

( )

**Oh, Mira. 2013. Loanword adaptation of consonant clusters from English into Korean.** *Studies in Phonetics, Phonology and Morphology* 19.1, 53-79. Many studies claim that loanword adaptation is perceptual mapping (Silverman 1992, Peperkamp et al. 2008) and relies crucially on fine-grained acoustic similarity (Kim and Curtis 2001, Boersma and Hamann 2009). By investigating loanword adaptation of stop-initial clusters from English into Korean with respect to vowel epenthesis, this paper aims to answer two questions. First, can the perceptual approach proposed by many researchers fully account for vowel epenthesis in loanword adaptation? Second, are the stop-initial clusters from English loaned in the same way into Korean regardless of their morphological structure? Close examination of loanword adaptation of stop-stop and stop-nasal sequences of English into Korean reveals three findings. Firstly, not all vowel epenthesis result from perceptual epenthesis. Secondly, the recoverability of source sounds pushes the adapters away from application of native phonological processes, which are prevalent in native phonology, in the direction of epenthesis, in which the identity of the preconsonantal stop is better encoded in loanwords. Thirdly, morphological structure of a source word plays a role in segmental mapping in loanword adaptation. (Chonnam National University)

Keywords: vowel epenthesis, the perceptual analysis, recoverability,  
loanword adaptation, morphological structure

## 1.

가

- (1) a. (1991)  
i. : peak < > [p<sup>h</sup>ik<sup>h</sup>i], week < > [wik<sup>h</sup>i]<sup>1</sup>  
ii. : jeep < ~ >  
[čip]~[čip<sup>h</sup>i], cake < ~ > [k<sup>h</sup>eik] ~ [k<sup>h</sup>eik<sup>h</sup>i]  
iii. : kick < > [k<sup>h</sup>ik], back < > [pek],  
look < > [ruk]  
b. (1991)  
i. : league < > [riki], bed < > [peti]<sup>2</sup>

\*

<sup>1</sup> < > [ ]

<sup>2</sup> (obstruents)

- ii. : Pyramid  
 < ~ > [p<sup>h</sup>iramit] ~ [p<sup>h</sup>iramiti],  
 zigzag < ~ > [čikiček] ~ [čikičeki]  
 iii. : Arab < ~ > [arap], big < ~ > [pik]

(1ai) (1bi)  
 (1aii) (1bii)  
 (1aiii) (1biii)  
 (1991)

50.4% 43.6% 가  
 가 6% (Kang 2003: 229). Kang(2003)

<sup>3</sup>

가

<sup>4</sup>

Kang(2003)

가  
 가

(2)

(2) Kang (2003: 237)

chapter < ~ > [ts<sup>h</sup>æp.t<sup>h</sup>ʌ]  
 octave < ~ > [ok.t<sup>h</sup>a.pi]  
 napkin < ~ > [næp.k<sup>h</sup>in]  
 doctrine < ~ > [tok.t<sup>h</sup>i.Lin]

(Catford 1977, Ladefoged 2005).

<sup>3</sup> Kang(2003)

Kang(2003)

가  
 가

가

가

<sup>4</sup> Kang(2003)

‘quick’

[ ]

TIMIT

‘week’

[ ]

가

가

58.5%

41.3%  
 (Kang 2003: 241).

‘chatper’

\*< >가<sub>5</sub> < >

가

가

- (3)
- |       |           |   |             |   |
|-------|-----------|---|-------------|---|
| /kʃ/: | action <  | > | , fiction < | > |
| /pʃ/: | caption < | > |             |   |
| /kʃ/: | picture < | > |             |   |
| /ks/: | fax <     | > | , sexy <    | > |
|       |           |   | , Mexico <  | > |
| /ps/: | Pepsi <   | > |             |   |

