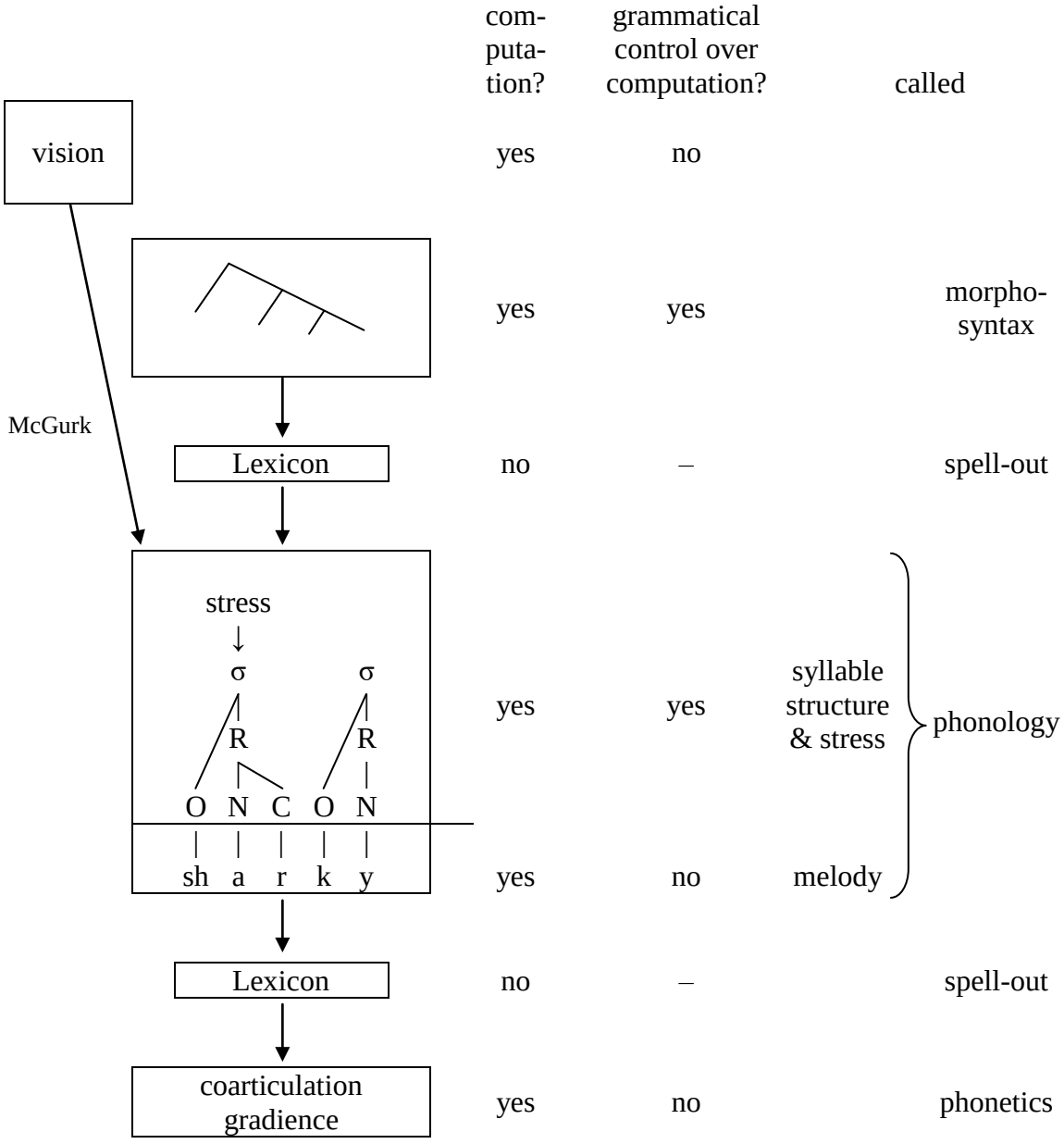
Tobias Scheer
scheer@unice.fr

this handout and some of the references quoted at
http://sites.unice.fr/scheer

Crecchio workshop
Variation and universals in language.
The implications of typological evidence for formal grammar

