

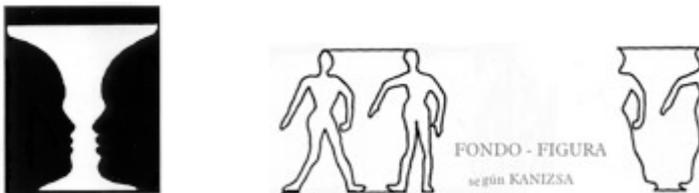
02. Linguistic impairment: language levels and relationships

Perceptual justification of language levels

[Perceptual, or liminar, linguistics](#) takes as its point of reference the laws of perception that organise our grasp on reality (López García, 1989). The phenomenological world we live in as something objective and real, unconnected to us, is not a direct copy of what surrounds us, but the result of a "series of mediations": perceptual laws, that together organise perceptual universes and that separate physical objects ("real") and phenomenological objects ("perceived").

These laws¹ were identified in the early 20th century by so-called *Gestalt Psychologie*, through research carried out by psychologists from the Berlin School, such as E. Rubin, M. Wertheimer and W. Köhler. The literature contains a number of anecdotes that may have prompted Max Wertheimer (1880–1943) to put forward the basic principles of this theory. One such anecdote describes the "Phi phenomenon" identified in 1912, in which two light bulbs are placed in a dark room; first the bulb on the left is switched on for a moment, then switched off; one minute later the same is done with the bulb on the right. As a result, observers (in this case, Wolfrang Köler (1887-1976) and Kurt Koffka (1886-1941), both psychologists and colleagues of Wertheimer) perceived two lights in succession. However, if the time delay between the two bulbs lighting up was progressively shortened, subjects eventually had the impression that they were seeing a single light moving from left to right and reported a sensation of motion. To explain this strange phenomenon, Wertheimer concluded that the subjects were not experiencing simple sensations and then combining them to form other more complex ones (classic associationism), but that they were directly perceiving complex configurations as a whole and analysing the individual elements afterwards. *This feature of simultaneous overall perception is particularly important in language, although more widespread approaches, both in structuralism and generativism, place more emphasis on linear successivity.*

Compared to other models explaining behaviour, such as fixed stimulus and response sequences, perceptual laws have a universal application, as demonstrated by intracultural studies. Edgar Rubin differentiated between the perceptual Figure-Ground concepts:



See <http://personal.us.es/jcordero/PERCEPCION/Cap01.htm>

Although sporadic references can be found to this type of relations in previous works (see Charles E. Osgood, Thomas A. Sebeok and A. Richard Diebold, 1974², to explain certain psycholinguistic phenomena), the use of perceptual laws as basis for an overall theory of linguistics is attributed to A. López García and his [GRAMÁTICA LIMINAR](#) (1980). In its 1989 formulation (*Fundamentos de lingüística perceptiva*, Madrid: Gredos), this theory of grammar

¹ Kanitzsa, Gaetano (1980): *Gramática de la visión. Percepción y pensamiento (The grammar of sight. Perception and thought)*, Barcelona: Paidós, 1986. Translated into Spanish by Rosa Premat.

² Osgood, Charles E. ; Sebeok, Thomas A. ; and Diebold, A.R. (1974): *Psycholinguistics*, Barcelona: Planeta. Trans. Aurelio Verde Irisarri and Juan Aparicio Frutos.

takes a wholly Gestaltist and perceptual view, which leads to analysed universes (the totality of language) being studied as groups of organised stimuli according to figure-ground notions, so that the analysis favours or stresses one of them and uses the rest as background for the study. In other words, the analysis deals with elements that are described by making reference to others (descriptors), but which are always simultaneous.

Cognitive linguistics, developed by R. Langacker in the mid-seventies, takes a similar view by distinguishing a PROFILE and a BASE or cognitive domain in every linguistic predication. (Langacker, *Foundations of Cognitive Grammar*, 1991: 5). Semantic structures are characterised by reference to cognitive domains consisting of some type of conceptualisation: concepts, perceptual experiences, manufactured knowledge systems, etc. For example, the basis or domain for defining "hypotenuse" is the concept of a right-angled triangle, "elbow" is defined by reference to the human arm, etc.

