1. Introduction

Since Clements (1985), the theory of Feature Geometry has been of great interest to phonologists, and much progress has been made by many researchers (cf. Sagey (1986a), Avery and Rice (1989), Lombardi (1991), etc.). The enterprise of the theory is to make explicit the internal structure of linguistic sounds, which is considered to underlie all human languages universally. The advantage of organizing the features into such a hierarchical structure is that it can easily capture the following facts, and give a clear explanation for them; (i) when an assimilatory procedure takes place, several features are affected together; (ii) a certain feature is relevant only when another feature is present, e.g. [anterior] only in the presence of [coronal]; and so on. In the former case, the relevant features are regarded as belonging to the same ‘node’ of the hierarchy, and in the latter, [anterior] as ‘dependent’ on [coronal].

The book Stricture in Feature Geometry (henceforth SFG), a revision
of Padgett's Umass thesis, is one specific model for a feature geometry. It is unique in that it focuses especially on stricture features; i.e. [continuant], [approximant], and [consonantal]. He claims that these features are dependent on place features, contrary to the prevalent assumption in this field that they are directly associated to the root. We will briefly review his analysis in the following section.

In this paper, I will argue for his theory, presenting further evidence to support it (section 2.2). The new evidence comes from English suffixation. I show that suffixes are sensitive to the structure of the base-final consonant sequence. Further in section 3, we will take a brief look at the way how, with the advent of Optimality Theory, Padgett himself has modified his own theory. Section 4 concludes the paper.

2. Stricture under Place Features

2.1. Summary of SFG

As was mentioned in the previous section, it has been assumed in phonological theory that each segment has its own structure, which is designed according to a unique, universal hierarchy of distinctive features. A number of competing proposals have been made for such a hierarchy, but one widely adopted view can be summarized in a somewhat simplified manner as in (1), a hierarchy proposed by McCarthy (1988) and given by Padgett as a representative of the standard view:

\[
(1) \quad \begin{array}{c}
\text{son} \\
\text{cons}
\end{array} \\
\text{Laryngeal} \\
\text{Place} \\
\text{Labial} \quad \text{Coronal} \quad \text{Dorsal}
\]

\[
\text{[nas]} \quad \text{[cont]}
\]

Although proposals may vary in their detail, the placement of stricture features, i.e. [continuant], [approximant], and [consonantal], which is the focus of SFG, is essentially the same; they are located directly under the root node.

In SFG, on the other hand, Padgett proposes a quite different struc-
ture. Observe the following:

(2)

As can be seen in (2), he argues that [continuant] should be located under each of the articulator nodes, and [approximant] and [consonantal] form ‘bundles’ with those articulator nodes; that is, these three stricture features, together with the articulator nodes, are assumed to constitute the ‘articulator groups.’

To justify his proposal of feature geometry in (2), he gives various facts from several languages; nasal and non-nasal assimilation, the structure of complex segments, OCP (Obligatory Contour Principle) effects on morpheme structure, and so on. See the following observations he makes on these issues:

(3) a. In many languages, nasal consonants assimilate in place to a following stop; but they typically avoid assimilating to a fricative, liquid or glide. Further, where they assimilate to these continuants, they always assimilate to stops.

b. When non-nasal consonants assimilate in place, [continuant] is assimilated as well (for the clear cases I (= Padgett; HZ) am aware of).

c. It is well known that some languages restrict the cooccurrence of consonants of similar place of articulation within roots (or some other domain). It is less well known that consonants that differ in [sonorant], [consonantal], [approximant] or [continuant] values can be systematic exceptions to such restrictions.

(SFG: 1)

We will briefly review his argument for justification, focusing particularly on the feature [cont] because his argument for it is most interesting and convincing.

The first observation, (3a), may be instantiated by a well-known pro-
cess of nasal assimilation in English involving the Level 1 prefixes *in- and *con-.