ON THE ORIGIN AND DISTRIBUTION OF UNIVERSALS

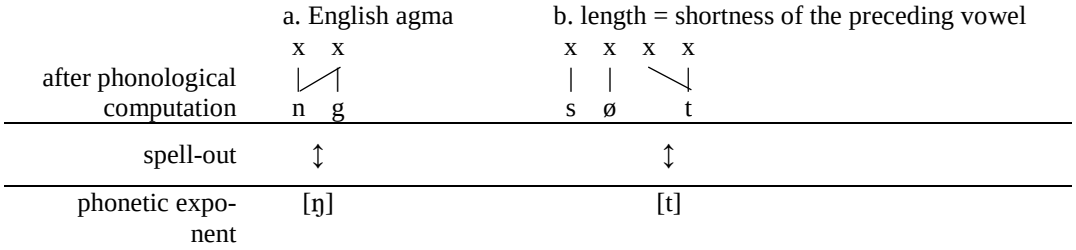
(1) what is under grammatical control
(in production, except for vision, which is perception)



(2) post-phonological spell-out
examples
a. English agma
[ŋ] is /ng/:
- it occurs only after short vowels
- it does not occur word-initially
Gussmann¥ (1998), Dressler¥ (1981) for German
b. shortness of the preceding vowel is the diagnostic for a geminate
1. distribution of short/lax vs. long/tense vowels in English
short/lax vowels occur in closed syllables, hence the phonetically simplex t in *city* must be a geminate (*not* an ambisyllabic consonant).
Hammond¥ (1997)
2. Norwegian

common gender	neuter	
peen	pen-t	pretty
stuur	stur-t	tall/big
søøt	søt	soft

(3)



1. Regularity has two sources: grammar and the real world

(4) two kinds of regularity
a. produced by grammar = result of a rule system
vs.
produced by non-grammar = result of physical (real-world) regularities
b. for any given regularity, how can we tell of which kind it is?
c. physical origin
no exception, no compromise possible
d. origin in grammatical computation
"exceptions" arise when the original extra-grammatical regularity is marshalled by grammar:
- lexical marking
- morphological restriction (for phonological processes)

(5) hence two kinds of universals
a. produced by grammar (a rule system located in the cognitive system)
b. produced by non-grammar (i.e. the physical, extra-cognitive world)
examples from phonology / phonetics
1. stressed vowels are longer
2. vowels before voiced consonants are longer than before voiceless consonants
3. k is more front before front vowels than before back vowels

(6) morpho-syntax (concatenation) vs. phonology / semantics (interpretation)
   a. morpho-syntax seems to lack (5)b extra-grammatical motivation of its properties
   b. only semantics and phonology have (5)b an extra-grammatical source

(7) phonology and semantics are a blend
   a. they are confronted with extra-grammatical patterns / sources of regularity
   b. which they marshal according to their own, real world-independent properties

(8) diachronic feed from the real world into grammar
   a. called grammaticalization
      in phonology, see the life cycle below.
   b. grammaticalization is categorization in language
   c. categorization in psychology:
      transforms a gradient (real-world) reality into a discrete mental object
      Harnad¥ (1987, 2003)
   d. all items that are manipulated by grammar are grammaticalized real-world items:
      syntax: time, person, number, inalienability, animcay etc.
      phonology: labial, occlusion, palatal etc.
      semantics: quantification, negation, etc.
   e. a note on morpho-syntax:
      syntactic *items* are grammaticalized, but patterns / regularities / processes are not.