The clearest example of perceptual analysis is perhaps found in the typical notion of syntax, the subject. It is well known that there are several ways of defining the subject:

- the one doing the action: **logical subject**. It is that about which something is predicated in a statement (Gutiérrez Ordóñez, "Tipos de predicado"); it is thus defined by a semantic criterion.
- the one that agrees with the verb: **grammatical subject**; the aspect of language stressed by this definition is its functional one.
- what appears in first place (**psychological subject** = theme = topic); this is a merely formal, positional definition.
- what is being spoken of, stressed by intonation (**emphatic subject** or pragmatic subject = focus); in this case, a pragmatic, informative definition criterion is used.

A single sentence can contain one word that responds to all four definitions: "*IRENE arrived just in time*", but this does not mean that the types of subject are interchangeable, so they can sometimes appear separated: "*The day before yesterday, the ex-minister was interviewed by journalists IN THE PRISON*", in which "journalists" do the action, "the ex-minister" agrees with the 3rd person singular verb, "the day before yesterday" appears in first place, and "in the prison" is the information stressed by intonation.

Keenan (1978: "Towards an universal definition of subject") states that in fact these four subject types reflect the types of relationship that can occur between two linguistic units. In the field of linguistic typology, four possible relationships between two elements are also identified; thus, Lehman (1978a: 9) identifies four basic types of syntactic processes:

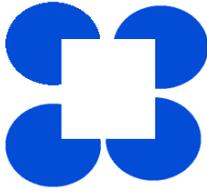
- **ordering** of linguistic elements in the verbal sequence
- **informativity**: distribution and concentration of energy between the elements selected for the syntactic chain
- **government**, when one element in the chain dominates the other,
- **agreement or control**, when one element modifies another on which it depends³.

In short, it can be said that the four subjects represent four different ways of reading the sentence, and these ways are conditioned by the laws governing how stimuli are received; the perceptual approach always takes into account the simultaneity of the data and uses it for the analysis. Taking visual perception as the paradigm, the laws of perception identified by Max Wertheimer⁴ can be schematised as follows (Kanizsa, 1980):

³ That is, that agreement always implies government, but not the other way round.

⁴ Subsequent literature has put forward many other laws, particularly in terms of their application in the field of visual arts, but these four (which are really three laws and the general principle of meaning) are from the original theory. I recommend you visit the web site of Juan Cordero, from the University of Seville, which has been developed from the artistic theory point of view: <http://www.personal.us.es/jcordero/PERCEPCION>

1. LAW OF CLOSURE: stimuli tend to group together in closed sets. In the following picture, there "is" no square, but one is perceived:



Osgood, Sebeok and Diebold (1974: *Psicolingüística*, Planeta) argue that the law of closure (which insists on the global nature of perceptual phenomena) justifies how what cannot be heard well can be understood by using context and structural predictions.

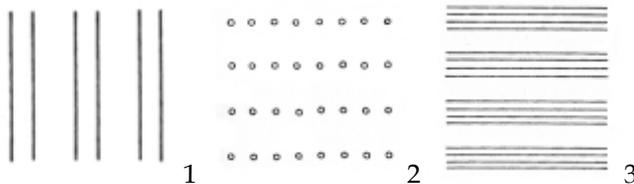
2. LAW OF EQUALITY or of SIMILARITY: in a complex perceptual universe, the same or similar stimuli tend to group together making a single figure. The top line is perceived as four groups of two whilst the bottom line makes two groups of four.



Osgood, Sebeok and Diebold (1974: *Psicolingüística*, Planeta) argue that the law of similarity or equality justifies, for example, that the allophonic variants of a phoneme are mentally grouped together into one figure. Mentally, only one unit /b/ is identified, although the pronunciation can distinguish between a plosive variant ("baño") and a fricative one ("cabeza").

