

Ch 7: More Than Noise

Introduction: Language

Personal Connection. List all the ways people can communicate. What role does communication play in your life? Describe a time when you told someone else a message, and they misinterpreted you. What do you think caused the breakdown in communication?

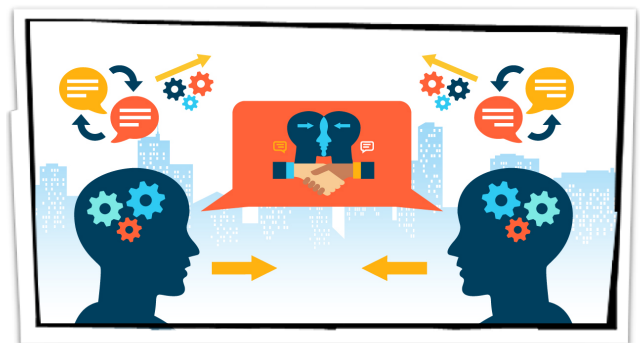
What is sound?

A sound is a set of vibrations and waves that travel through space at 340 meters per second. Left to itself, a vibration is just a vibration, expressionless and void of purpose. When the vibration hits the ears of a person, the vibrations take on a new purpose. The human brain is wired for auditory response - where sounds become symbols carrying meaning and triggering a response in the brain. A favorite song from childhood elicits a warm, happy emotion and brings back a recollection of fond moments. A roar of a lion or a gun shot initiates the fight-or-flight response. A mother knows the cry of her own child and can specifically recognize the sound out of a crowd of other babies.

To humanity, sound is more than just noise or vibrations. Sound encompasses the expression of culture.

A. What is Language

Language is a system of communication using sounds, gestures, and images as symbols to convey a meaning previously agreed upon by two or more people. Despite every human on the planet communicating through language, the brain does not come pre-wired for any one particular language system. Instead, like culture, languages have been uniquely developed over millions of years and are now being transmitted from one generation to the next. As of 2016, there were 7,000 distinct languages in the world. Once learned, language is used to share thoughts, ideas, information, processes, and procedures. Language is used to discuss the past, present, and future as well as topics that are both real and imaginary. It can convey personal experiences or those that have happened to other people. Language is a powerful tool essential to the success of humanity; both as individuals and collectively as a species.

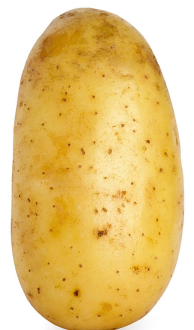


Language as Sound

Sound is the most fundamental form of communication to humans. Every major language ever conceived has an oral component. Despite the wide range of complex noises the human mouth can make, language systems use less than fifty *phonemes* - language sounds - to create combinations and patterns. *Phonetics* is the study of the sounds within language systems and a phoneme is the smallest unit of sound. For example, the word “food” is composed of the phonetics: ff- eew- d.

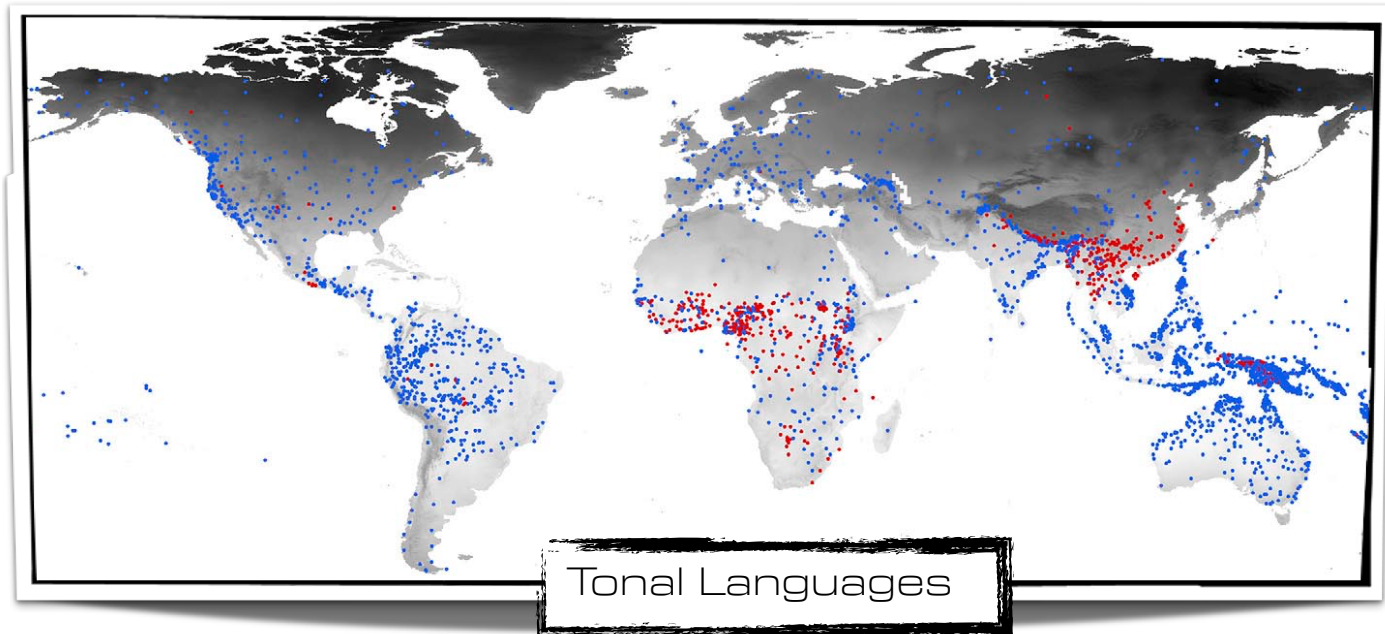
Different language systems use different sets of phonemes. English uses “th,” while Dutch does not. This makes English words with “th” difficult for Dutch speakers to say (e.g., words like “The - Them - These - Things - Tenth”). Chinese and Japanese do not have an “r” phoneme in their language. Their tongues never learn to make that sound and many never gain the skill. Meanwhile, the Bushman tribe in Southern Africa use a “click” phoneme when speaking, a sound not found in any other language sets.

Different languages use different sets of phonemes to name the same object. Look at the picture to the right. What do you call that object? English speakers call them “potatoes;” the Spanish call it “papa;” Germans call them “Kartoffel;” and Swahili speakers call it “viazi.” Same object, different phonemes to describe them.





