The “genetic code” of melody: Cognitive structures generated by the implication-realization model

Process

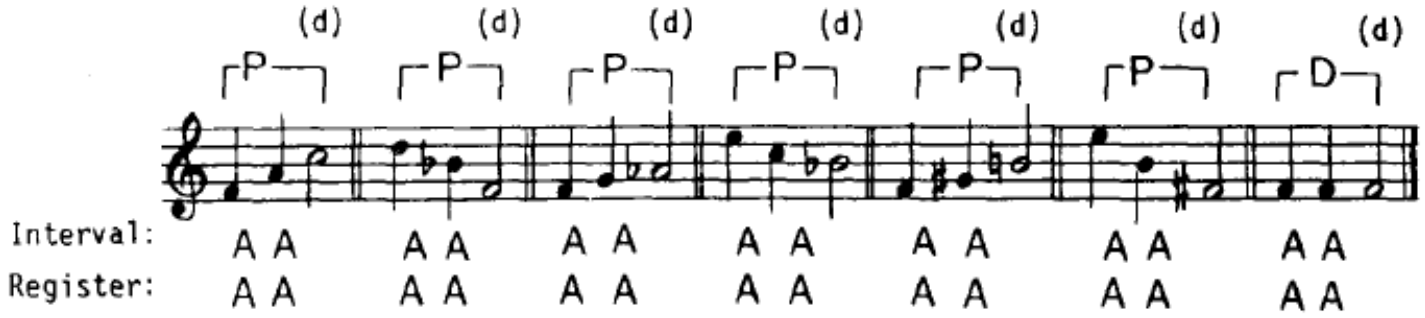


Figure 3

I call such patterns where both intervallic similarity and registral continuation of ascent or descent are realized **registral-intervallic processes (or simply *processes*)**

P:方向相同（上升或下降）

Process

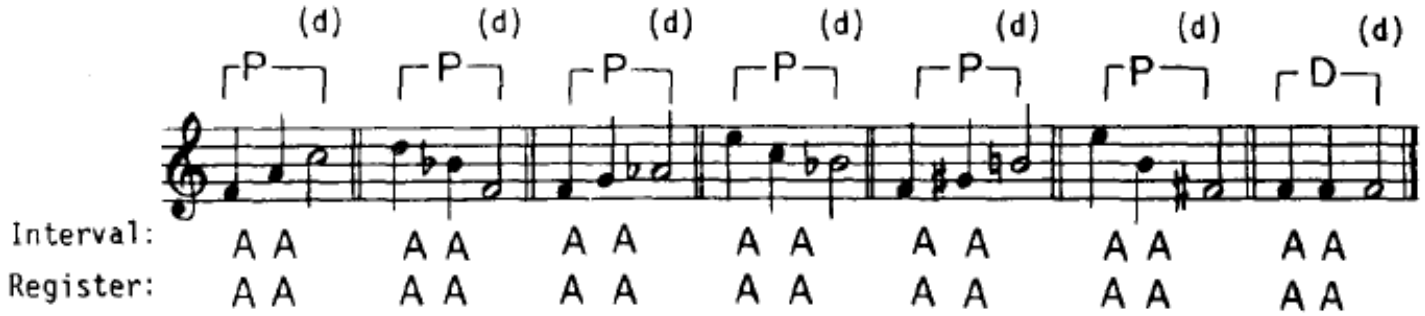


Figure 3

A corollary to process is iteration or **duplication**, symbolized by the letter D within the bracket; unlike all other patterns, duplication always implies interval (a unison), registral direction (lateral), and specific pitch (e.g., C-C-C).