3. LAW OF PROXIMITY: stimuli that are close together tend to be seen as members of one figure, that is, of one coherent Gestalt:

As J. Cordero argues, in this group of saints painted by Fray Angélico, the law of proximity applies, forming three groups of heads in horizontal lines which prevail over vertical lines, identical colours or over any other law of perception.



In figure 1, the vertical lines are grouped together in three narrow vertical bands or strips, separated by two larger spaces. In figure 2, the points are horizontally closer, making the set into a group of horizontal lines. In figure 3, groups of four lines are closer together, making horizontal blocks that are perceived as separate figures within the set.

Osgood, Sebeok and Diebold (1974) use the law of proximity (linking the stimuli in closest proximity) to justify the linear association of elements in syntagmas.

LAW OF GOOD FORM OR 'Prägnanz' (German for *conciseness*) stimuli tend to group together according to conventional models that establish "good forms" accepted by the

community and can enable a certain hierarchy to be applied to the other laws when they come into conflict:

In liminar or perceptual grammar, the four ways of viewing the parts of a sentence (according to the four perceptual laws), are extended to be regarded as **four distinct levels of linguistic organisation**; epistemological correlations are set up so that each of the subjects and laws refers back to a LANGUAGE structure or LEVEL according to the following correspondences (López García, 1980; 1989):

- **Law of closure: logical subject: level of GOVERNMENT** that approaches sentences as a complete unit ("closed") around the subject doing the action. Two sub-levels can be distinguished:
 - the ARGUMENTARY, in which the action done is conceived as a verbal function that organises the various actants (f-x,y,z-)
 - and the PREDICATIVE sub-level, where the subject-predicate arrangement leads to seeing the sentence as a logical judgement in which something is said about something (sub + pred).

A governing relation between two language units supposes the compulsory presence of one from the appearance of the other: for example, in Latin the preposition *sine* governs the ablative case, the verb *amo* governs the accusative case, etc. Government can be defined as a relationship between two terms such that neither of them shows why they should be related (perceptually it would be said that they do not show the border along which they are joined). It is, basically, a linguistically-dependent relationship found in all language components, not only in syntaxis:

- For example, in *phonology*, certain distributional environments determine (govern) an alternation of allophones: the presence of a labial consonant, for example, labialises any immediate nasal implosive ("énfasis, invicto"); phonological alternations can also be governed by the type of word unit: for example, the alternation between velar plosive [k] and interdental fricative [ç] in "elétrico/ electricidad". The fact that every total interrogative statement (requiring yes or no) demands an ascending toneme can also be considered pragmatic-phonological government.
- Governing relationships can also be found in *morphology* in the prepositional selection of certain verbs (those which introduce regime complements: "enterarse DE, acostumar A"), or in the presence of certain morphemes (such as the article or some clitic pronouns), etc.
- The quintessential governing relationship is found in *syntaxis*: actantiality, that is, the relationship between a verb and its nominal complements, the arguments or actants; the number of actants governed by each verb is called verbal valency.
- Governing relationships can be found in *semantics*, for example between a relational unit and a constitutive unit, or between some deep cases.
- In *pragmatics*, for example, a predicted turn (acceptance, rejection) is governed by a predictive turn (invitation) and a continuator is governed by an intervention, etc. In textual pragmatics, it can also be said that a complication governs a resolution, or that a connector governs an argument, etc.

Clinical linguistics considers that there is a **deficit of government** in cases where there is omission or substitution of governed units, regardless of the linguistic component in which the omission/substitution appears. Several theories, such as the "Tree Pruning

Theory" (Friedmann y Grodzinsky 1997)⁵ can be regarded as theories on the scope of deficit of government in syntax, specifically in verbal tense morphemes, copulative conjunctions and subordinate sentences.

- **Law of similarity: grammatical subject: CONCORDANT level**, where the similarity of certain morphemes enables the functional alignment of several units (verb and its subject, nucleus and its determiner) to be recognised. In perceptual terms, the concordance relationship is that in which two terms are joined along a border shown by both of them. As seen in governing relationships, concordance relationships occur in different language components:

- *phonological* concordance: for example, vowel harmony phenomena mean that in some languages, atonic vowels are influenced by tonic vowels (some Catalan and Basque dialects, Turkish languages, etc.); phonological concordance can also be morphologically motivated, for example in the case of Spanish Andalusian dialects, which open the final vowel in cases where the plural /-s/ is elided ("lòh coheh" with open vowels, instead of "los coches").

