the found ends and the made begins?
2. **How much does the code help you learn, and how much does the practice that comes with it?** We know memory loves connections. We don't yet know how to measure what the code contributes on its own, separate from everything else.
3. **Why do words that aren't related converge?** *Much* and *mucho*, *day* and *día*: the same code and the same meaning by different roads. Part of it may be chance, and that has to be counted. Whatever is left after counting is one of the most interesting questions in the discipline.

4. **How do you compare different macrosystems?** We know they shouldn't be mixed. We don't yet really know what can be compared between them.
5. **What happens in the brain?** The Meulemans zone is a hypothesis. It will take a lot of research to find out whether there's anything to it.
6. **What does the voice say that words don't?** Psychophonology is only beginning to have instruments for studying micromusicality, endorhythm, the tremor in a voice.

These aren't small questions. They aren't impossible ones either. That's how almost everything we later came to know began: with someone who learned to look at something that didn't have a name yet.

Words have bones

To the Reader

If you've made it this far, you know how to do things you didn't know how to do at the start of this manual.

You know how to strip the flesh off a word and keep the bone, and you know the bone comes from the sound, not the spelling. You know your mouth has seven regions, and that a *p* and an *f* can be the same person in different disguises. You know how to read a code, and you know a code doesn't mean: it orients. You can tell a relative from a loan and from a stranger who happens to look alike. You know why Spanish writes *hijo* with an *h*, why Portuguese says *chave* where Spanish says *llave*, and what Jacob Grimm and fairy tales have to do with your Spanish class. You know the voice says things words don't. And you know *much* and *mucho* aren't related, even though everything about them shouts that they are; and that this doesn't erase their resemblance, which is still there as an open mystery.

You also know what this manual doesn't ask of you. It doesn't ask you to believe that words have secret meanings. It doesn't ask you to add up consonants to guess meanings. It doesn't ask you to explain a people by the sounds of its language. Those readings weren't left out of prejudice: they were left out because they don't work, and because sometimes they do harm.

And you know there are open questions. What codes are. How much they really help. What happens in the brain when a thought

becomes voice. Nobody has those answers yet.

I'll leave you with an image. At the start of the manual there was a Spanish list that was forgotten by the next day: *padre, pie, pez*. Three loose words, like cards dealt out. Now look at the same list again. They aren't three pieces of data anymore. They're three glimpses of a single rule, and behind the rule there's a family five thousand years old that stretches from India to Ireland. One of its branches passed through Rome and became Spanish; another passed through the forests of Germania and reached, tonight, your mouth. The list didn't change. You did.

One last suggestion, which doesn't require buying anything or signing up for anything. Tonight, pick any word of yours. Take its vowels away. Look at the bone. And ask yourself where it comes from: how far it must have traveled to reach, exactly today, exactly you.

Words have bones. Now you know where to look for them.

And if you want to keep going, I'll see you at www.endolinguistics.science and at www.independentbooks.site.

A. T. M.

Appendix A. Quick Reference

The seven classes

symbol	say it	region	consonants
Φ	phi	the lips	p, b, f, v, <i>w</i> at the start of a syllable
Θ	theta	the teeth	t, d, <i>th</i> (think, that)
X	chi ("kai")	the back	k, g, <i>h</i> (house), Spanish <i>j</i>
Σ	sigma	the hiss	s, z (zoo), sh, ch (church), j/ dge (judge)
Λ	lambda	the flowing ones	l, r
M	san	the closed hum	m
Ξ	xi ("ksai")	the open hum	n, ng (sing), Spanish ñ

Borderline case: the *y* of *yes* (and the Spanish *ll* and *y*). Write it in parentheses; don't force it into a class.

How to get a code, in three steps

1. **Root.** Strip endings and prefixes: *-ing, -ed, -s, -tion, -ly, -ness, re-, un-, dis-...*
2. **Skeleton.** Write down the consonants of the root as they **sound**, in order.

3. **Classes.** Swap each consonant for its symbol.

Sound rules for English

- Silent letters don't count: *knight* n·t, *write* r·t, *lamb* l·m.
- One sound, several spellings: *c, k, ck, q* → k → X. *ph* → f → Φ. The *gh* of *laugh* → f; the *gh* of *night* is silent.
- *th* is one sound → Θ. *x* → k·s → X · Σ.
- Double letters count once: *cherry* ch·r.
- *sh, ch, j, dge* → Σ (read by where they end).
- *ng* → Ξ. English *h* → X. *w* at the start of a syllable (*water*) → Φ.
- The *r* after a vowel depends on the accent: US English counts it (*mother* m·th·r), much of England doesn't (*mother* m·th).