Consider the following words:

\[
\begin{align*}
(4) & \quad \text{a. impale} & \quad *\text{impale} & \quad \text{b. infallible} & \quad *\text{infallible} \\
& \quad \text{impossible} & \quad *\text{impossible} & \quad \text{infamous} & \quad *\text{imfamous} \\
& \quad \text{impenitent} & \quad *\text{impenitent} & \quad \text{infinitive} & \quad *\text{imfinite} \\
& \quad \text{implicit} & \quad *\text{implicit} & \quad \text{invariable} & \quad *\text{invariable} \\
& \quad \text{imbue} & \quad *\text{imbue} & \quad \text{involuntary} & \quad *\text{involuntary} \\
(5) & \quad \text{a. complacent} & \quad *\text{conplacent} & \quad \text{b. confess} & \quad *\text{comfess} \\
& \quad \text{composit} & \quad *\text{composit} & \quad \text{confederacy} & \quad *\text{comfederacy} \\
& \quad \text{compassion} & \quad *\text{conpassion} & \quad \text{confirm} & \quad *\text{comfirm} \\
& \quad \text{combust} & \quad *\text{conbust} & \quad \text{convert} & \quad *\text{comvert} \\
& \quad \text{combine} & \quad *\text{conbine} & \quad \text{convoke} & \quad *\text{comvoke}
\end{align*}
\]

Obviously, the nasal in the prefixes assimilates in place to the first segment of the base, unless the latter segment is a continuant. In the ‘standard’ theory, it is necessary to stipulate that the feature [−cont] ‘triggers’ the nasal assimilation:

\[
(6) \quad \text{Root} \quad \text{Root} \\
\hspace{1cm} [+\text{nas}] \quad \text{Place} \quad [−\text{cont}]
\]

Otherwise, it would be impossible to account for the difference in application between (a) and (b) of (4) and (5). However, one of the problems with such an explanation is that “we might just as well stipulate a [+cont] trigger, though such a rule is unattested” (SFG: 28).

In Padgett’s theory, on the other hand, the difference in question can easily be accounted for. Suppose that nasal assimilation had applied to a nasal preceding a [+cont] segment:

\[
(7) \quad \text{Root} \quad \text{Root} \\
\hspace{1cm} [+\text{nas}] \quad \text{Place} \quad [+\text{cont}]
\]

Then, the result would have been a nasal continuant, a type of segment which is not observed cross-linguistically. Thus, such a process is

---

1 As is widely known, the Level 2 prefix *un- exhibits no such assimilatory behavior, and thus is irrelevant to the present discussion.
avoided, and the nasal remains /n/ before fricatives. In this way, Padgett’s geometry gives a clear and simple account of the phenomenon at issue.

As for instances where a nasal does seem to assimilate in place to a following fricative, which might provide a basis for the standard theory, he gives several explanations for them. First, they should be more properly viewed as phonetic processes to which structure preservation is irrelevant. Second, such cases often involve a hardening process, by which the original fricative becomes an affricate containing both [-cont] and [+cont]. It is not clear to me whether such explanations are really adequate. However, given that seeming counterexamples are rare, it would not be unreasonable for us to maintain Padgett’s analysis.

As an example of the second observation, (3b), he takes liquid assimilation in Havana Spanish. In this language, the liquids r and l assimilate to a following [+consonantal] segment in all features but [voice]; e.g. ser pobre [bp] ‘to be poor.’ This process can be expressed in Padgett’s theory as in (8):

\[
\begin{array}{c|c}
\text{Root} & \text{Root} \\
\hline
\text{Place} & \text{Place} \\
\hline
[+\text{approx}] & [-\text{approx}] \\
\hline
[-\text{cont}] & [-\text{cont}] \\
\end{array}
\]

This structure easily captures the fact that [-cont], as well as [-approx], spreads in tandem with the articulator node. Again, the standard geometry fails to explain this fact because [-cont] and [-approx] are assumed to be independent of the articulator nodes.

The third observation, (3c), concerns the effect of the OCP on the cooccurrence of segments within a root. What is meant in (3c) is that when identical segments are avoided within a root, the identity is computed not only by the articulator nodes, but also by some of the stricture features. In Semitic, for example, coronal segments are considered to be identical when they have the same value on [son] and [cont] as well. In the standard theory, it is not clear why these features, and not others, are involved in the computation. In Padgett’s theory, on the other hand, it is reasonable; all the features on a path
from the Root, [son], to an articulator-dependent feature, [cont], are computed.