Language systems have unique and specific patterns and rules governing the order of sounds: *morphology, syntax, and grammar*. *Morphology* is the study of patterns and arrangement of phonemes that govern a language. For example, in English, adding an “s” makes an object plural: “cow” refers to one large mammal, “cows” refers to multiple. The prefix “de” stands for “removal or separation.” Thus, the word “deindustrialization” means “no longer having industrial factories.” The *syntax* of a language guides and governs the order in which words are put together to become sentences and phrases. Yoda became a unique fan favorite for his syntax: “Much to learn, you still have... Strong with the force he is.” Grammar rules provide the framework for how language is arranged and punctuated using periods, commas, quotations, capitalizations, etc. The grammar in the sentences “Let’s eat Grandma!” and “Let’s eat, Grandma!” creates very different meanings.



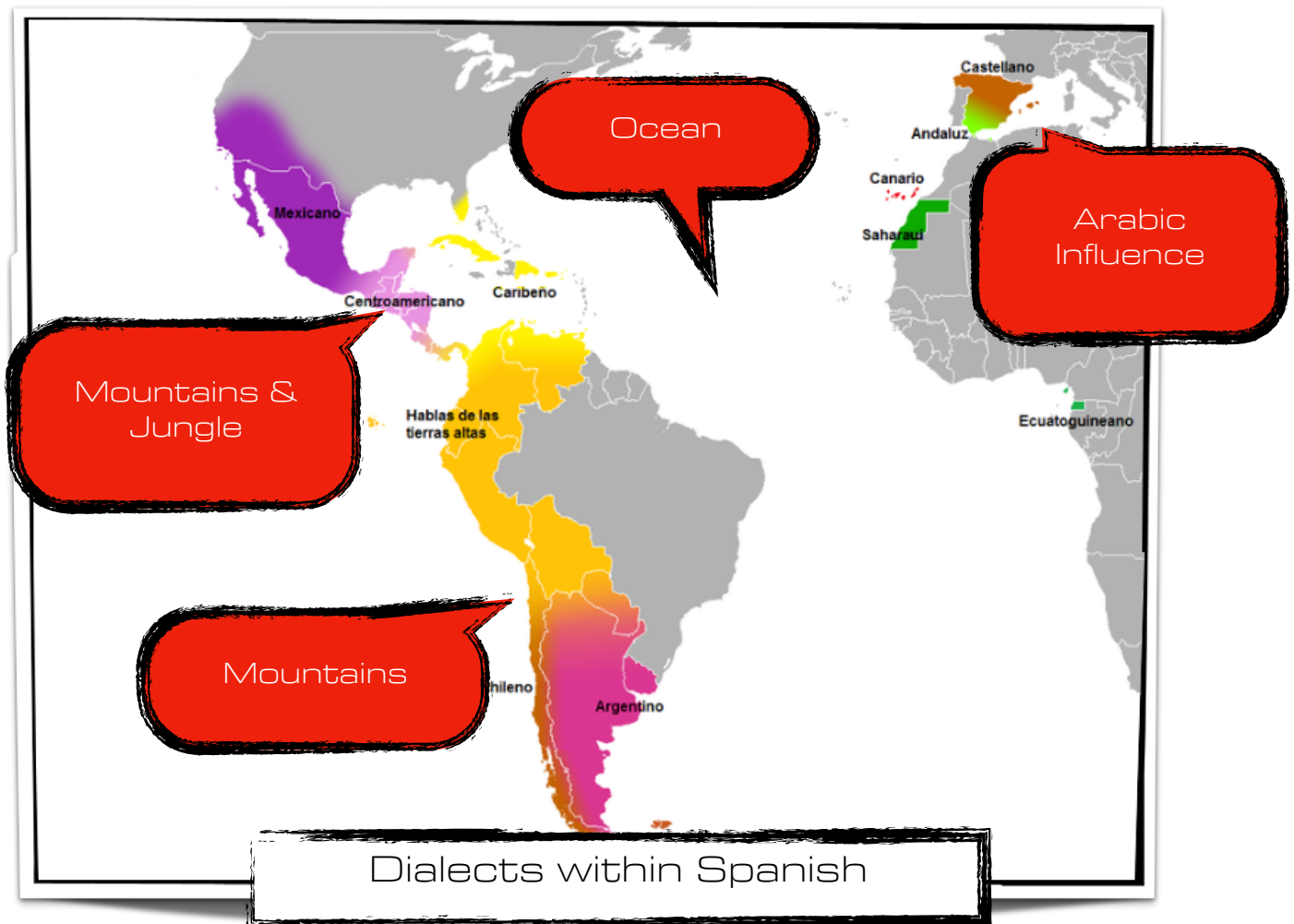
“How” the phonemes of a word are expressed is as influential as the spoken words themselves. Tonal qualities provide character spoken words and include:

- Lip control (open or more closed)
- Pitch range (high and low)
- Glottis control (sharp/crisp or smooth/flowing transitions between high and low pitches)
- Articulation (crisp/forceful or relaxed/slurred word pronunciations)
- Rhythm control (pattern of emphasis placed on certain words)
- Tempo (the speed of speaking the words)

Out of the 7,000 languages in the world, 70% are tonal languages, mostly found in Africa, East Asia, and Central America. Tonal languages rely on voice qualities like pitch to determine the meaning of words. In Cantonese, spoken in China and Hong Kong, there are four tones: flat, rising, falling, falling-raising. How the tone applies to a phoneme can alter the meaning. For example, in Cantonese, the phoneme “ba” can mean “to uproot,” “to hold,” “eight,” or “a farm tool” depending on which tone is used. An accidental shift in tone can turn “ma” from meaning “mother” to meaning “horse.” In non-tonal languages, tone is still important but for different reasons. In English, saying, “I’m fine” with a cheery smile is different from saying, “I’m fine” with a harsh scowl. Tones convey the attitude a person has when making their statement.

Within a language there can be regional variations with accents and dialects. Since isolation creates uniqueness, when a language is used across a large territory, regional variations begin to develop. Most dialects can be associated with a physical barrier like an ocean, mountain range, or jungle that creates enough separation for a unique variation to

develop. *Dialects* are a subset of a language, sharing the vast majority of the rules and structures of the mother tongue, but also having enough variations in word choice to be considered unique or separate. One example is the distinction between American English and British English. While sharing the same phonemes, syntax, and grammar, the word choices are distinct and unique. An American says *bathroom* while the British say *loo*; Americans say *silverware*, British *cutlery*. Similarly, regions can develop *accents*, or ways of pronouncing words. The Spanish spoken in Madrid sounds different from Barcelona, which is different from Mexico. For example, in Barcelona, they pronounce “C” as “TH.” Thus, *Barcelona* sounds like *Barthelona*. In the USA, New Yorkers sound harsher, rushed, and aggressive and add “aw” to their vowels. Thus, “talk” sounds like “taaawlk.” In contrast, in Charleston, South Carolina where the pace is “sloooooowa, and thee end of lettas just disssapeaaa...” For both dialects and accents - it is the “same language,” but the word choice and tones vary by region.