- (4)
- a.
- |           |            |              |                |              |             |
|-----------|------------|--------------|----------------|--------------|-------------|
| victory < | >          | , Vacteria < | ], cocktail <  | >            | , factory   |
| <         | >          | , octave <   | >              | , McDonald < | >           |
|           |            | , doctrine < | >              |              |             |
| >         | , doctor < | >            | , helicopter < | >            | , captain < |
|           |            |              | >              |              |             |
- b.
- |          |   |                            |   |            |
|----------|---|----------------------------|---|------------|
| napkin < | > | (187,000) <sup>6</sup> , < | > | (440,000), |
| sitcom < | > | (7,110,000), <             | > | (29,100)   |

(4b)

(5)

- (5)
- a.
- |           |   |            |   |                |   |
|-----------|---|------------|---|----------------|---|
| Vietnam < | > | , picnic < | > | , technology < | > |
|-----------|---|------------|---|----------------|---|

---

<sup>5</sup>

(mora)가<sub>5</sub>  
(Peperkamp et al. 2008).

<sup>6</sup>

가

treatment < >, fitness < >, partner < >,  
magnetic < >, magnesium < >  
b. /l/ :  
Hitler < >, medley < >, topless < >,  
necklace < >

Kenstowicz(2005)  
Davidson and Noyer(1997) Match Yip(2006) MIMIC  
가

(Paradis and LaCharité 1977).<sup>7</sup>

가? 가 (6) 가  
가

(6) 가 (Perception only Hypothesis):

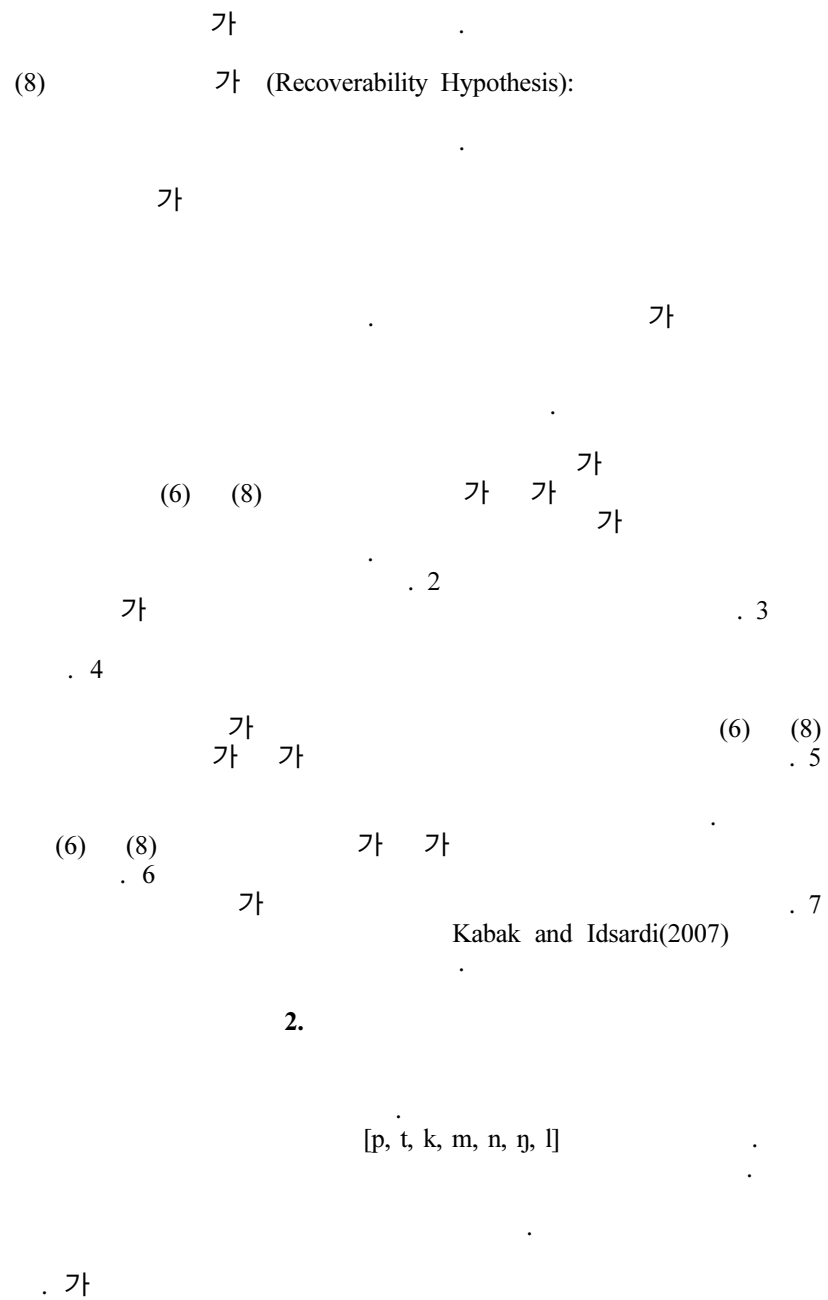
Kang(2003) 가  
Kang(2006) Oh(2010) (7) /tw/ /kw/  
/tw/ kw/ F2 VOT(Voice Onset Time, ) /tw,