Rules for Spanish words

- The *h* is silent: it doesn't count.
- *j*, and *g* before *e* or *i*, sound like a strong *h* → X.
- *c* before *e* or *i*, and *z* → *s* in Latin America (Σ), *th* in most of Spain (Θ).
- *qu* → k → X. *rr* → one Λ. *ch* → Σ. *ñ* → Ξ.
- *ll* and *y* → borderline case.
- The *i* and *u* in diphthongs (*tierra, rueda*) are vowels: they don't count.

Notation

written	means
$p \cdot d \cdot r$	a skeleton : real consonants
$\Phi \cdot \Theta \cdot \Lambda$	a code : classes, in order
$\{\Phi, \Theta, \Lambda\}$	a nucleus : the same classes, without order
*tréyes	a reconstructed word, not written in any document

Six questions before you believe a connection

1. Did I check it in an etymological dictionary?
2. Is it the same family of languages?
3. Am I adding up classes?
4. Did I count the words that don't fit?
5. Am I saying it as a finding or as a reading?
6. Would it survive someone who doesn't think like me?

Appendix B. Solutions

Before you read a solution, try the exercise. If you already tried and got it wrong, even better: a mistake followed by its correction is one of the best ways to learn.

The etymologies in these solutions were checked against the research corpus of the program, which brings together etymological dictionaries and expert databases.

Chapter 2

Exercise 2.1.

word	skeleton	comment
knight	n · t	the <i>k</i> and the <i>gh</i> are silent
phone	f · n	<i>ph</i> sounds <i>f</i> ; the final <i>e</i> is silent
laugh	l · f	here <i>gh</i> sounds <i>f</i>
write	r · t	the <i>w</i> is silent
lamb	l · m	the <i>b</i> is silent
box	b · k · s	the <i>x</i> sounds <i>ks</i>
cherry	ch · r	<i>ch</i> is one sound; <i>rr</i> counts once
thumb	th · m	<i>th</i> is one sound; the <i>b</i> is silent

Chapter 3

Exercise 3.1.

word	skeleton	code
mother	m · th · r (US) / m · th (UK)	M · Θ · Λ / M · Θ
table	t · b · l	Θ · Φ · Λ
stone	s · t · n	Σ · Θ · Ξ
lamp	l · m · p	Λ · M · Φ
king	k · ng	X · Ξ
fish	f · sh	Φ · Σ

Exercise 3.2.

word	how it sounds	skeleton	classes
jirafa	<i>hee-RAH-fah</i> , with a strong <i>h</i>	j · r · f	X · Λ · Φ
queso	<i>KEH-so</i>	k · s	X · Σ
cena	<i>SEH-nah</i> (Latin America) / <i>THEH-nah</i> (Spain)	s · n / th · n	Σ · Ξ / Θ · Ξ
guerra	<i>GEH-rrah</i> ; the <i>u</i> is silent	g · r	X · Λ
llave	<i>YAH-veh</i>	(y) · b	borderline + Φ
hielo	<i>YEH-lo</i> ; the <i>h</i> is silent	(y) · l	borderline + Λ

Chapter 4

Exercise 4.1. The pairs with the same nucleus in reverse order are:

Words have bones

one	the other	codes
pat	tap	$\Phi \cdot \Theta$ and $\Theta \cdot \Phi$
net	ten	$\Xi \cdot \Theta$ and $\Theta \cdot \Xi$
pan	nap	$\Phi \cdot \Xi$ and $\Xi \cdot \Phi$
mug	gum	$M \cdot X$ and $X \cdot M$

None of these pairs is related. They are word-game inversions, good for training the eye.

Chapter 5

Exercise 5.1.

pair	group	why
three / tres	(a) co-derivatives with the same meaning	both come from the same Proto-Indo-European word
exit / éxito	(b) co-derivatives that changed meaning	both come from Latin <i>exitus</i> , "a going out"; in Spanish it means "success"
tomato / to-mate	(c) loan	Spanish took it from Nahuatl <i>tomatl</i> , and English took it from Spanish
night / noche	(a) co-derivatives with the same meaning	both come from the same Proto-Indo-European word
goose / ganso	(c) loan	Spanish borrowed it from Gothic; deep down it is a relative of <i>goose</i> , but it didn't arrive by inheritance
actual / actual	(b) co-derivatives that changed meaning	both come from Latin; in Spanish it means "current"

Chapter 6

Exercise 6.1. The Portuguese for Spanish *hijo* (son) is *filho*. The Italian for Spanish *humo* (smoke) is *fumo*. In both, the Latin *f* that Spanish lost is still there.