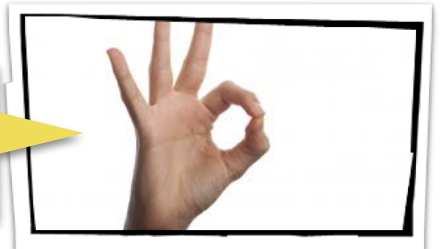
Language as Gesture

In language, body positioning and posture is critical to understanding the message one person sends another. Research shows that 60% of the message a person interprets comes from body language. In the face alone, there are 80 muscles capable of 7,000 unique facial expressions. Certain expressions or gestures are universal across humanity: tears, coughing, goose bumps, blushing, laughter, scream, and disgust. Other gestures are interpreted differently, based upon the cultural system. What one society creates to be a welcoming expression could be received differently by outsiders. Even a simple hand gesture can have different meanings. In the USA, the “Ok” hand gestures is considered an expression that everything is fine, and is generally received as having a positive meaning. In Brazil, the same gesture is considered taboo, obscene, and highly insulting. European cultures place value on eye contact as a sign of attentiveness. However, Native American cultures discourage youth from making eye contact with adults, believing it to be a sign of disrespect. In Asian cultures, if a business man smiles when selling a product or service, it is a sign that he is a crook and is taking advantage of the customer. At McDonalds, the corporate culture is “Service with a Smile,” believing a stern face to be rude.



Sign Language is also a form of gesturing using hand gestures and arm movements to express letters, words, and expressions. Many regions have their own versions and variations of sign language with American Sign Language having over 7,000 gestures to communicate.

Good job?
Or
Offensive?



Language as Writing

Certain cultures use written symbols to create a visual representation of sounds and ideas. For the vast majority of humanity's transhuman existence, people have kept an oral tradition by singing songs and telling stories to teach and keep memories alive. While transitioning from a transhuman to an agricultural society, people began to accumulate possessions and conduct large, complex transactions. To ensure the accuracy of transactions, writing was developed to provide a concrete expression of an abstract idea.

Writing evolved into two main forms, some using an *alphabet* and others using *logograms*. *Alphabets* consists of visible symbols or letters representing one sound. Putting multiple letters together creates words, and multiple words become sentences with syntax and grammar rules applying. English, French, Spanish and German all use alphabets. The other form of written expression uses logograms. *Logograms* use one image/picture to represent one idea. The Japanese and Chinese use logograms. Both writing systems have an inherent weakness: no body language. Without tone or vocal attributes, the written symbols are left up to interpretation by the reader and how the reader is feeling in the moment. A simple word like "ok" changes meaning based on pitch and body positioning, thus making it vulnerable to be misinterpreted.



Gendered Language

Language within a society is strongly impacted by gender, economic class, and ethnicity. Gender differences in language shape the acceptable methods for how a person stands, walks, greets, the appropriate vocabulary, etc. In the USA, men stand with their back slightly arched to push the chest out, arms away from their body, legs in a wider stance. Women keep their legs together, one knee bent, with a slight body lean, and arms close to the body. How a male greets another male, verbally and physically, is typically different from how a male greets a female. People use different tones, words, and gestures depending on their own gender and the person they are talking to. Gender is applied to objects: sayings like “Mother earth” or “Father time.” Gender is applied to actions as in, “He threw like a girl” or “your drawing looks girly.” In French, Italian, and Spanish a gender is attached to words, sometimes without a seemingly logical reason as to the gender of the noun. Something used by a woman may be masculine, and something neutral, like a table, can be feminine. In cultural systems with strong gender difference in their language complexes, an androgynous individual can create an awkward social exchange, as the speaker may not know the appropriate vocabulary to use without offending.

Centripetal vs. Centrifugal Forces

Language can serve as a centripetal or centrifugal force. When people speak the same language, it is *centripetal force* that unifies people together. Being able to communicate is beneficial for economic activity as the boss and employee speak the same language. People can easily access services like education and health care with minimal linguistic problems. People can access government officials and policies by being able to understand the laws, the police, or posted signs. People can enjoy the same music, movies, TV shows, and social media experiences helping to create a united sense of “us.”