- *morphological* concordance: (formal) morphematic similarity between two elements from different categories; in Spanish⁶, for example, there is morphological concordance of gender and number between noun and adjective. The level of concordance should not be confused with the morphological component, although grammatical language units are without a doubt their clearest example.

- *Semantic* concordance: this is seen in category selections; semantic discordance occurs when, for example, a speaker with fluent aphasia selects as the subject of a /-animado/ verb ("caer") a lexeme with the /+animado/ feature ("la señora cae el agua") to describe the "cookie theft scene".

- *Pragmatic* concordance: this can also be seen in adjacent pairs.

Concordance deficit refers to the cases in which linguistic deficit is manifested by discordance between language units, regardless of the grammar level; some phonological paraphasias are cases of discordance in that a particular distinctive feature "infects" a phoneme by mistake. "Concordances ad sensum" are, strictly speaking, semantic discordances, although they are accepted as grammatical (*Una docena de niños no pudieron patinar; Todos los hombres somos iguales; Eso son tonterías; Algunas alumnas esperáis aprobar*).

- **Law of proximity: psychological or topical subject: LINEAR or ORDER level**, which adheres to formal criteria organising units according to their appearance in the chain (topical/comment). As is well known, linearity is a characteristic of the language sign, and is thus present of necessity in all components:

- *Phonological order*: some phonological phenomena that back up the importance of order at this level, for example metathesis, which can be classed as an error (*Grabiel* instead of *Gabriel*, *sastifación* instead of *satisfacción*) or as having become

⁵ Friedmann, N. and Grodzinsky, Y. (1997): "Tense and Agreement in Agrammatic Production: Pruning the Syntactic Tree", *Brain and Language* 56, pp. 397-425.

⁶ Concordance in Spanish occurs in:

- nominal syntagmas: gender and number (*las feas macetas blancas*)
- possession: the concordance is established with what is possessed, not with the possessor (*los perros son suyos, las perras son suyas, el mechero es suyo, la casa es suya*)
- verbal syntagma: there is concordance of person and number of the subject with the verb (*ella trajo el pan, ellos trajeron el pan, ellas trajeron el pan*)
- in composite verbal forms, concordance with the object is not marked (in contrast to Catalan, for example).

a part of regular grammar (*periculo* > *periglo* > *peligro*; *spatula* > *espadla* > *espalda*; *parabola* > *parabla* > *palabra*)

- *Morphological order*: some morphological categories are characterised by a fixed order, for example, in Spanish both article morphemes and prepositions are placed first.
- *Lexical-semantic order*: “*pobre hombre*” is not the same as “*hombre pobre*”, as changing the order of antecedent and consequent produces a different meaning.
- *Syntactic order*: one of the most developed topics in linguistic typology is that of word order.
- *Pragmatic order*: Negation is a pragmatic category that links a topic and its comment; cohesive relationships of co-reference also back up order relationships, insofar as the co-referential chains arrange their nucleus (first mention) and the rings (subsequent mentions) in a linear way; focalisation sometimes uses the resource of disturbing the unmarked word order.

Order deficit, then, can appear in any language component, breaking the usual (unmarked) linearity of linguistic elements. Sometimes the disturbance in order has an informative use, or is compensated by other types (for example, broken Spanish constructions are a focusing mechanism: “quien ha terminado la tesis ha sido Luisa”).

▪ **Law of 'Prägnanz' or good form: emphatic subject: ENUNCIATIVE or PRAGMATIC level**, in which the units are identified by reference to the context, that is, to the enunciation (focus or assertion, and presupposition). In the enunciative structure or level, a speaker and a receiver are said to be related by a particular speech act, and that a statement in which a particular element stands out as an emphasised focus is dominant; this kind of informative focus expresses an unknown related to a presuppositional chain (Ángel López García: *Estudios de lingüística española*, Barcelona, Anagrama, 1983: 35).