Though not mentioned in (3), Padgett’s observations on the structure of complex segments offer part of the evidence for his theory. In particular, his theory can do away with the device called ‘pointer,’ which is posited by Sagey (1986b). Take /ps/ as an example. In the standard theory, a ‘pointer’ is necessary to show which articulator [+cont] refers to:

(9)  
\[ \begin{array}{c} \text{Root} \\ \text{Place} \\ \text{Coronal} \\ \text{Labial} \end{array} \]  

In this structure, the pointer indicates that Coronal, not Labial, is [+cont]; i.e. /s/, not /ʃ/ or /f/. In Padgett’s theory, on the other hand, such a device is unnecessary:

(10)  
\[ \begin{array}{c} \text{Root} \\ \text{Place} \\ \text{Coronal} \\ \text{Labial} \end{array} \]  

Since [cont] is dependent on articulator nodes, it becomes possible to show in a natural and straightforward manner which of the articulator nodes is relevant to the feature.

Although the arguments above may offer strong support for his claim, there still remain some points which are not clear. His argument on the features [cons] and [approximant], for example, is not so strong, because evidence for them is scarcer. Moreover, the placement of these features is not explicit enough; he does not give a clear explanation of why they must be located with the articulator nodes, and not as their dependents like [cont]. Presumably this is because of the absence of substantial evidence for their autosegmental status—in contrast, there are many instances of that assimilatory process in languages by which only continuancy spreads. Nevertheless, it would have been nice to have more evidence for the placement of these features.

Aside from these difficulties, however, the overall discussion on the placement of [cont] is convincing, as we have seen above. In the next
subsection, therefore, I will follow Padgett’s analysis of the placement of [cont], and give further evidence for it.

2.2. Evidence from English Word Formation

Another piece of evidence for Padgett's placement of [cont] comes from the facts pertaining to the affixation of the English adjectival suffixes -ory, -ive, and -al. In Zamma (1994a), it was proposed that suffixes have their own specification as to what kind of base they attach to, based on a proposal by Fabb (1988). In particular, I proposed that the suffixes above have the following lexical specifications, respectively.

(11) a. -ory and -ive attach to bases which end with a voiceless coronal obstruent (i.e. /s/ and /t/).
b. -al does not attach to bases which end with a voiceless coronal obstruent (i.e. /s/ and /t/).

Prior to the ensuing discussion on the central issue, that is, feature geometry, I will show the appropriateness of the proposal. First, we will consider the specification in (11a). The words in (12) are those which conform to the specification; (12a) for -ory and (12b) for -ive, respectively.\(^2\)

(12) a. dismissory (<dismiss), vomitory (<vomit), excretory (<excrete), depository (<deposit), contributory (<contribute)
b. reflexive (<reflex), regressive (<regress), active (<act), effective (<effect), prohibitive (<prohibit), possessive (<possess)

Satisfying the lexical specification, -ory and -ive are attached directly to the bases. However, this is not the case for the words in (13).

(13) a. signatory (<sign), reformatory (<reform), observatory (<observe), declaratory (<declare), inflammatory (<inflame)
b. accusative (<accuse), conservative (<conserve), provocative (<provoke), comparative (<compare), affirmative (<affirm)

\(^2\) Exceptions which do not conform to the specification are as follows:

(i) a. invitatory (<invite), excitatory (<excite), salutatory (<salute)
b. optative (<opt), interpretative (<interpret), limitative (<limit)

In these words, -ate is introduced even though the last consonant of the base is /t/.
In these words, the forms -atory and -ative, not -ory and -ive, are attached to the bases. This is because, I propose, the suffix -ate is brought in to satisfy the requirement in (11a). Note that the last consonant of -ate clearly satisfies it.\(^3\)

Other procedures are taken to satisfy the requirement. Observe the following words:

(14) a. introductory (<introduce)  
   b. subjunctive (<subjoin), subscriptive (<subscribe), introductory (<introduce), perceptive (<perceive)

(15) a. /d/\rightarrow/s/: expand/expansive, decide/decisive, abrade/abrasive\(^4\)  
   b. /z/\rightarrow/s/: abuse/abusive, effuse/effusive  
   c. /r/\rightarrow/s/: cohere/cohesive, adhere/adhesive  
   d. /ʃ/\rightarrow/t/: admonish/admonitory, punish/punitory

In (14), the noun-forming suffix -t, rather than -ate, is introduced to satisfy (11a). In (15), the final consonants of the base undergo segmental changes; i.e. to /s/ or /t/.

-al, on the other hand, can be attached directly to various segments.