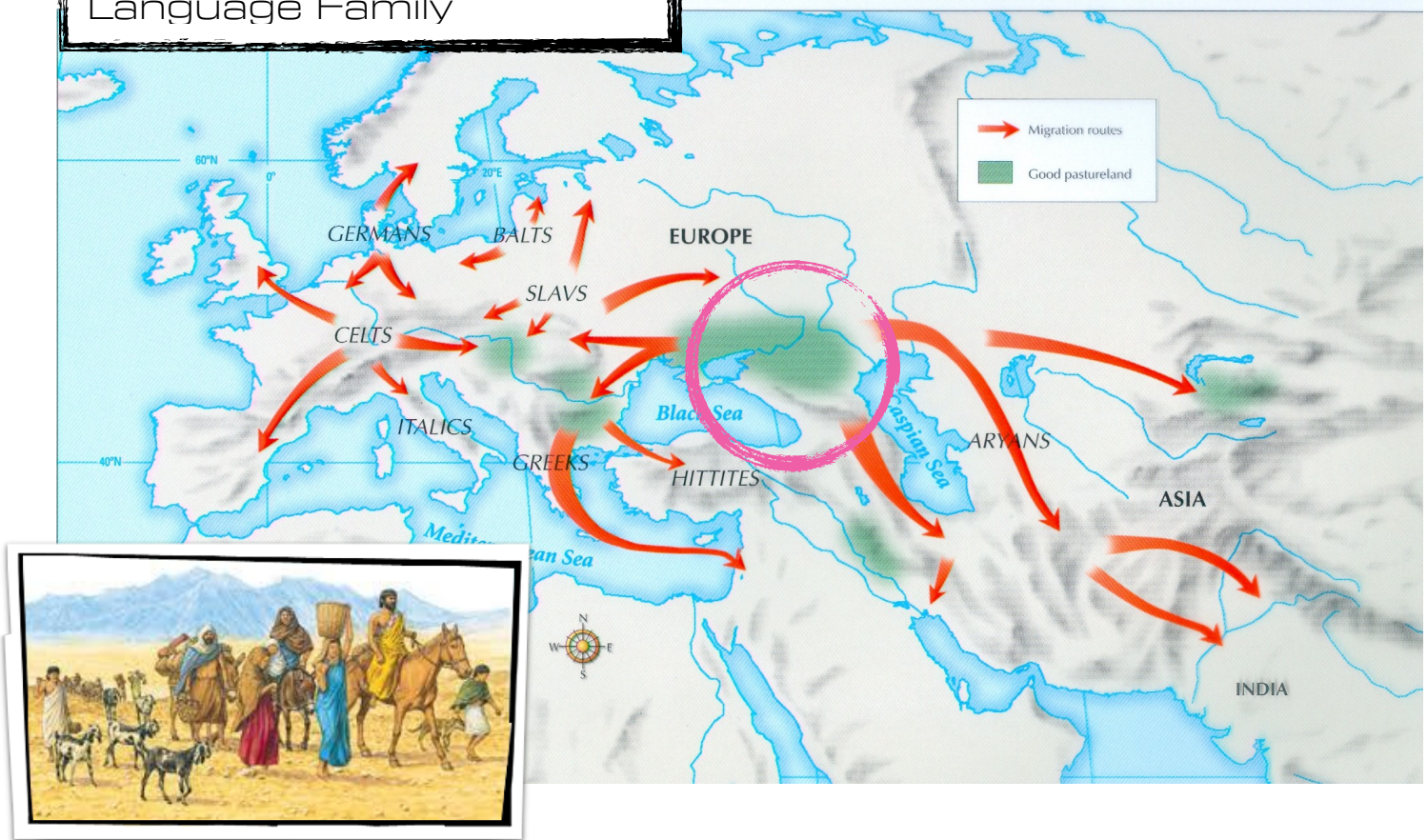
Language can also be a *centrifugal force* that pulls a society apart. Societies with multiple languages are also multicultural because of migration or political agreement (drawing of a border, peace treaty after a war). For example, South Africa had their border drawn for them by the Europeans, joining together 12 different cultural groups, each with their own unique language. These language barriers cause economic issues because the people who wish to work cannot speak the same language as the bosses or the customers and therefore cannot be hired. In Greece, Syrian refugees who were doctors and lawyers have had to take basic service and day-labor jobs because of the language barrier. People who speak different languages struggle to access services like health care and education because they cannot understand the laws, policies, or basic signs. These barriers create an “us vs. them” mentality that tears at the cultural fabric of the society instead of creating unity.

B. How Does Language Diffuse and Change?

Isolated Communities: The Origin Story

All languages can trace their story back to a hearth in an isolated indigenous society which developed a language unique to themselves. These languages are unique in their phonetics, syntax and grammar, as it reflects the nature around them. Anthropologists refer to these as *isolated languages* (or language isolate), as their traits are unique and not being shared by the people groups around them. The Basque language in northern mountains of Spain is an isolated language, having no relationship to the languages in Western Europe. Another example is the Ainu language, spoken on the Japanese island of Hokkaido. Ainu does is entirely unique from other languages written or spoken in Japan or East Asia. Any change that happens takes place from internal innovations that create new vocabulary - either from the development of a new technology or attempts to understand a new geological event.

Origins of Indo-European Language Family



Relocation Diffusion

The most common cause for the diffusion of a language is relocation diffusion. When a person emigrates, they bring their culture and language with them to their new location. In ancient societies, as communities grew in size, they would divide to become two different groups. Because of their common background, there would be increased interaction between them. The larger the collection grew, the more the language spread. An ancient example were the transhumance Aryan groups in Central Asia. They moved and expanded north and west into Europe, and southeast into Iran, Afghanistan, and India. A more recent example of this was colonization when Europeans relocated around the world and established language communities on each continent: the Spaniards diffused Spanish, the British diffused English, the French diffused French.

In a modern context, the number one cause of migration is economic opportunity. As people move from a rural to an urban location, their language travels with them. Through chain migration, ethnic enclaves form and begin to create a sustained expression of the language on building signs, through music/art/dance, and in the business services. An example of this is the Basque enclave in Idaho. Even though the Basque language is a language isolate - with no other "related" languages - Basque spread to Idaho through chain migration to take advantage of the sheep sheering industry. Soon, they formed ethnic enclaves and the Basque language started appearing on buildings and signs.





Roman Empire



Modern Romance Languages

Expansion Diffusion

One of the first methods of expansion was trade because different cultures had comparative advantages in different natural resources. Societies would learn key words and phrases from their neighbors in order to do business with them. At first it was a *pidgin*, or an abbreviated/simplified version of a language, with just enough words to communicate what you were wanting to buy or sell. In adherence to the gravity model, the more dominant the society's economy, the more other societies would interact with them. When this pidgin becomes the language for business and political deals between societies, it becomes known as a *lingua franca*. For example: China had the world's largest economy during the ancient and medieval time periods. The Chinese language spread and influenced cultures north into Mongolia, east to Japan, and south into Korea, Vietnam, Laos, and Indonesia.

Similar to trade, military conquest had a strong linguistic impact. As societies built and expanded their empires, they forcefully assimilated conquered populations to their language. Thus the Latin speaking Roman conquest from Britain to Spain and around the Mediterranean Sea still shapes the linguistic landscape to this day. To this day, the bulk of the former Roman empire speaks languages descended from Latin (the areas that don't were later conquered by the Germans, Vikings, or Arabs).

Colonization also used military conquests to diffuse their native language. South America is divided between two languages - Spanish and Portuguese - because the land was divided between Spain and Portugal.

Religion is another common method of language diffusion. Religions share common holy texts and prayers that are tied to a specific set of words or sounds; thus spreading the language through religious practice. For example, in Islam, the Quran can only be written in Arabic. Any place that adopts Islam must learn the Arabic language. So to, the relationship between Hebrew and Judaism: the relocation/diaspora of the religion spurred the diffusion of the language.

Language diffuses even more rapidly though advanced communication technology and mass transportation. The modern ability to overcome space-time compression and reduce the friction of distance has allowed more people to interact and increased the diffusion of all languages. Popular music and movies contagiously diffuse language and other cultural practices with little regard for physical barriers. As an example, in the USA, there are a growing number of people learning Japanese and Korean because of the distribution of Anime and K-Pop across internet platforms. Now Americans, Europeans, and Nigerians debate online which version of Dragon Ball Z is most authentic - the English dubbed or original Japanese.