Exercise 6.2. By Grimm's law: *foot* → *pie*, *tooth* → *diente*, *horn* → *cuerno*. The learned English co-derivative of *foot* is **pedestrian**, from Latin *pedester*, which comes from *pes*, "foot." If you look for other words with *ped-* (like *pedal*), you may find more cousins of *foot*, but check each one.

Chapter 8

Exercise 8.1. For Spanish *pie*: **pedestrian**. For Spanish *cabello* (hair): **capillary**, from Latin *capillaris*, "of the hair," from *capillus*, "hair" — the same Latin word that became *cabello*. Capillaries are the body's blood vessels as thin as a hair.

Chapter 9

Exercise 9.1. All three came from Nahuatl, through Spanish:

English	Spanish	Nahuatl
chocolate	chocolate	chocolātl
coyote	coyote	koyoo-tl (reconstructed Nahuan form)
avocado	avocado, earlier aguacate	āhuacatl

Look at the endings. The Nahuatl noun ending *-tl* became *-te* in Spanish (*chocolātl* → *chocolate*, *āhuacatl* → *aguacate*), and English kept the Spanish shape, or reshaped it again (*tomatl* → *tomate* → *tomato*). A borrowing rule, just like the correspondences of chapter 6, only between languages that are not relatives.

Appendix C. Glossary

The number in parentheses is the chapter where the term first appears.

Access point (8). A word of your own, less used, that is a co-derivative of a word in the language you are learning: English *capillary* for Spanish *cabello*.

Affix (2). A piece attached to the root to change its job: a prefix goes before (*re-*, *un-*), a suffix goes after (*-tion*, *-ly*).

Apophenia (12). The tendency to see connections or figures where there are none. It is the engine of creativity and of mistakes at the same time.

Appropriation (11). The work of making your own a language that comes from outside. It happens with your first language and happens again with every new one.

Borderline case (3). A sound that sits on the edge between two categories, like the *y* of *yes* or the Spanish *ll*. It is written down without being forced into a class.

Bridge sentence (8). A sentence in your language bent to line up with another one, using real words of your language.

Class (3). Each of the seven regions of the mouth, with its own felt quality: Φ , Θ , X , Σ , Λ , M , Ξ . A class on its own means nothing. Also called OAS classes.

Code (4). A sequence of two or three classes, in order, taken from

the skeleton of a word's root. A code orients a field of meaning; it does not define it.

Co-derivative (5). A word that descends from a common source with another word. It often keeps its code, but not always: the road can wear it down (Spanish *hijo*, from Latin *filius*, lost the *f*). Linguists call them cognates.

Convergence (12). A relation between two words with different histories that arrive at the same code and the same field of meaning, like *much* and *mucho*. It is not kinship, but it is a fact; its explanation is still open.

Correspondence (6). A rule by which a sound in one language shows up as another sound in a related language: where Latin has *p*, English has *f*.

Endolanguage (1). The deep organization of a language, beneath what it says: codes, rhythms, patterns you don't see.

Endolinguistics (1). The discipline that studies what languages carry inside. It was founded by Christiane S. Meulemans and José Ángel Elias Fernández y Cuevas.

Endorhythm (10). A person's inner rhythm: the way of moving through time from which all their speaking rhythms come. It forms before words do, and it shows in your accent.

Exolanguage (1). Language as it appears: the words you hear, the grammar, the spelling.

False friend (5). A word in another language that looks like one of yours but doesn't mean the same. It can be a relative that changed meaning or a stranger that just looks alike.

Folk etymology (12). A change in a word because its speakers

thought they saw a connection it didn't have, like English *crayfish*.

Found, constructed and projected sense (12). Three ways a connection between words can exist: found (history guarantees it), constructed (a declared interpretation) or projected (a claim with nothing behind it: apophenia).

Grimm's law (6). A chain of changes in the consonants of the Germanic languages, described by Jacob Grimm in 1822.

Habence (13). A word of the Mexican philosopher Agustín Basave Fernández del Valle for the original "there is," before any measuring or naming.

Inversion (4). A change in the order of a code that keeps its nucleus: $\Theta \cdot \Lambda$ and $\Lambda \cdot \Theta$.