D:三个音都相同

Process

Partial Denial

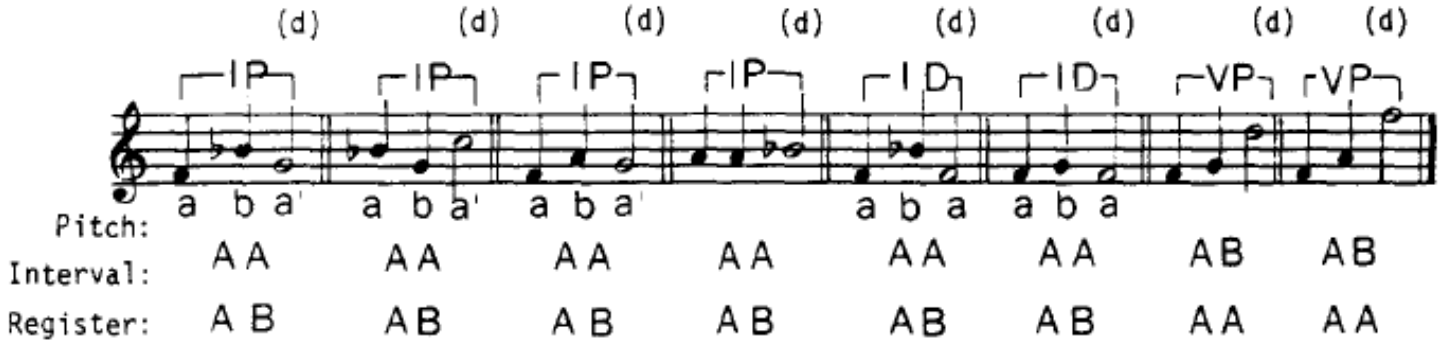


Figure 4

I call such patterns I call such partially realized patterns of similar intervals **intervallic processes** and symbolize them with the letters IP (note how the unison figures into this in the third example). IP:音程几乎不变 语域方向变化

Similarly, I call partially realized patterns where registrally zigzagging intervals are exactly the same **intervallic duplications** (ID). ID:第一个音与第三相同 与二不同

Process

Partial Denial

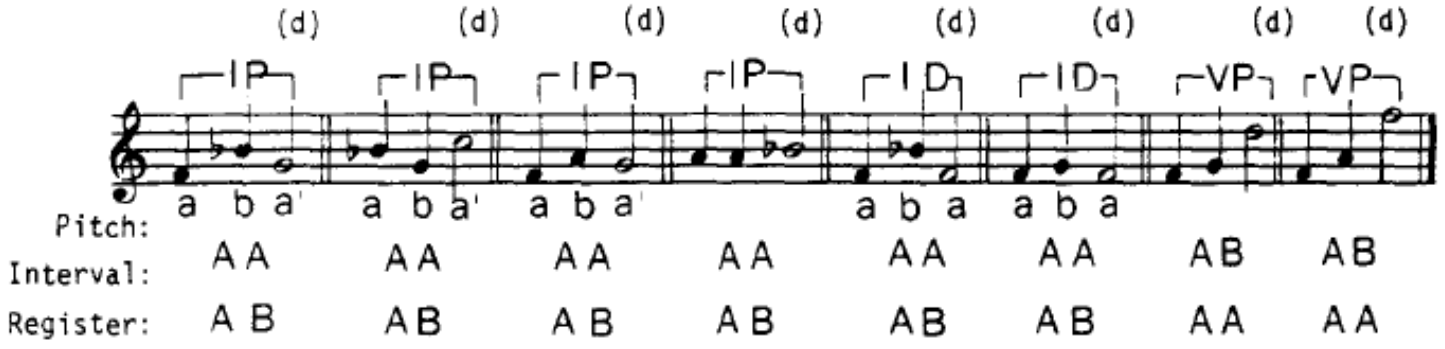


Figure 4

Partial realizations of this type- where initially implied registral direction is continued but intervallic differentiation(A+B) occurs instead of intervallic similarity (A+A) - I call **registral processes** (mnemonic: V=vector=registral direction).