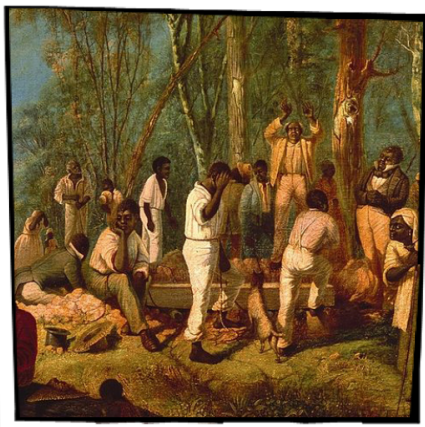
Because humanity is inquisitive and innovative, languages evolve along with societal innovations and adaptations. As humans meet new challenges presented by nature (or by other humans), the human mind finds ways to adapt, often by inventing new tools or processes which require creating new words or repurposing old words to be able to communicate. For example, if we went back in time to the year 1700, no one would know what the term “United States of America” referred to. To have said, “steam-powered engine” or “electric light bulb” would have been met with blank stares and awkward looks - especially in Japan, China, and Ghana. In the year 1900, these words would have made perfect sense because of the innovative process of industrialization. However, in 1900, the words “computer, internet, and Instagram” would have been unknown. Tweeting was something only birds did, and TikTok only referred to the sound of grandfather clocks. Airplanes would have been partially understood, but they would not want to fly in one over the Atlantic. They would have called you, “a bashed goop, trying to be a Wisenheimer.” In the 21st century, our language continues to evolve along with new technologies and challenges: virtual reality, exploration of Mars, climate change, Qubit in Quantum Mechanics, gender confirmation surgery, fake news, and gig economies. But, then again it is hard to stay woke and ice these days... facts.

Woke? Yes, I did at 9am.



Interaction & Mixtures

When two different linguistic groups interact frequently, a blended *creole* language can emerge. Since interaction creates blendedness, when groups that speak two different languages live in close proximity to each other, each language gradually influences the other. They swap words, share expressions, and learn pidgin versions to be able to trade and reach political agreements. Given enough time, the blended, creole version of the languages becomes the most commonly spoken language by the community. For example, in Louisiana inhabitants from France, Spain, western Africa, and Indigenous Americans lived side-by-side. Over time, the interaction between the different cultural groups led to the swapping and sharing of words from each language... until something new emerged. While based in French, the Louisiana Creole language became so altered that it was no longer understandable by the people of France. Similarly, in the southeastern USA, another creole emerged, called Gullah. Slaves from “Senegal down to Sierra Leone and Liberia” were brought to South Carolina and Georgia, being valued for their knowledge and skill in growing rice. Overtime, Gullah formed as a unique creole-mixture of English syntax and western African languages, spoken by the enslaved populations as a means of protecting what they could of their native language and cultures.