Loan (5). A word one language takes, ready-made, from another, like *tomato*, from Nahuatl through Spanish.

Logos (13). The word, the concept, reason. In qualic metaphysics, it arrives after the experience.

Macrosystem (9). A large family of languages seen as a system: Indo-European, Semitic, Uto-Aztecán. Macrosystems are never mixed in the same comparison.

Meulemans zone (11). A region of the brain's right hemisphere where, according to a hypothesis of this tradition, codes, rhythm and the melody of speech would be processed.

Micromusicality (10). The finest details of the voice: tremors, pauses, tensions. They carry much of what a person feels.

Nucleus (4). The set of classes in a code, regardless of order: $\{\Theta, \Lambda\}$.

OAS (3). Originating Affective Sounds: the name of the seven

classes.

Open case (12). A relation you can see and check but that nobody has fully explained yet, like the resemblance between *much* and *mucho*. It is neither turned into a kinship that doesn't exist nor dismissed as "pure chance."

Proto-Indo-European (1). The reconstructed language from which the Indo-European languages descend. It left no written document.

Psychophonology (10). The study of the sound of language on three planes at once: structure, music and mind.

Quality (13). What an experience is as it is lived, which no number exhausts: red as you see it, the taste of a mango.

Qualo (13). In qualic metaphysics, the smallest unit of lived appearing, prior to words. It can't be measured; we only know its traces.

Root (2). The piece of a word that carries the meaning. The code is taken from the root.

Shared unconscious (13). What the speakers of a macrosystem share without knowing it. It is not universal: it is relative to each family of languages.

Skeleton (2). The consonants of a word, in order, as they sound.

Take away the scaffolding (8). Testing whether you remember something without the help you learned it with, to know if there was real learning or only suggestion.

Threshold (11). A place of passage between two states. The phonic threshold is the passage between thought and sound.

Tonal language (10). A language in which the pitch of the voice is part of the word, like Mandarin Chinese or Zapotec.

Tonogenesis (10). The birth of a tone when a language loses a

consonant and the difference it marked moves into the melody of the vowel.

Appendix D. Going Further

Tools for checking

The most important thing you take from this manual is the habit of checking. These tools are free, and they are good for exactly that.

- **Online Etymology Dictionary**, at etymonline.com. It explains where each English word comes from, almost always with its relatives in other languages.
- **Wiktionary** (en.wiktionary.org). A collaborative dictionary with etymologies, pronunciations and audio in a huge number of languages. Because it is collaborative, it's worth checking it against another source.
- **Diccionario de la lengua española**, from the Royal Spanish Academy and the Association of Academies of the Spanish Language. Online at dle.rae.es. For Spanish words: at the start of each entry it says where the word comes from.
- **IE-CoR** (iecor.clld.org). The expert database behind the percentages in chapter 7. It's technical, but you can look up a concept and see how it is said in more than 150 Indo-European languages, and which forms are co-derivatives of each other.

If you want to read more

- Alejandro Toledo Martínez, *Teoría de la Endolingüística: Fundamentos y Aplicaciones*. Editorial ELADEM, 2025. The full account of the discipline, for when this manual feels too short. In Spanish.
- Alejandro Toledo Martínez, *El lenguaje antes de las palabras* (*Language Before Words*). On the shared unconscious and what language organizes before we think it.
- Alejandro Toledo Martínez, *Psychophonology: The Musical Architecture of Embodied Thought*. The whole of psychophonology: vowels, rhythm, endorhythm, the threshold.
- Alejandro Toledo Martínez, *Metafísica cualica* (*Qualic Metaphysics*). For the philosophical side of chapter 13.

To learn more

If this manual left you wanting more, there are two places you can go:

- www.endolinguistics.science — the home of endolinguistics: the discipline, its texts and its research.
- www.independentbooks.site — where you can get the books of the series: *Teoría de la Endolingüística*, *El lenguaje antes de las palabras*, *Psychophonology*, *Metafísica cualica* and others.

A suggestion for the group

If you're reading this in a class, with a group, here is an exercise that works very well. Each person picks a word from home: one their

grandmother uses, one from their town, one that only their family says. They take its skeleton and its code. Then, all together, you look up its history in an etymological dictionary. Some will come from Latin, others from French, from Old English, from Arabic, from Spanish, from Nahuatl or another Indigenous language, others from who knows where. At the end, put on the board the map of where the group's words come from. It is a map of you.