(16) verbal (<verb), physical (<physic), economical (<economic), primal (<prime), original (<origin), personal (<person), adjectival (<adjective)

Note that the bases of these words do not violate the specification in (11b). However, when the base does not conform to the restriction, that is, when the base ends with /s/ or /t/, a certain procedure applies. Consider the following:

(17) facial (<face), racial (<race), official (<office), sacrificial (<sacrifice)  
(18) actual (<act), intellectual (<intellect), habitual (<habit), spiritual (<spirit)

\(^3\) It is because -ate has a special status in English morphology and phonology that this suffix is brought in to satisfy the lexical specification. There are two facts which suggest that -ate behaves in a special way. One is shown in the suffixation of -able, in which -ate is deleted when -able is attached to it; e.g. educate/educable. The other is exemplified in the accentuation of the words with -atory/-ative; the suffix refuses to bear primary stress even when it is predicted in the calculation that the stress would fall on the suffix. (For details, see Zamma (1994b).)

\(^4\) On the inappropriateness of the analysis by Chomsky and Halle (1968), who utilize Spirantization to account for this alternation, see Zamma (1994a).
In (17), the form -ial, rather than -al, is attached to the base which ends with /s/.\(^5\) Similarly, the form -ual is attached to /t/-ending bases in (18). This is due to the restriction in (11b) imposed on -al; to satisfy the requirement, the epenthetic vowels are introduced after the base-final /s/ and /t/.\(^6\)

When the base ends with /nt/, however, the situation is different. -ate is introduced in (19), and the epenthetic vowels do not appear in (20), even after the base-final /t/.\(^7\)

(19)  
(a) incantatory (<incant)  
(b) argumentative (<argument), presentative (<present), frequentative (<frequent), augmentative (<augment), alimentative (<aliment)

(20) accidental (<accident), parental (<parent), rental (<rent), segmental (<segment), experimental (<experiment), oriental (<orient)

Because the base argument ends with /t/, a form like *argumentive would be predicted. Contrary to our prediction, -ate is introduced before the suffix. Similarly, even though accident ends with /t/, /u/ is not

\(^5\) Exceptions to vowel epenthesis after /s/ and /t/ are the following:

(i) a. dismissal (<dismiss), glossal (<gloss)  
   b. fatal (<fate), dialectal (<dialect), orbital (<orbit), palatal (<palate), pivotal (<pivot), brutal (<brute)

As for the words in (ia), it is possible to analyze the bases as having underlying geminates /ss/. In that case, however, an asymmetry arises between -al, on the one hand, and -ory and -ive, on the other, because the base final sequence is not regarded as a geminate in the suffixation of the latter; e.g. dismissory/*dissmissatory, dismissive/*dissmissive (see the discussion below).

The exceptions in /t/-ending bases in (ib) seem rather abundant, but my impression is that they do not nullify the analysis in this paper because there is a clear difference between /nt/ and /ns/ in appearance/non-appearance of the epenthetic vowel. See the discussion below.

\(^6\) Although the choice of the epenthetic vowel depends on the final segment of the base, that is, /i/ for /s/ and /u/ for /t/, the reason remains unclear. There are several words which are exceptions with respect to this selection; e.g. sensual (<sense), sexual (<sex) (/u/ is inserted after /s/); partial (<part) (/i/ is inserted after /t/).

\(^7\) In the following exceptional words, -ate is not introduced in (i) and /u/ is inserted in (ii), even though they end with /nt/:

(i) plaintive (<plaint), preventive (<prevent)  
(ii) accentual (<accent), eventual (<event), conventual (<convent)
inserted before -al. It is obvious in the examples above that the sequence /nt/ behaves differently from a single /t/.

When we note that both of the segments in this sequence have the same place feature, i.e. [coronal/anterior], we can guess the reason for this seemingly exceptional behavior. As shown in (21), /nt/ is considered to constitute a linked structure of the place node:

(21) \[
\begin{array}{c}
\text{Root} \\
\text{Place} \\
\text{[+nasal]} \\
\text{Root}
\end{array}
\]

In this structure, /n/ and /t/ share the place node with each other. Recall here the Linking Constraint proposed by Hayes (1986), shown below:

(22) \textbf{Linking Constraint}

Association lines in structural descriptions are interpreted as exhaustive.