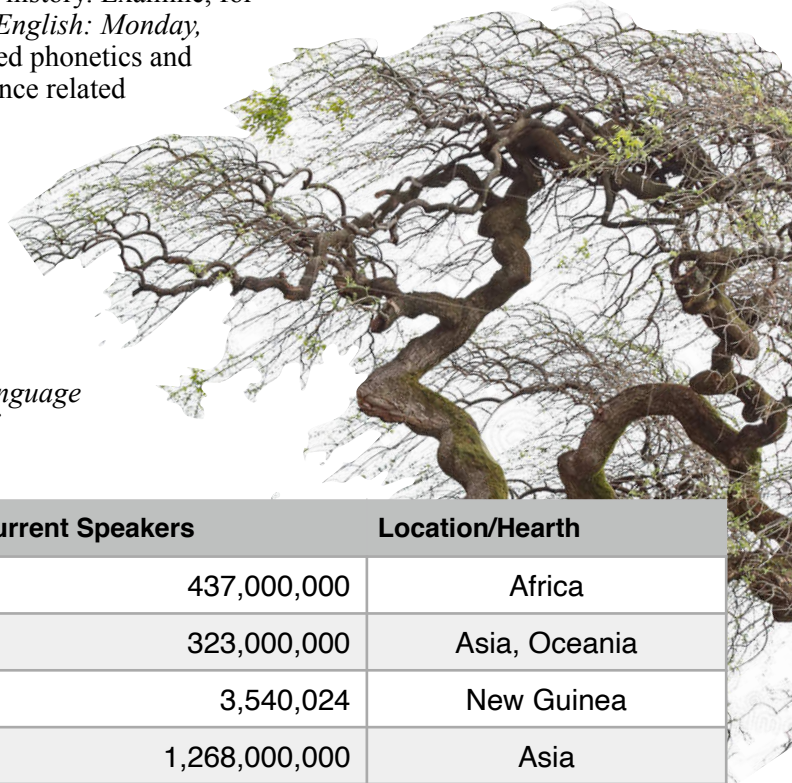


E. Language Families and Trees

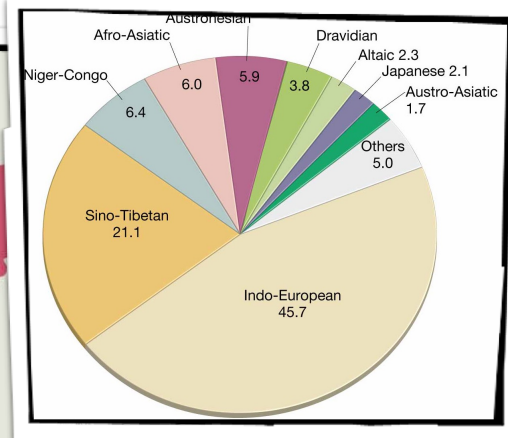
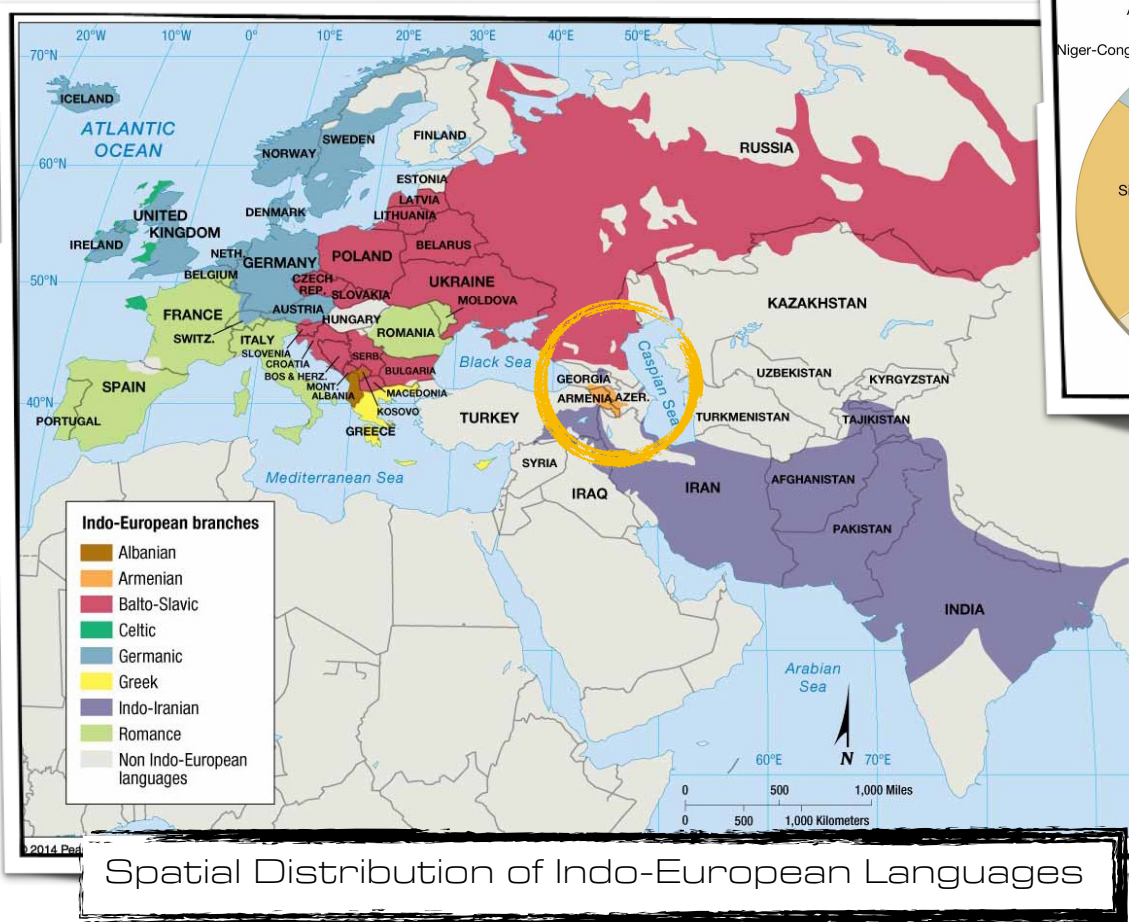
Language Trees

Languages can be categorized by analyzing common traits of grammar, syntax, morphology, and phonemes. Since isolation creates uniqueness, disconnected people will develop radically different phonemes to explain the world around them. Thus, linguists have concluded that ANY similar/shared phonemes, words, or phrases are a sign that those languages were related or connected at some point in history. Examine, for instance, the words used to represent the first day of the week. *English: Monday*, *German: Montag*, and *Dutch: Maandag*. There are clearly shared phonetics and syntax between the three languages, demonstrating they were once related or interconnected at some point in their history. Comparatively, “Monday” in three other languages... *French: Lundi*, *Italian: Lunedì*, *Spanish: Lunes*. The French/Italian/Spanish clustering are clearly related to each other, but distinct from the English/German/Dutch forms. One more set... *Swahili: Jumatu*, *Malay: Isnin*, *Chinese: xīng qī yī*. None of these languages sound like any of the others, revealing they do not have any discernible direct relationship or connection.

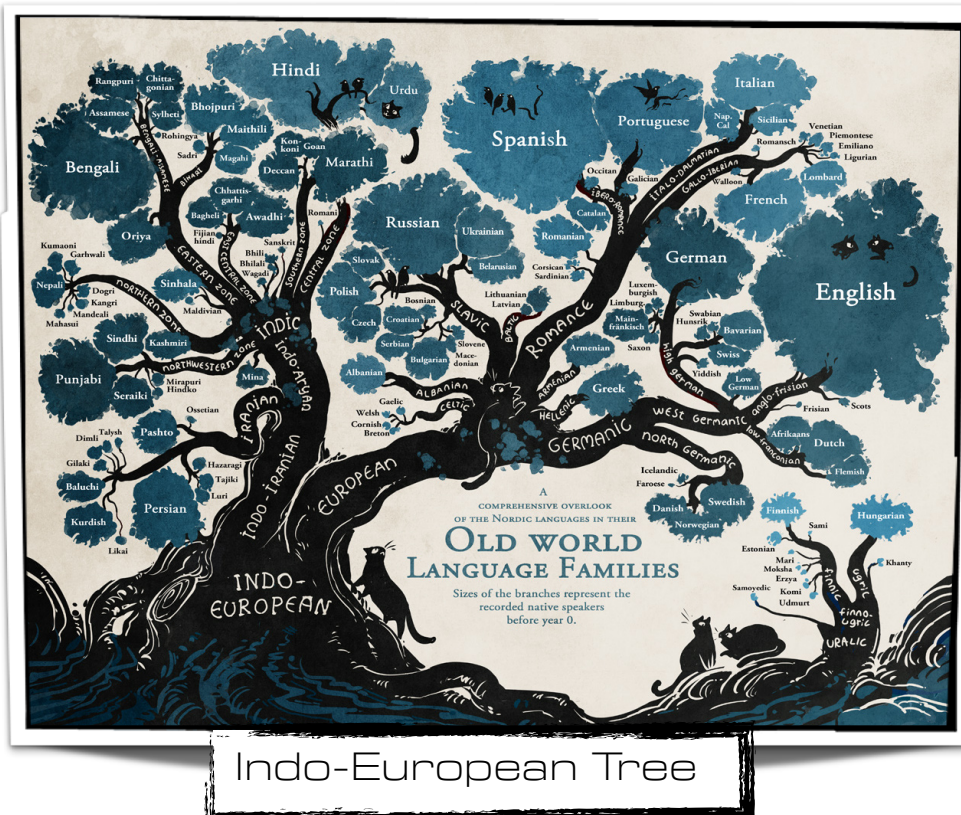
Linguistic scholars claim there are approximately 17 major *Language Family Trees* with at least 50 related languages: (Sorted by # of Languages).