VP：语域方向不变 第二音程相比较第一音程更大（大于人们心理预期范围）

Implication of reversal

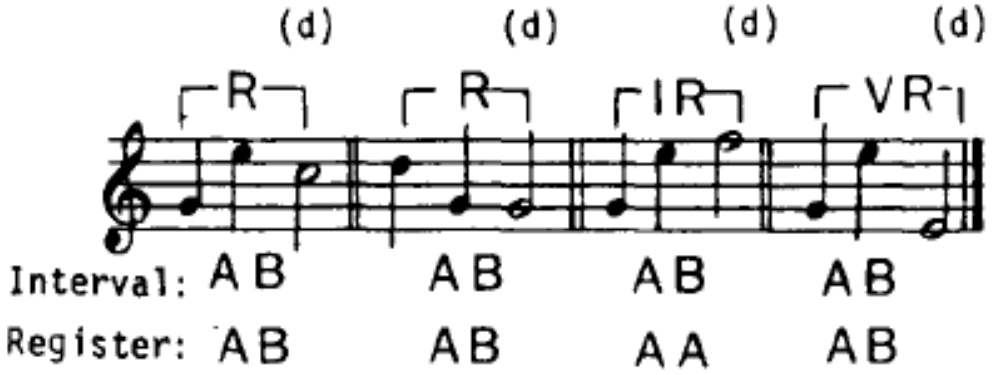


Figure 5

Some patterns within the parameter of melody are capable of creating closure in and of themselves (though usually assisted by (d), (h), and (b)). One such type is intervallic-registral reversal or simply **reversal,** when a listener hears a large interval (P5 or greater), he expects, all other things being equal, a change in registral direction (A+B) and a differentiation of interval

R：人们假设听到了一个大的音程之后 在语域和音程都发生变化

Implication of reversal

Partial Denial of reversal (IR,VR)

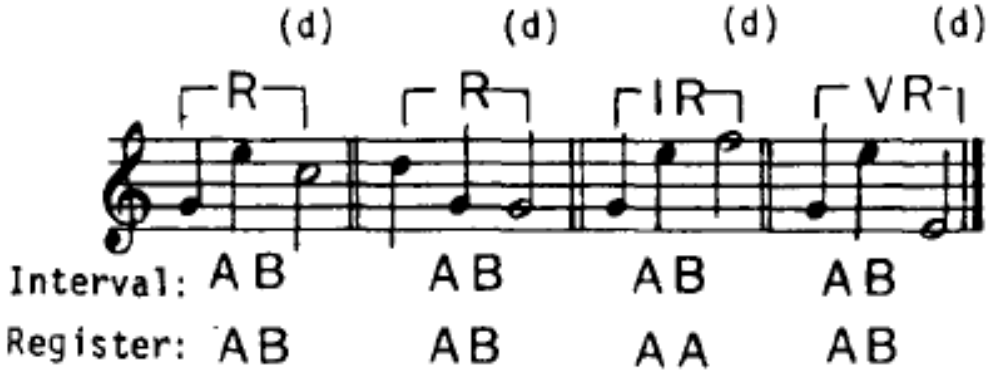
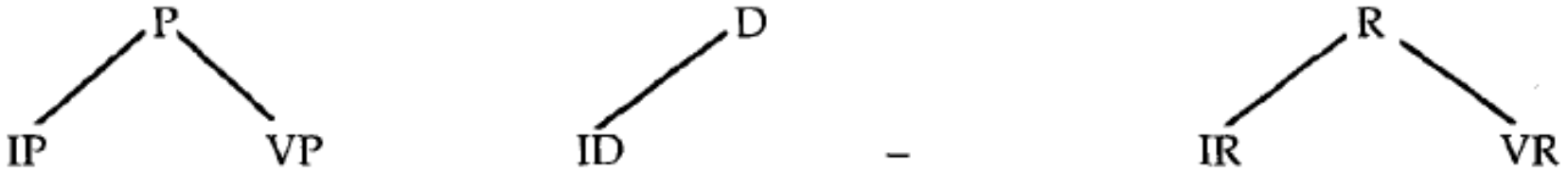