Due to this constraint, the base-final /t/ of the words in (19) and (20) with the linked structure in (21) is not regarded as a 'genuine' /t/, which contains a single association line. Therefore, -ate is introduced in (19) and /u/ is not inserted in (20), so as to satisfy the specifications in (11).

Just resorting to the same place feature, however, is not enough for explaining the facts in the relevant suffixation. Consider the cases where the base ends with /ns/, both of which have the same place feature:

(23) a. sensory (<sense), responsory (<response)
   b. offensive (<offense), expensive (<expense), defensive (<defense), recompensive (<recompense), responsive (<response)\textsuperscript{8}

(24) financial (<finance), provincial (<province), essential (<essence), evidential (<evidence), substantial (<substance), referential (<reference), circumstantial (<circumstance), influential (<influence)

\textsuperscript{8} Some of the words here may be derived directly from the verb through the procedure shown in (15); e.g. offend $\rightarrow$ offensive. What is important is that -ate is not introduced in these words in any case.
Although -ate is added to the bases which end with /nt/, -ory or -ive is attached directly to the base in the words above. Similarly, an epenthetic vowel does appear in (24), although it does not in (20). These facts suggest that the bases in (23) and (24) are regarded as having a 'genuine' /s/ at the end. In other words, the sequence /ns/ is not considered to have a linked structure as in (21).

In Zamma (1994a), it remained unclear why /ns/ does not constitute a linked structure, while /nt/ does. Given Padgett's geometry, however, this problem can easily be resolved. Recall that in his theory the feature [continuant] is dependent on the articulator nodes. The segment /s/, therefore, is represented as below:

(25) \[
\begin{array}{c}
\text{Root} \\
| \\
\text{Coronal} \\
| \\
[+\text{cont}]
\end{array}
\]

/n/, on the other hand, is not provided with [+cont], and is represented as in (26):

(26) \[
\begin{array}{c}
[+\text{nas}] \\
\text{Coronal}
\end{array}
\]

When these segments are concatenated, it is impossible in this theory to link the place node, because it would create an impossible segment, i.e. a continuant nasal.

(27) \[
\begin{array}{c}
*\text{Root} \\
\text{Root} \\
[+\text{nas}] \\
\text{Coronal} \\
| \\
[+\text{cont}]
\end{array}
\]

Thus, linking the place node is avoided in this case, producing a sequence of two distinct segments.

---

9 Note that words ending with -nsatory/-nsative are derived from -ate-ending bases; e.g. compensatory (<compensate, *compense).
Since the /s/ in this structure is not linked to the preceding /n/, it is regarded as a 'genuine' /s/. Hence, -ory and -ive attach directly to the base, and /i/ is inserted before -al. It is important to note that this explanation is only available in Padgett's theory, in which [continuant] is located below the articulator nodes. In the standard theory, where [cont] is dependent on the root node, it cannot be explained why the sequence /ns/ does not constitute a linked structure.

With this geometry, linking the place node does not entail the linking of [continuant], and thus there is no motivation for avoiding the structure in (29). Clearly, Padgett's theory is superior to the standard one as regards the analysis of English suffixation.

Although relevant examples are not abundant, the fact of suffixation to the /st/-ending bases seems to reinforce my argument for Padgett's geometry. Consider the following words:

(30) suggestive (<suggest), digestive (<digest), arrestive (<arrest), resistive (<resist), exhaustive (<exhaust), combative (<combust)

(31) textual (<text), contextual (<context), bestial (<beast), celestial (<celeste)

In these words, -ive is attached directly to the bases and /i/ or /u/ is inserted before -al. This fact suggests that the sequence /st/ is not regarded as constituting a linked structure, as in the case of /ns/. Interestingly, this is exactly what we predict in Padgett's geometry. Note that /s/ and /t/ differ only in continuancy; the former is [+cont] while

---

10 Again, there are a few exceptional words:

(i) a. gustatory (<gust)
   b. gustative (<gust), manifestative (<manifest)

(ii) coastal (<coast), postal (<post), festal (<feast)
the latter is [-cont] (32a). Given this featural difference and Padgett's geometry, it is impossible to link their place nodes while maintaining the identity of each segment. If they were linked, the result would be total assimilation to geminate /ss/ (32b):

\[
\begin{array}{cc}
(32) & \text{a. Root Root} \\
& \text{Coronal Coronal} \\
& [+\text{cont}] [+\text{cont}] \\
\end{array}
\]