Family Name	# Languages	# Current Speakers	Location/Hearth
Niger–Congo languages	1,524	437,000,000	Africa
Austronesian languages	1,223	323,000,000	Asia, Oceania
Trans–New Guinea	476	3,540,024	New Guinea
Sino-Tibetan languages	453	1,268,000,000	Asia
Indo-European languages	437	2,910,000,000	Asia, Europe
Afro-Asiatic languages	366	380,000,000	Africa, Asia
Pama–Nyungan languages	300	Unknown	Australia
Nilo-Saharan languages	199	42,800,000	Africa
Oto-Manguean languages	176	1,678,214	North America
Austroasiatic languages	169	103,000,000	Asia
Tai–Kadai languages	94	80,800,000	Asia
Dravidian languages	84	229,000,000	Asia
Tupian languages	66	5,026,502	South America
Uto-Aztecan languages	58	1,910,442	North America
Torricelli languages	57	113,705	New Guinea
Sepik languages	55	162,704	New Guinea
Arawakan languages	54	699,709	South America

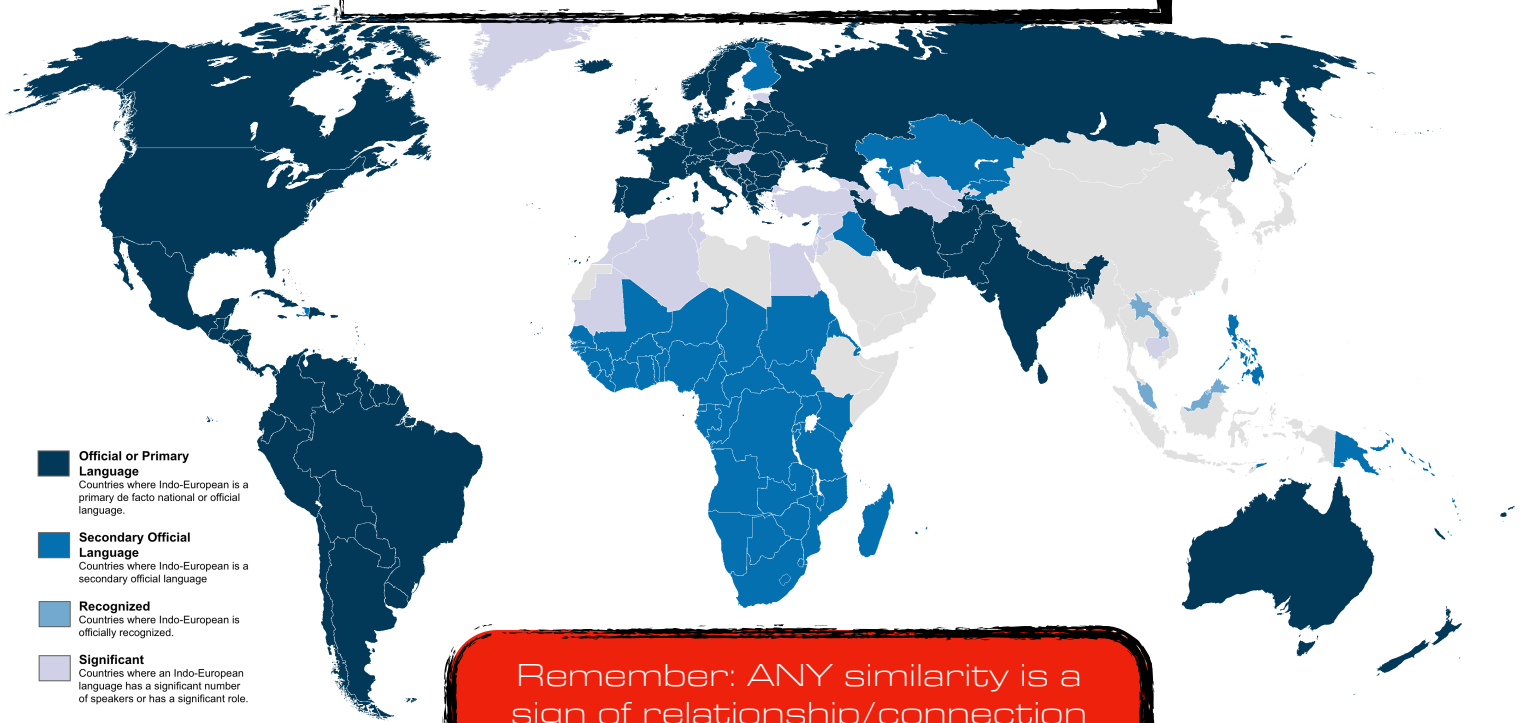


Examining the Indo-European Tree



The Indo-European Language Tree has the largest number of language speakers. It is believed that the hearth of the Indo-Europeans were a group in modern-day Armenia. This group split up, some going into Europe, the other to India. All of these languages share some common phonetics and the use of some kind of alphabet. The languages on the same “branch” share even greater similarities in word choice, syntax, and grammar. European colonization and imperialism diffused the Indo-European languages around the world, force-assimilating cultures to speak or adopt aspects of the language. Now, the connectivity of the internet, mass transportation, economic power, and political power has made this the most powerful and profitable language tree on earth.