Figure 5

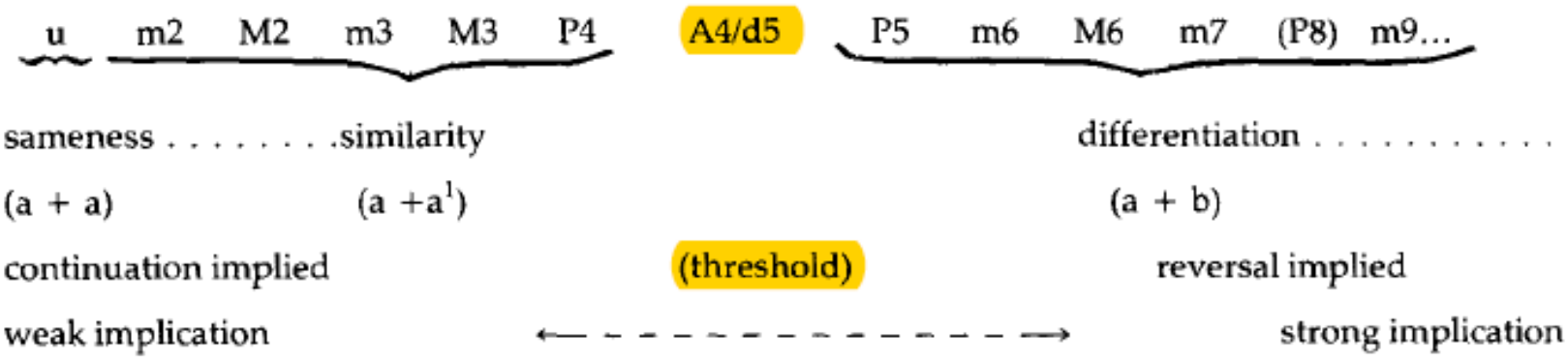
The intervallic implication of reversal (that a small interval is to follow a large leap) can be realized, while registral implication (that direction is to reverse) can be denied. I call such partially realized patterns ***intervallic reversal***. IR：相比R 只是方向发生了变化即同向

Conversely, given a large initial leap, registral implication can be realized while intervallic implication is denied. This pattern I call ***registral reversal***。VR: 由一个较大的音程到一个更大的音程

The hypothesized parametric scale



(P=process; IP=intervallic process; VP=registral process; D=duplication [iteration]; ID=intervallic duplication [intervallic iteration]; R=reversal; IR=intervallic reversal; VF=registral reversal)



Retrospective realizations (complete denials)

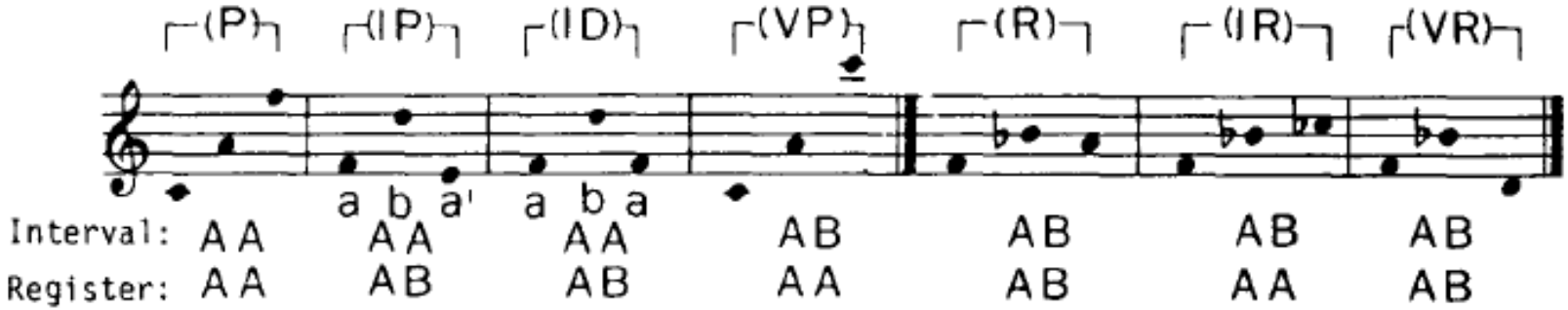


Figure 6

It so happens that even if the pitch, interval, and registral direction implied by large intervals is denied, **large intervals nevertheless can retrospectively come to be heard either as processes (P), intervallic processes (IP), or registral processes (VP)**. And it so happens that even if the aspects of pitch, interval, and registral direction implied by small intervals are denied**, small intervals may still retrospectively come to be heard either as reversals (R), intervallic reversals (IR), or registral reversals (VR) even though none of these realizations was originally implied.**

