a succinct list of the rules (i.e., less wordy than what we have in the LaitzRules document) in the order in which they are implemented and a description of the technical process (how it was coded and which humdrum functions you used).

I used two separate scripts:

1. functionfinder.sh
   1. Collection of awk pattern matching commands, meant to extract the functions from the list of rules that we came up with.
   2. These looked up a specific pattern, and used the **humdrum** pattern tool. Specifically pattern –f, which returns the line range of the pattern found. Then these line ranges were stored in a variable, and the appropriate substitution was made for all lines within that range.
2. phraseModel.sh
   1. Similar collection of pattern matching commands, but specifically looked for things that didn’t conform to the phrase model.

**Function Finder**

1. First, the script ascribes chords with a blanket function. All I chords are given Tonic, all ii and IV chords are P, and all V and vii chords are labeled as D.
2. The second rule implements rule number 1 of our list. It looks for

**4.1 Details of the Rules**

A list of rules was derived from the Laitz text, and was implemented individually over each file using the **pattern** tool from the Humdrum Toolkit (Huron, 1995). The rules, which can be seen in Table 1, were implemented in order, beginning with basic substitutions, and moving to more intricate examples and exceptional cases. Of the twenty rules, three focused specifically on “I” chords (Rules 1–3), four on “ii” or “IV” chords (Rules 4–7), two on “iii” or “III” chords (Rules 8–9), seven on “V” or “viio” chords (Rules 10–16), and two focused on “vi” chords (Rules 17–18). One additional rule (Rule 19) pertained to augmented sixth chords, while a final rule (Rule 20) focused on functions of pedal, passing, and arpeggiated chords in second inversion. Of these twenty rules, eight of them referred to ascription of Tonic function (Rules 1, 5, 6, 8, 11, 14, 15, and 17), seven to Dominant function (2, 7, 10, 12, 13, 16, and 18), and four to Predominant function (Rules, 3, 4, 9, and 19). One rule (Rule 20) did not ascribe a specific function, but ensured a continuation of previous functions.

**4.2 Enforcing the Phrase Model**

Each file was then run through a second set of rules, which ensured that the implementation of the phrase model was consistent. This script went through four stages to ensure that the higher-level function assignments were maintained. Firstly, all instances in which D was followed by PD were smoothed. For example, any instances which would have not followed the trajectory of a standard musical phrase (such as T-P-D-PD-D-T) were corrected to be consistent with Laitz’s model (T-P-D-D-D-T). Secondly, PD labels were expanded (for example, P-T-P and P-D-P were labeled as elaborations of P). This was followed by a function that ensured that lower-level phrases that were not likely a part of the phrase model were smoothed (for example, T-D-T-P became an elaboration of T). A final rule ensured that, upon the arrival of a Dominant, it was maintained until a prominent tonic function occurred. The inclusion of both scripts also allowed for a comparison between the accuracy of files when run through the phrase-model enforced script and when run without it.

Table 2: The Enforcement of the Phrase-Model.

|  |  |
| --- | --- |
| Rule | Phrase Model Rule |
| PM.1 | All instances in which Dominant was followed by PD were smoothed (T-P-D-P-D-T became T-P-D-D-T). |
| PM.2 | Predominant labels were expanded (P-T-P and P-D-P phrases were labeled as elaborations of P). |
| PM.3 | Lower-level phrases not a part of the phrase model were smoothed (T-D-T-P became an elaboration of T). |
| PM.4 | Dominant labels were elaborated until I chords were present. |

Table 1. Function Rules. Note that these rules were executed in the order listed.

|  |  |
| --- | --- |
| **Rule Number** | **I/i Chords** |
| 1 | Opening and closing “I” chords are labeled as “T”. |
| 2 | When “I” chords in second inversion followed by a V chord, both chords are cadential, and both chords are ascribed dominant function (D). |
| 3 | When I6 chords occur between a IV and a IV6, they are all labeled as a “PD” expansion. |
|  | **ii/IV Chords** |
| 4 | By default, ii and IV chords, and their altered versions (which are likely the result of modal mixture) are labeled “PD”. |
| 5 | If either a IV or a ii65 both succeeds and precedes a I chord, it should plagal motion, and is labeled “T”. |
| 6 | When IV6 chords occur between a I and a I6, all events are labeled as “T”. |
| 7 | When IV6 chords occur between a V and a V6, all events are labeled as “D”. |
|  | **iii/III Chords** |
| 8 | By default, the iii chord is labeled as “T”. |
| 9 | bIII is labeled as “PD”. |
|  | **V/viio7** |
| 10 | By default, all V and vii chords are labeled as “D”. |
| 11 | When preceded by a I and followed by a I chord (in either root position or first inversion), V6 and viio6 are treated as expansions of the Tonic, and all instances are labeled as “T”. |
| 12 | Root position V7 chords are labeled a “D”. |
| 13 | Passing diminished chords are labeled as “D”. |
| 14 | Tonic-Dominant-Tonic progressions are labeled as “T” |
| 15 | Both viio65, viio43, V42, and V43 chords are most often passing chords between i and i6 and are labeled as “T”. |
| 16 | viio42 chords often serve as neighbors for V7 chord, so are labeled as “D”. |
|  | **vi chords** |
| 17 | vi chords are labeled as “T” by default. |
| 18 | If vii precedes and is followed by a V chord, it is labeled as “D”. |
|  | **Augmented sixth chords** |
| 19 | All augmented sixth chords are labeled “PD”. |
|  | **Pedals, Passing, and Arpeggiating** |
| 20 | Second inversion chords that are a part of a pedal, a passing, or an arpeggiating harmony assume the function of the previous sonority. |

Each file was then run through a second script, which ensured that the implementation of the phrase model was consistent. For example, any instances that would have not followed the trajectory of a standard musical phrase (such as T-P-D-PD-D-T) were corrected to be consistent with Laitz’s model (T-P-D-D-D-T).

|  |  |
| --- | --- |
| Musical Event | Suggested Function |
| Opening and closing “I” chords | Tonic |
| “I” Chord in first inversion, followed by a “V” chord | Dominant (both events) |
| IV-I6-IV6 | Predominant (all events) |
| Pedal, passing, or arpeggiating 64 chords | Treated as extension of the harmonic function of the previous chord. |
| “ii” and “IV” chords | Assumed to be Predominant |
| Altered “ii” and “IV” chords (modal mixture) | Retain function as Predominant |
| “IV” or a “ii65” that both succeeds and precedes a I chord | Tonic (all events) |
| I-IV6-I6 | Tonic (all events) |
| V-IV6-I6 | Dominant (all events) |
| Iii | Tonic |
| bIII (in Major) | Predominant |
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