If a language has more than one rule (and they all do), the rules have to find a way to get along. It’s usually assumed that they apply one by one in an order, but we can imagine other scenarios.¹

1. **Simultaneous application** of rules is one other possibility
   - Suppose we have the following two rules:
     - **Labialization**: [−labial] → [+round] / u __ V
     - **Harmony**: u → i / i C₀ __
   - What happens to the underlying forms below if each rule just finds any segments in the underlying form to which it can apply and performs the structural change?
     - /dalbuge/
     - /dibumpo/
     - /griluda/

2. **Convergent simultaneous application** of rules is another possibility
   - What happens to the same underlying forms if each of the rules above freely applies and re-applies until the structural change it makes becomes vacuous (= until *convergence*)?
     - /dalbuge/
     - /dibumpo/
     - /griluda/

3. **Ordered rules**
   - If rules apply instead one by one (in *ordered* fashion), so that one rule’s output is the next rule’s input, there are two possible outcomes with the same two rules given above.

<table>
<thead>
<tr>
<th>/dalbuge/</th>
<th>/dibumpo/</th>
<th>/griluda/</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
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<tr>
<td>H</td>
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</tbody>
</table>

   - This isn’t always the case, however: two rules must crucially *interact* in some way for each ordering to have a distinct effect on the outcome. (Recall that this is also true of constraints and ranking; the results are different, but the basic concepts are the same.)

4. **Intrinsic vs. extrinsic ordering**
   - Can we tell just from looking at a set of rules what order they should apply in? There have been proposals to do just that — to impose an *intrinsic* rule ordering, determined by properties of the rules themselves (or in tandem with the underlying representations).
   - But if each language can order the rules any way it likes (though perhaps within some constrained limits), rule ordering is (relatively) *extrinsic*.
   - Ideally, what we need are languages or dialects that form a (near-)minimal pair for the ordering of two rules. This is harder than it seems, however: there are one or two well-worn examples out there, but there’s always the nagging possibility that the differences between the two languages/dialects can be accounted for via different rules and/or URs.

¹ Or you can let K&K, Ch. 8 imagine them for you: ‘simultaneous application’ is what they call ‘the Direct Mapping Hypothesis’ (pp. 291-307), and ‘convergent simultaneous application’ is what they call ‘the Free Reapplication Hypothesis’ (pp. 307-313).
Types of pairwise rule interaction

5. **Feeding:** Rule1 feeds Rule2 if R2 is applicable to some form only because the form has undergone Rule1. (Informally, Rule1 creates a suitable input for Rule2.)
   a. Can you remember an example from the Russian data discussed in K&K, Ch. 3?
   b. **Example:** Guinaang Kalinga\(^2\) (*Ethnologue*: dialect of Lubuagan Kalinga, Austronesian language from the Philippines with 12,000-15,000 speakers). Assume there are lots of examples like (i), where the first stem vowel is not an unstressed [o].
      
      i. dábo (hypothetical) → dinábo (hypothetical)
      ii. dopá ‘fathom’ → dimpána ‘he measured by fathom’
      iii. gobá ‘firing (pots)’ → gimbána ‘she fired’
      iv. ?omós ‘bath’ → ?immósna ‘she bathed’
      v. botá? ‘broken piece’ → bintá?na ‘she broke’
      vi. ?odáw ‘requesting’ → ?indáwna ‘he requested’
      vii. bosát ‘sudden break’ → binsátna ‘he snapped’
      viii. ponú ‘filling’ → pinnúna ‘she filled’
      ix. to?óp ‘satisfaction’ → tin?ópna ‘he satisfied’
      x. sogób ‘burning’ → singóbna ‘he burned’
      xi. donjól ‘report’ → diŋjólna ‘he heard’

      • Account for the different allomorphs of the infix /-in-/. Derive [dimpána].

      • Can we accomplish feeding with simultaneous application? What about convergent simultaneous application? (Try [dimpána] again.)

6. **Bleeding:** Rule1 bleeds Rule2 if Rule2 is *not* applicable to some form because the form has undergone Rule1. (Informally, Rule1 *destroys* a suitable input for Rule 2.)
   a. Can you remember an example from the Russian data discussed in K&K, Ch. 3?
   b. Recall Epenthesis > Assimilation in English/Lithuanian. Can this be achieved with simultaneous application? What about convergent simultaneous application?

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Transparent vs. opaque interactions

7. In simple cases, feeding and bleeding interactions are called *transparent*, because, if we think of the two rules in declarative rather than procedural terms, (i) they are both “satisfied” in the resulting form, and (ii) this is achieved without any “superfluous” changes.
   a. In Guinaang Kalinga, both “no unstressed [o] in the context VC\_CV” and “nasals must have the same place of articulation as a following C” are satisfied by [dimpána].
   b. In Lithuanian, both “adjacent obstruents must agree in voicing” and “don’t have adjacent near-identical Cs” are satisfied by [api\-b’er\ti], and there’s no need to have *[ab’i-b’er\ti]*.
   c. In *opaque* interactions, on the other hand, either one of the rules is not “satisfied” or one of them applies (or at least appears to apply) “superfluously” (= in the wrong context).

8. **Counterfeeding.** R2 counterfeeds R1 if R2 could feed R1, but R1 > R2 so R1 doesn’t get to apply. Often, you know that \( A \rightarrow B / X\_Y \) has been counterfed if there exist surface \( XAY \)s.
   • Reverse the order of the rules in the feeding interactions in 5a and/or 5b above.

   • Can counterfeeding be achieved with (convergent) simultaneous application?

9. **Counterbleeding.** R2 counterbleeds R1 if R2 could bleed R1, but R1 > R2 so R1 still gets to apply. Often, you know that \( A \rightarrow B / X\_Y \) has been counterbled if there exist surface Bs derived by the rule that aren’t in the context \( X\_Y \) — this is how the change is “superfluous”.
   • Can you remember an example from the Russian data discussed in K&K, Ch. 3? Alternatively, reverse the order of the rules in the bleeding interactions in 6a and/or 6b above.

   • Can counterbleeding be achieved with (convergent) simultaneous application?