(9) life-cycle of phonological processes
   (rule aging)
   Baudouin de Courtenay¥ (1895), Vennemann¥ (1972), Bermúdez-Otero¥ (2007, 2014)
   a. phonological rules come into being through phonologization, i.e., the grammatical knighting of some variation that is present in the phonetic signal.
   b. alternations are born as phonetic regularities, then move into grammar where they are first phonological but at some point start to add morphological conditions, followed by lexical factors. Finally they are levelled out or eliminated from the language by some other means.
   c. during this life-cycle, alternations become less and less regular: they apply to 100% of those items that satisfy the triggering conditions in their initial stage, but adding morphological and/or lexical conditions subtract more and more items from their influence.
   d. ==>
      exceptionless (phonetic) > morphological conditions > lexical conditions > ø

(10) a note on phonetics
   a. phonetics implements physical, i.e. extra-cognitive regularities
   b. but it also has cognitive aspects:
      some phonetic properties are language-specific and need to be learned
   c. whether the latter are grammatical in kind depends on your take on parametric variation:
      1. stored and acquired independently of the computational system (classical view)
      2. a piece of the computational system (OT)
      Examples (from phonology): inventories, lower spell-out (phonology → phonetics).

2. What is a universal?

(11) what is a universal?
[all properties below need to be met]
a. something that is true for all languages
b. something that cannot be acquired by children
[be careful with artificial language experiments: these are typically done with adults]
c. something that grammar is unable to generate

(12) the remote island
Hale & Reiss¥ (2008)
a. typology:
if X is absent from (or present in) all languages, it could be
1. a systematic gap: grammar rebels against it (X cannot be generated)
2. an accidental gap: there is this remote island where X occurs…
b. logical problem
the claim that there are pink elephants cannot be shown to be wrong by coming up with 5, 28, 1000 or five million grey elephants.

(13) mistakenly taking real world regularities for universals
[what Hale & Reiss¥ (2000) call substance abuse]
a. example from phonology:
1. the real world produces a pattern where stressed vowels are longer
2. this is grammaticalized by some languages: tonic lengthening
b. what does that tell us about phonological universals?
Nothing.
c. the only thing we know is that phonology does not object managing a this pattern.
d. we have no evidence as to whether would object managing the reverse pattern, i.e. where all and only non-tonic vowels are lengthened.
e. ==> how can we avoid this confusion?

3. Crazy Rules

(14) Crazy Rules
evidence for and against universals in a given area
a. crazy rules are rules that make no phonetic sense
b. literature
Bach & Harms¥ (1972), Buckley¥ (2000, 2003, 2004), Vennemann¥ (1972), Hyman¥ (2001), Scheer¥ (2015)
c. typically, theories try to discount crazy rules, which are said to be a number of things but the result of phonological computation:
1. the lexicon, 2. allomorphy

(15) examples
  a. Oboyan Russian
     Bach & Harms (1972: 16ff)
     after palatal consonants, pretonic non-high vowels appear as
     1. [i] if the following stressed vowel is [ɛ,ɔ,a]
     2. [a] in case the following stressed vowel is [e,o,i,u]
  b. Sardinian
     Contini¥ (1987), Scheer (2015)
     l → ʁ / V__V, including in external sandhi
  c. Southern Pomoan
     Buckley (2000, 2003)
     i → u / d__
  d. Ndebele (Bantu, Zimbabwe)
     Hyman (2001)
     p^h, β, b, mb → $\widehat{tʃ}$, $\widehat{tʃ}'$ (ejective), $\widehat{dʒ}$, $ɲ\widehat{dʒ}$ / __w
  e. French palatalization
     caru > [ʃ] cher, gamba > [ʒ] jambe
     k,g → $\widehat{tʃ}$, $\widehat{dʒ}$ / __a

(16) how crazy rules emerge
  a. crazy rules are not born crazy, they become crazy through aging
     (Bach & Harms 1972)
  b. life-cycle:
     at birth, i.e. upon grammaticalization, a phonological process is fully regular, transparent and phonetically motivated.
  c. hence
     k → $\widehat{tʃ}$ / __i
     is a possible product of grammaticalization, but
     k → $\widehat{tʃ}$ / __u
     is not.
  c. one thing that can happen after some time are context-free substitutions of segments
     1. in a language with
        k → $\widehat{tʃ}$ / __i
        all i's become u's.
        This produces the crazy rule
        k → $\widehat{tʃ}$ / __u
     2. example from English:
        k → $\widehat{ts}$ / __i 12^{th} century
        deaffrication $\widehat{ts}$ > s
        k → s / __i today