(7) a. twin < > \* < >, twist < > \* < >  
b. queen < > \* < >, quick < > \* < >

VOT

가

<sup>7</sup> Paradis and LaCharité(1977) (Preservation Principle)



가 . 가 (9)

- (9) a. :\*[cont]] :< >[ ] vs. :<bus>[ ]  
b. :\*[CC] :<Max>[ ]  
c. :\*[stop][nasal] :< >[ ] vs. :<picnic>[ ]

( [\*[cont]] ),  
( [\*[stop][nasal]] ( [\*[CC]] ),  
가 (SyllCon)  
가 (Davis and Shin 1999).

가 .  
[cont] < > [ ]  
< > [ ]  
[ ] <bus> [ ]  
[ ] DEP-V>>IDENT  
(Kang 1996). ,  
/s/

/s/ .

(Itô and Mester 1995, Kang 1996, Shinohara 2004).  
Boersma and Hamann(2009)  
가 .

가 .  
(Paradis and LaCharite 2005)

가 (Silverman 1992, Kim and Curtis 2002).

가, Silverman(1992)

(Silverman 1992: 31). (10)

(10) ‘stamp’ (Silverman 1992: 15)  
 [stam]  
 [sitam]  
 [sitam]<sup>8</sup>

가

Boersma and Hamann(2009)

가

([ ] ), (/ / )  
 ([ ] )  
 Hamann(2009) . Boersma and

가

---

<sup>8</sup> ‘stamp’ [si[L]tam[H]]

(11) (Boersma and Hamann 2009: 12)

*|underlying form|* (Faithfulness constraints)  
*/surface form/* (Structural constraints)  
*[phonetic form]* (Cue constraints)

(comprehension)

[t] <bus> [ ] 가 < > [ ] /s/가  
[s'i] 가

(12) Boersma and Hamann(2009)

a. ( ): (Boersma and Hamann 2009: 15)