For Osgood, Sebeok and Diebold, the law of symmetry (which they call law of continuity) explains, for example, that diphthongs can be considered as one phoneme and not two.

Integration deficit is used to refer to the deficient situation shown in this level, where various language components are involved of necessity; there are authors, such as Grodzinsky (1990)⁷ who describe the typical expression of speakers with Alzheimer-Type Dementia as “dissolution”.

These four levels are much more universal than they seem, and are inevitably imposed on speakers. Certain grammatical categories are more sensitive to some of these criteria than to others; for example, conjunctions or negation are completely order sensitive (López García, 1983: 43-65)⁸, whilst the adjective is placed in the governing level (“deep structure” in López García, 1983).

The difference between the levels is that the order level is inexplicable without reference to the previous speech, whilst the government and concordance levels are independent of what is said before and after. In the order and enunciation level, relationships are established around centres of interest that are topics and focuses, and that are reliant on what has been said before and on what is known. Thus, a text can do without belonging to order and enunciation relationships, but government and concordance are always present (which also explains how linguistic study has privileged the latter two over the former).

⁷ Grodzinsky, Y. (1990): *Theoretical Perspectives on Language Deficits*, MIT Press.

⁸ López García, Ángel (1983): *Estudios de lingüística española (Spanish Linguistic Studies)*, Barcelona: Anagrama.

The four levels respond to human trends in organising the world, perceived through the senses and intelligence. In perceptual terms, these laws are thought to be of genetic origin, as nobody is taught to look; it could be accepted that babies are born with a certain predisposition for language acquisition by means of these laws for grouping stimuli. It can thus be argued that there is a certain amount of innateness, but more as a trend than as a principle. A number of constructivist intercultural studies have shown that there are differences in the speed with which a notion is acquired, but a fair amount of similarity in cognitive operations. The child, says Bronckart⁹ (1977: 221) *whatever social and cultural context he or she finds themselves in, generalises and abstracts the characteristics of their actions; in this way they build their knowledge, remodelling and rebalancing previous acquisitions at each stage.* This explains the different types of bilingualism; a child can speak two languages almost perfectly up to the age of ten, because he or she uses the general, neutral laws to suit both languages; later, these laws pass through the filter of the mother tongue. This is why it is advisable to differentiate, from the learning point of view, between learning second languages ("the earlier the better", as the saying goes) and learning foreign languages (in this case learning IS favoured by the metalinguistic knowledge that the learner has of their mother tongue).

The aforementioned can be summarised by a table of parallelisms (*careful: these are not directly equivalent* but rather epistemological correlations) such as the one below:

Criterion	Semantic	Functional	Formal	Pragmatic
Subject	Logical	Grammatical	Psychological Topic	Emphatic Focus
Structure Generativist	Deep	Superficial	Linear	Enunciative
Jakendoff 's parallel architecture 2007¹⁰	Propositional structure	Syntactic structure	Phonological structure	Informative structure
Level Linguistic	Government	Concordance	Order	Emphasis
Perceptual Law	Closure	Similarity	Proximity	Good Form

Armed with this classification it is possible to use an exclusively linguistic criterion to tackle the situation of deficiency¹¹, using as descriptor the type of relationship between the disturbed element and the other linguistic elements. As stated in the previous section, the forerunner of this view refers back to the proposals put forward by Jakobson and Lesser.

- Deficit of government
- Concordance deficit
- Order deficit
- Integrity or informativity deficit

⁹ Bronckart, J. P. (1977): *Teorías del lenguaje (Theories of Language)*, Barcelona: Herder, 1980. Translation by Juan Llopis.

¹⁰ Jakendoff, Ray (2007): *Language, Consciousness, Culture. Essays on Mental Structure*, Cambridge, Mass.: MIT Press.

¹¹ B. Gallardo (2008): *Criterios lingüísticos en la consideración del déficit verbal (Linguistic criteria in the consideration of verbal deficit)*. *Verba*, in press.