(17) does grammar care?
  a. if grammar cared for rules to be crazy or not,
     it would object when a non-crazy rule becomes crazy: the computation would break down because grammar is unable to process craziness.
  b. in a number of documented cases this is not what we see:
     nothing happens, i.e. the rule becomes crazy and continues to work just as before.
  c. ==> grammar does not care.

(18) why are crazy rules rare?
  a. because they are the result of diachronic rule telescoping.
  b. it takes some historical accident and time to create a crazy rule.
  c. many rules disappear along the regular life cycle before they can become crazy.

(19) independence of the real world and its cognitivized version
(in linguistics, Saussue's Langue vs. Parole)
  a. wave length and colour perception
  b. relationship between time (real-world) and tense (grammar),
  c. *dog* (real-world) and *dog* (concept),

(20) regarding phonology
  a. phonology is phonetically arbitrary
  overview: Bermúdez-Otero¥ (2006: 498ff)
  b. Anderson¥ (1981), Hyman¥ (2001), Hamann¥ (2011, 2014)
  c. consequences for OT
  if the melodic properties of phonological processes are arbitrary, the entire justification of markedness constraints disappears (Bermúdez-Otero 2006).
  d. reaction
  markedness constraints exist but are neither universal nor a finite set.
  Rather, they are langauge-sepcific, i.e. acquired/constructed on the basis of available data.
  Bolognesi¥ (1998: 464ff), Boersma¥ (1998), Bermúdez-Otero & Börjars¥ (2006).

(21) crazy rules diagnostic
  a. crazy rules are only ever melodically crazy.
  b. there are no cases on record where craziness concerns
  - stress
  - syllable structure
  c. the following crazy patterns do not occur:
    1. stress the antipenultimate unless the penultimate begins with a labial, in which case the initial syllable is stressed.
    2. open syllable shortening, closed syllable lengthening
    3. tonic lengthening in closed syllables
    4. compensatory shortening
    5. intervocalic strengthening, post-consonantal weakening

(22) hence
  a. grammar does not care for melody
  anything may be turned into anything in any context
  ==> SPE was right regarding melody, post-SPE critiques were wrong.
  b. grammar does care for stress and syllable structure
  c. there are universals in stress and syllable structure, but not in melody
  d. computation
    1. in melody:
    turns X into Y in context Z. Period.
    2. in stress & syllable structure:
    does the same, but imposes universal restrictions on this computation.

(23) further support of the Crazy Rule diagnostic
separating melody vs. stress/syllable structure:
melody is incommunicado with morpho-syntax
(Scheer¥ 2011: §660, 2012: §124)

a. category-sensitive phonology
récord vs. recórd etc.: never concerns melody.

b. infixation
Yu¥ (2007): melody never contributes to the definition of the anchor

c. phonologically conditioned allomorphy
only properties at and above the skeleton are found to condition allomorphy, melody does not. Scheer¥ (2016)

d. chunk definition (mapping)
is the delineation of phonologically relevant chunks in the linear string.
Empirical picture emerging from 30 years of Prosodic Phonology: prosodic phrasing is done on the basis of morpho-syntactic information plus
1. information structure
2. eurythmy
3. size of the string
4. pitch
==> melody does not contribute

e. within phonology
a trivial but hardly ever mentioned fact about the computation of supra-skeletal structure is that melody is never involved. [sonority is not melody]
That is, melody never plays a role when
1. stress,
2. tone,
3. syllable structure
4. positional phenomena
are computed, or when
5. computational domains
are defined (cycles, phases, prosodic constituents etc.).
The following do not exist:
1. "stress the penultimate when preceded by a labial, otherwise the antepenultimate"
2. "contour tones may only appear on long vowels or short vowels followed by a labial coda"
3. "a C_1C_2 cluster is a branching onset iff C_1 is a labial"
4. "l-vocalization occurs before another consonant, but only when the preceding vowel is back"
5. "start a new computational domain every time you hit a labial"