On the other hand, the standard geometry does not predict total assimilation. Since [+cont] in this geometry is assumed to be dependent not on the articulator node but on the root node, the identity of each segment can be retained even under the linkage of the place node.

\[
(33) \\
\text{Root Root} \\
[+\text{cont}] \text{Coronal}
\]

Hence, it is predicted that /st/ should be different from a 'genuine' /t/, which would result in the introduction of -ate before -ory and -ive, and the direct attachment of -al. However, as we have seen, this is not the case.

In sum, Padgett's geometry correctly predicts the facts of English suffixation. In order to account for the difference in the form of suffix, i.e. -ory/-ive vs. -atory/-ative and -al vs. -ial/-ual, it is necessary to distinguish among coronal-coronal sequences at the end of the base. The sequences /nt/, on the one hand, and /ns/ and /st/, on the other, can be distinguished by Padgett's geometry, in which [continuant] is dependent on the articulator nodes. The standard geometry, on the other hand, cannot make this distinction among the relevant sequences,

\[11\] The facts of the suffixation to the bases with /rs/ and /rt/ can also be seen as evidence in support of Padgett's geometry; in particular for the placement of [approximant] and its 'bundled' nature with the articulator nodes. There are many words in which -ive is directly attached to the bases with /rs/ and /rt/; e.g. aspersive, dispersive, inversive, perversive, cursive, excursive; assertive, divertive, revertive, abortive, sportive, contortive. In the sufffixation of -al, however, the examples are very few whose bases end with /rs/ or /rt/, and only a few exceptions can be found; e.g. reversal, universal, mortal. Moreover, the bases with /ls/ and /lt/ are rare for all the suffixes. So, I will leave this issue just by suggesting the possibility.
because [continuant] is located directly under the root node.

3. Padgett's Subsequent Studies within Optimality Theory

After Padgett proposed his theory of Feature Geometry in 1991, the theoretical apparatus for phonology has been greatly changed with the development of a new theory — Optimality Theory (henceforth OT; cf. Prince and Smolensky (1993)). OT does not employ 'rules' to account for phonological phenomena; the emergence/non-emergence of phonological phenomena is determined by the relative ranking of constraints, without 'derivation.' According to this change in methodology of phonology, Padgett has changed his way of dealing with the facts formerly attributed to Feature Geometry. In this section, then, I will briefly sketch the subsequent studies by Padgett, and consider how the facts observed in the previous sections can be treated in the new theory.

First, in order to capture the general fact that several features act in tandem, Padgett (1995) proposes a theory called Feature Class Theory. In this theory, segments are specified with relevant features without a hierarchical structure, and the features are regarded as constituting 'classes' of several categories. Below are representations of such classes:

(34) Laryngeal: \{voice, asp, glo\}
    Place: \{Lab, Cor, Dors, Phar, ant, dist, hi, lo, back, round ...\}
    Pharyngeal: \{Phar ...\}
    Oral: \{Lab, Cor, Dors, ant, dist, hi, lo, back, round ...

By referring to a particular class, it is possible in this theory to predict that several features act in tandem. For example, all the features which belong to the class 'Color' are affected by a constraint such as \textsc{align(color)}, which requires spreading of the features.

Second, in order to accommodate the relation between the place and the stricture features, which is the target of the book under examination, Ní Chiosáin and Padgett (1997) have introduced a unit called \textit{gesture}, that is, "a unitary bundle of articulator and oral stricture features" (p. 6). By using the gestures, labial segments, for example, can be
represented as in (35):

\[(35)\quad u/w \quad \beta \quad f \quad p/m\]

\[\quad \text{Lab}_V \quad \text{Lab}_A \quad \text{Lab}_F \quad \text{Lab}_S\]

In these representations, 'V' stands for 'vowel/glide,' 'A' for 'approximant,' 'F' for 'fricative,' and 'S' for 'stop.' In other words, the gestures above are regarded as containing the following values of stricture features:

\[(36)\]

<table>
<thead>
<tr>
<th></th>
<th>V</th>
<th>A</th>
<th>F</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>[cons]</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>[approx]</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>[cont]</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
</tbody>
</table>

Ní Chiosáin and Padgett say, “[t]he important result here of adopting gestures ... follows when these units spread .... Spreading of major place gestures entails spreading of all of these properties” (p. 6). Thus in this theory, the fact noted above in (3a) that nasal consonants assimilate in place to a stop but not to a fricative is easily accounted for. Since a fricative is labeled as PL_F (where PL stands for an articulator), and thus an assimilation to this segment involves stricture features, a nasal avoids being assimilated so as not to produce an illegal nasal fricative. In a similar vein, the fact in (3b) can also be accounted for; continuancy is affected in place assimilation, because it is included in the gesture along with the place feature.