The ‘genetic code'

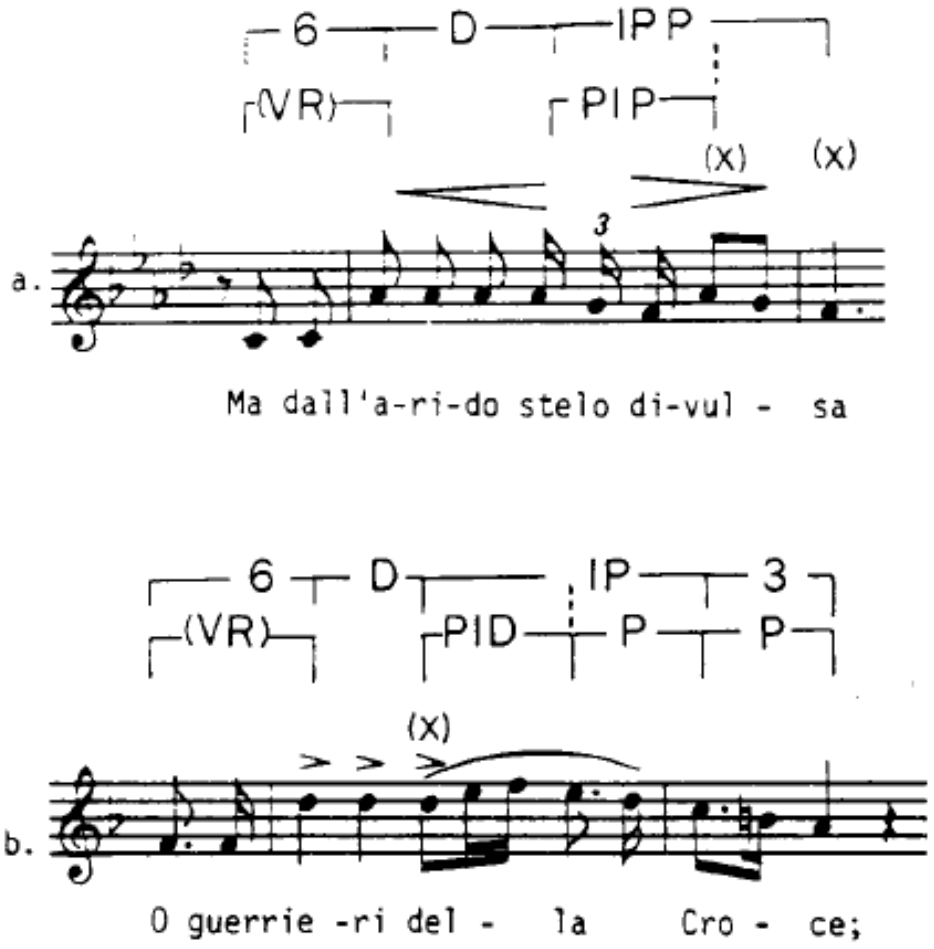
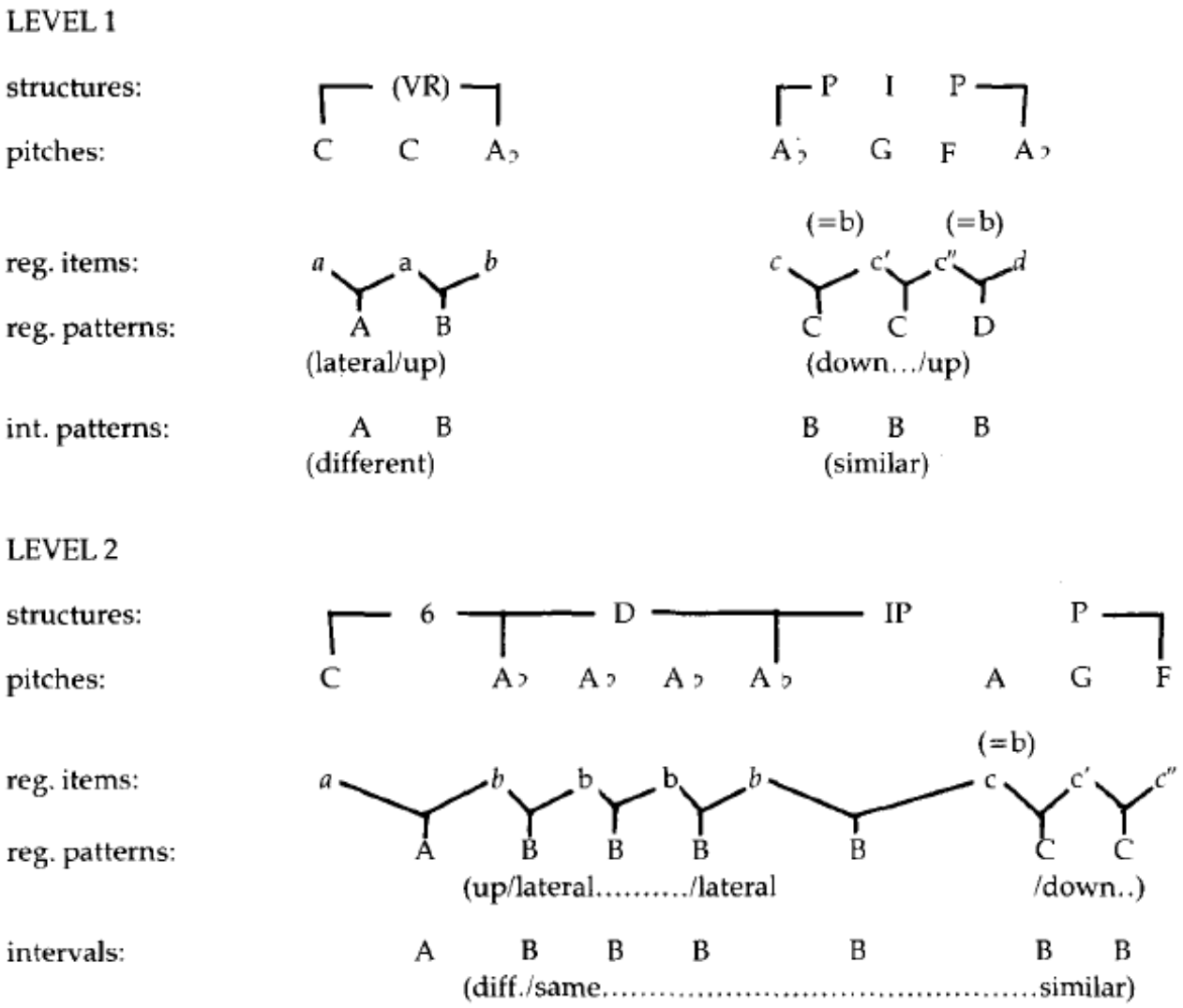


Figure 10 Verdi, *Un Ballo in Maschera*, Act II, sc. 1; *I Lombardi*, Act IV, sc. 2.

Encoding


LEVEL 1
structures:
(VR)
P I P
pitches:
C C A♭
A♭ G F A♭
(=b) (=b)
reg. items:
a a b
c c′ c″ d
reg. patterns:
A B
C C D
(lateral/up)
(down…/up)
int. patterns:
A B
B B B
(different)
(similar)
LEVEL 2
structures:
6 D IP
P
pitches:
C A♭ A♭ A♭ A♭
A G F
(=b)
reg. items:
a b b b b
c c′ c″
reg. patterns:
A B B B B
C C
(up/lateral……/lateral
/down..)
intervals:
A B B B B B B
(diff./same……similar)