4. Conclusion

(24) loci of arbitrariness
(i.e. no universals here)
a. lexica
1. upper spell-out: morpho-syntax → phonology
2. lower spell-out: phonology → phonetics
b. melody
items and patterns below the skeleton

(25) loci of universals
a. origin: grammar (the cognitive system)
1. morpho-syntactic computation
2. stress- and syllable structure-related computation
b. origin: non-grammar (real world)
1. phonetic computation
2. [semantic equivalent ?]

(26) parametric variation
a. definition
parametric variation
1. is a property that is possible by UG, but prohibited in a particular language
2. in a language where it is prohibited, grammar rebels against its violation (systematic, not accidental gap).
3. needs to be acquired based on language-specific input.
b. it occurs everywhere:
1. in lexica
2. in all types of computation (morpho-syntactic, stress & syllable, also melodic)
3. phonetics

(27) broader debate
a. Hauser *et al.*¥ (2002)
biolinguistic scenario of the genesis of language
1. FLN (Faculty of Language in the Narrow sense)
- absent in animal capacities, no development possible on these grounds
==> only morpho-syntax (Merge & Phase)
2. FLB (Faculty of Language in the Broad sense)
- present in animal capacities, the human version is a development on these grounds
==> phonology, phonetics, semantics
b. quarrel with Pinker-Jackendoff
around the question whether the emergence of language follows the regular selectional-adaptive scenario or was accidental, i.e. non-adaptive.
Pinker & Jackendoff¥ (2005a,b), Fitch *et al.*¥ (2005)
c. a central point made by Pinker & Jackendoff
is that phonology is just as grammaticy as morpho-syntax.

d. do animals
   - have stress?
   - have syllable structure?
   - have parametric variation?
   - have a reaction against ill-formedness (language-specific or universal)?

e. can all these properties have developed on the grounds of animal capacities?

References

Anderson, Stephen 1981. Why phonology Isn't "Natural". Linguistic Inquiry 12: 493-539.

Bach, Emmon & R. T. Harms 1972. How do languages get crazy rules? Linguistic change and generative theory, edited by Robert Stockwell & Ronald Macaulay, 1-21. Bloomington: Indiana University Press.

Baudouin de Courtenay, Jan Niecisław 1895. Versuch einer Theorie phonetischer alternationen. Ein Capitel aus der Psychophonetik. Straßburg: Trübner.

Bermúdez-Otero, Ricardo 2006. Phonological change in Optimality Theory. Encyclopedia of language and linguistics, 2nd edition, vol.9, edited by Keith Brown, 497-505. Oxford: Elsevier.

Bermúdez-Otero, Ricardo 2007. Diachronic phonology. The Cambridge Handbook of Phonology, edited by Paul de Lacy, 497-518. Cambridge: CUP.

Bermúdez-Otero, Ricardo 2014. Amphichronic explanation and the life cycle of phonological processes. The Oxford handbook of historical phonology, edited by Patrick Honeybone & Joseph C. Salmons. Oxford: OUP.

Bermúdez-Otero, Ricardo & Kersti Börjars 2006. Markedness in phonology and in syntax: the problem of grounding. Lingua 116: 710-756.

Boersma, Paul 1998. Functional Phonology. Formalizing the interactions between articulatory and perceptual drives. The Hague: Holland Academic Graphics.

Bolognesi, Roberto 1998. The phonology of Campidanian Sardinian. Dordrecht: HIL.

Buckley, Eugene 2000. On the naturalness of unnatural rules. UCSB Working Papers in Linguistics 9.

Buckley, Eugene 2003. Children's unnatural phonology. Proceedings of the Berkeley Linguistics Society 29: 523-534.