Moreover, other properties can also be captured in this theory. First, the OCP effect in root cooccurrence can be accounted for in terms of the gesture; the sequence of the identical gesture is avoided. Second, complex segments can be represented as having two gestures; for example, /ps/ might contain both Labs and CorF. Third, a linked structure is possible only when there is an identical gesture; thus, /nt/ is linked by sharing CorS, while /ns/ and /st/ are not, because they have CorS and CorF.

Clearly, this new theory is based on the findings of SFG that stricture features have a close relation to the place features. In this sense, it may be adequate to say that SFG still has some influence on the current theory. Several questions, however, may arise in Feature Class Theory. First, it is not clear where the classes in (34) and the feature values of the gestures in (36) are determined, because grammar is considered in OT to consist only of Generator (or Gen), which maps an input onto an infinite set of output candidates, and constraints. Ní
Chiosáin and Padgett explain that "feature classes ... are understood as set-theoretic postulates" (p. 6), but a problem arises as to where they should be set. Moreover, it is not clear why only the place and the stricture features in combination, rather than other features such as the laryngeal ones, can be a gesture.

In addition, an empirical problem arises as to the treatment of stricture as a part of the gesture, the problem of how to explain the cases where only continuancy spreads. As has been mentioned above, it is due to such cases that SFG treats [cont] as dependent on the articulator node. Because the stricture and the place features are considered to be a bundle within a gesture, it is impossible to predict that only [cont] spreads independent of the place features.

Since OT is a relatively new theory and is still under progress, it is necessary for us to await future researches in order to determine whether the subsequent studies by Padgett are on the right track. In fact, some researchers have recently proposed alternative analyses to account for those phenomena which Feature Geometry accomodated. In any proposed analysis, however, it is indispensable to take into account the facts that were disclosed in SFG, as well as the evidence from English word formation discussed in section 2.2 of this paper.

4. Conclusion

Padgett succeeded in presenting a reasonable geometry of features,

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12 An anonymous reviewer of EL suggested that the classes and the gestures can be determined by Gen, but it seems impossible. True that Prince and Smolensky (1993) say that "Gen contains information about the representational primitives and their irrevocable relations" (p. 4). The classes and the gestures, however, are not representations but something like definitions. Therefore, although it is possible for Gen to produce prosodic structures over segments in the input (cf. Prince and Smolensky (1993: 4)), it is impossible that a class is produced by Gen.

13 It is also predicted in this theory that there should be no cases where only the place feature would spread. In the geometry in (2), on the other hand, such a spreading is possible, given that the negative values of the stricture features are underspecified.

14 Pulleyblank (1997), for example, accounts for the fact in (3a) by several constraints which require assimilation of a feature. Suzuki (1998) and Fukazawa (1999), on the other hand, account for OCP effects in several languages by utilizing the device of Local Conjunction (cf. Smolensky (1993)).
by focusing on stricture features which were not fully discussed in previous analyses. His placement of [cont] under the articulator nodes, in particular, makes it possible to account for various facts; for example, nasal and non-nasal assimilation, root cooccurrence restrictions, and the representation of complex segments. In this paper, I adduced another fact from English suffixation as independent evidence for his theory, in which the base-final sequences are distinguished according to their structures.

Since the emergence of Optimality Theory, the facts which were held to be explicable by means of Feature Geometry have come to be treated differently. As I have illustrated in Section 3, Padgett himself proposes a revised theory called Feature Class Theory, which is based on the proposals and empirical findings of SFG. However, several problems, both theoretical and empirical, remain to be solved, and thus it is necessary to await future researches to make this new theory more complete. In any case, it seems that the results of SFG should not be neglected.

REFERENCES


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