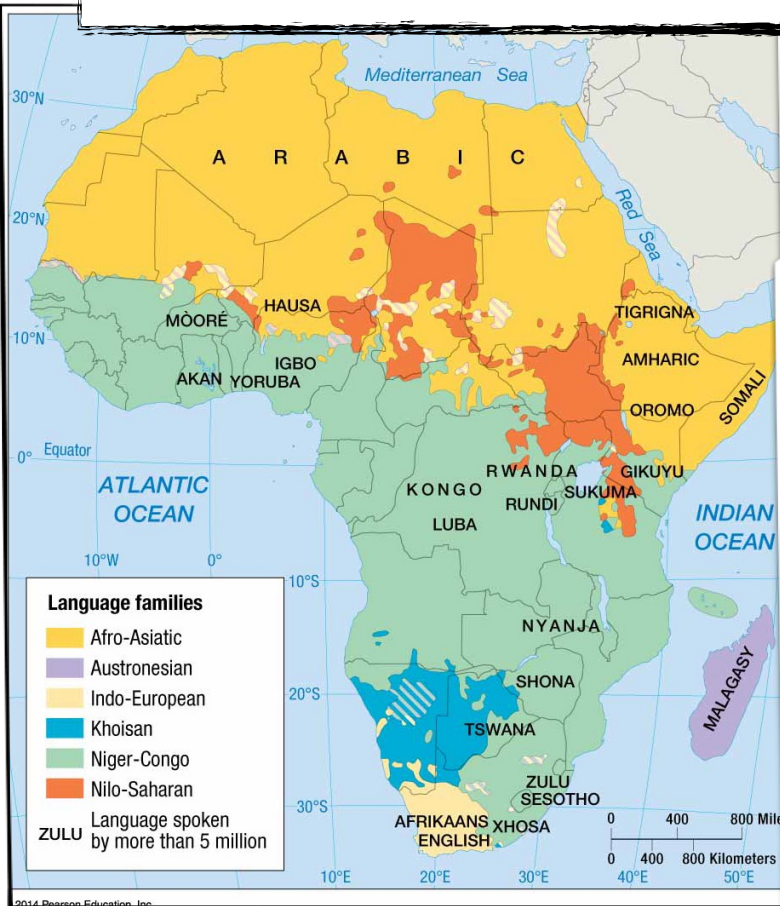
Indo-European: Where Spoken



ENGLISH	OLD GERMAN	LATIN	GREEK	SANSKRIT	JAPANESE
ONE	AINS	UNUS	HEIS	EKAS	HIITOTSU
TWO	TWAI	DUO	DUO	DVA	FUTATSU
THREE	THRIJA	TRES	TREIS	TRYAS	MITTSU
FOUR	FIDWOR	QUATTUOR	TETTARES	CATVARAS	YOTTSU
FIVE	FIMF	QUINQUE	PENTE	PANCA	ITSUTSU
SIX	SAIHS	SEX	HEKS	SAT	MUTTSU
SEVEN	SIBUM	SEPTEM	HEPTA	SAPTA	NANATSU
EIGHT	AHTAU	OCTO	OKTO	ASTA	YATTSU
NINE	NIUN	NOVEM	ENNEA	NAVA	KOKONOTSU
TEN	TAIHUM	DECEM	DEKA	DASA	TO

Shared Words vs. Not

Spatial Distribution of Other Language Trees

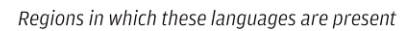
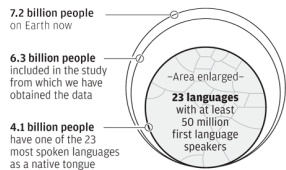


Note to Students. Be familiar with which language family is distributed in which part of the world.

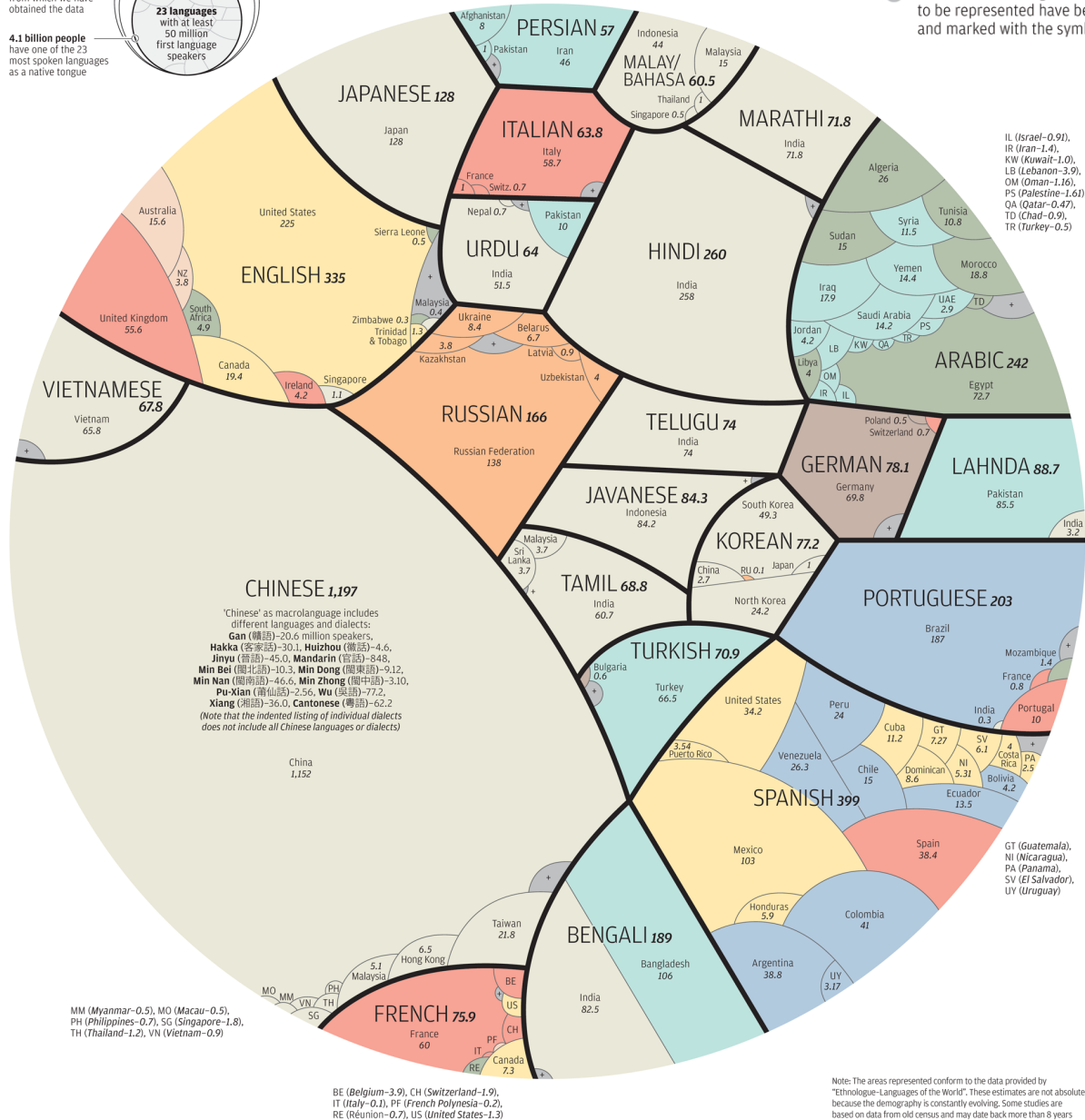
World Languages - by Size

A world of languages

There are at least 7,102 known languages alive in the world today. Twenty-three of these languages are a mother tongue for more than 50 million people. The 23 languages make up the native tongue of 4.1 billion people. We represent each language within black borders and then provide the numbers of native speakers (in millions) by country. The colour of these countries shows how languages have taken root in many different regions



● Countries whose figures in each language is too small to be represented have been put into a single group and marked with the symbol '+'



Note: The areas represented conform to the data provided by "Ethnologue-Languages of the World". These estimates are not absolute because the demography is constantly evolving. Some studies are based on data from old census and may date back more than 8 years

Note to Students. A visual breakdown of the size and location of each language - based on native speakers.