Buckley, Eugene 2004. The origin of a crazy rule: [du] in the Southern Pomoan Group. Paper presented at the Annual Meeting of The Society for the Study of the Indigenous Languages of the Americas (SSILA), Boston. Handout available at http://www.ling.upenn.edu/~gene/cv.html.

Contini, Michele 1987. Etude de géographie phonétique et de phonétique instrumentale du sarde. 2 vols. Alessandria: dell'Orso.

Dressler, Wolfgang 1981. External evidence for an abstract analysis of the German velar nasal. Phonology in the 1980's, edited by Didier Goyvaerts, 445-467. Ghent: Story-Scientia.

Fitch, Tecumseh, Marc Hauser & Noam Chomsky 2005. The evolution of the language faculty: Clarifications and implications. Cognition 97: 179-210.

Gussmann, Edmund 1998. Domains, relations, and the English agma. Structure and Interpretation. Studies in Phonology, edited by Eugeniusz Cyran, 101-126. Lublin: Folium. WEB.

Hale, Mark & Charles Reiss 2000. Substance Abuse and Dysfunctionalism: Current Trends in Phonology. Linguistic Inquiry 31: 157-169.

Hale, Mark & Charles Reiss 2008. The Phonological Enterprise. Oxford: OUP.

Hamann, Silke 2011. The Phonetics-Phonology Interface. The Continuum Companion to Phonology, edited by Nancy Kula, Bert Botma & Kuniya Nasukawa, 202-224. London: Continuum.

Hamann, Silke 2014. Phonetics-phonology mismatches. Paper presented at Old World Conference in Phonology, Leiden 22-25 January.

Hammond, Michael 1997. Vowel Quantity and Syllabification in English. Language 73: 1-17.

Harnad, Stevan 2003. Categorical Perception. Encyclopedia of Cognitive Science, edited by Lynn Nadel. Chichester: Wiley.

Harnad, Stevan (ed.) 1987. Categorical Perception. The Groundwork of Cognition. Cambridge: CUP.

Hauser, Marc, Noam Chomsky & Tecumseh Fitch 2002. The faculty of language: what is it, who has it, and how did it evolve ? Science 298: 1569-1579.

Hyman, Larry 2001. The Limits of Phonetic Determinism in Phonology. *NC revisited. The Role of Speech Perception in Phonology, edited by Elizabeth Hume & Keith Johnson, 141-185. New York: Academic Press.

Pinker, Steven & Ray Jackendoff 2005. The faculty of language: what's special about it ? Cognition 95: 201-236.

Pinker, Steven & Ray Jackendoff 2005. The nature of the language faculty and its implications for the evolution of language (Reply to Fitch, Hauser and Chomsky). Cognition 97: 211-225.

Scheer, Tobias 2011. A Guide to Morphosyntax-Phonology Interface Theories. How Extra-Phonological Information is Treated in Phonology since Trubetzkoy's Grenzsignale. Berlin: Mouton de Gruyter.

Scheer, Tobias 2012. Direct Interface and One-Channel Translation. A Non-Diacritic Theory of the Morphosyntax-Phonology Interface. Vol.2 of A Lateral Theory of phonology. Berlin: de Gruyter.

Scheer, Tobias 2015. How diachronic is synchronic grammar? Crazy rules, regularity and naturalness. The Handbook of Historical Phonology, edited by Patrick Honeybone & Joseph C. Salmons, 313-336. Oxford: OUP.

Scheer, Tobias 2016. Melody-free syntax and phonologically conditioned allomorphy. Morphology 26: 341-378.

Vennemann, Theo 1972. Rule inversion. Lingua 29: 209-242.

Vennemann, Theo 1972. Sound change and markedness theory: On the history of the German consonant system. Linguistic change and generative theory. Essays from the UCLA Conference on historical linguistics in the perspective of transformational theory (1969), edited by R.P. Stockwell & R.K.S. Macaulay, 230-274. Bloomington: Indiana Univ. Press.

Yu, Alan C. L. 2007. A Natural History of Infixation. Oxford: OUP.