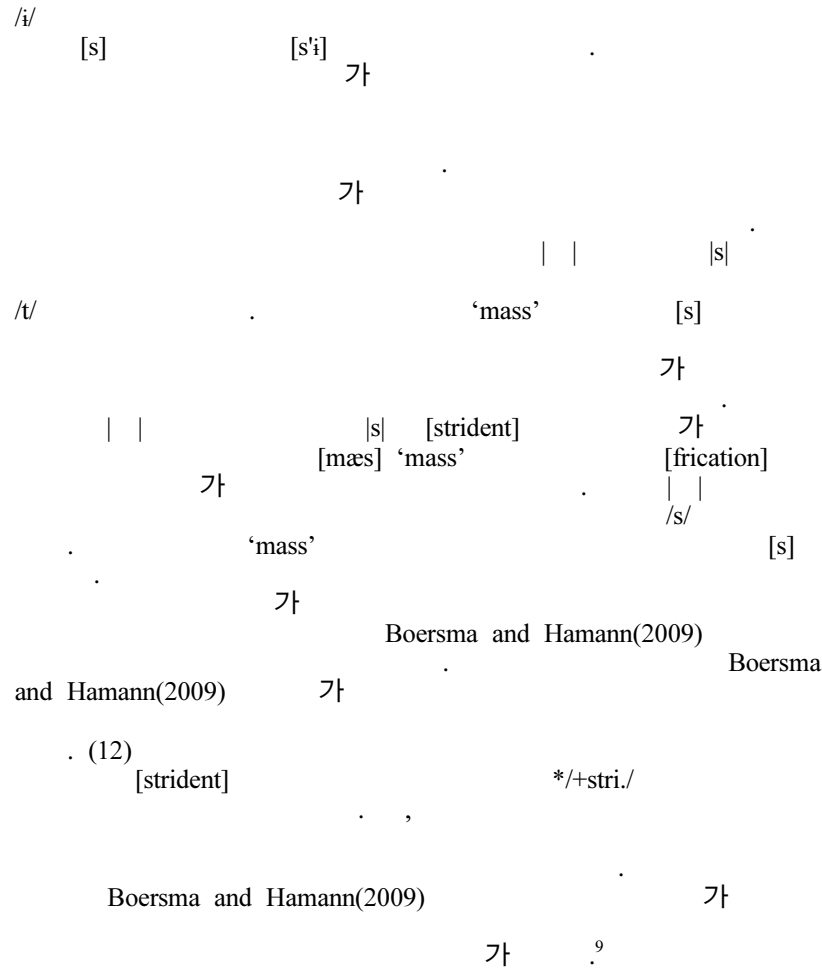
os	*/+stri./	DEP-V	MAX-C	IDENT(stri)	*/C./
/os./	*!				*
/ot./				*	*
/o.si/		*!			
/o./			*!		

b. ( ‘mass’): (Boersma and Hamann 2009: 28)

[mæs]	*/+stri./	*[frication] /-str/	*[ ] /i/
/mæs./	*!		
/mæt./		*!	
/mæ.s'i/			*

(12a) 가  
DEP-V가 IDENT(stri)  
가 /t/ |s|  
(12b)  
[s]가 [frication] /-strident/ 가





### 3.

p', t', k', s, s', c, c<sup>h</sup>, c', m, n, l, h]) 18 ([p, t, k, p<sup>h</sup>, t<sup>h</sup>, k<sup>h</sup>,  
 ([p, t, k, m, n, ɲ, l]) 7

---

<sup>9</sup> Boersma and Hamann 2009) (Peperkamp and Dupoux 2003, (Silverman 1992).

- (13) a.  $\langle \rangle [ ]$   
 b.  $\langle \rangle [ ]$ ,  $\langle \rangle [ ]$ ,  $\langle \rangle [ ]$ ,  $\langle \rangle [ ]$   
 c.  $\langle \rangle [ ]$ ,  $\langle \rangle [ ]$

(13)

가

(14)

- (14) top  $\langle \rangle$ , pop  $\langle \rangle$ , book  $\langle \rangle$ , cook  $\langle \rangle$

(15)

- (15) a.  $[ ]$ ,  $[ ]$ ,  $[ ]$   
 b.  $[ ] * [ ]$ ,  $[ ] \sim [ ]$   
 c.  $[ ] * [ ]$ ,  $[ ] * [ ]$

(15a)

(15b)

(15c)

Jun(1995)

가

가 가

(16)

가

(16)

 $\langle \rangle \langle \rangle$ 

(Jun 1995)

(15)

:

가?

(4)

5

- (17) a. [ ], [ ], [ ]<sup>10</sup>  
 b. [ ]\*[ ], [ ]\*[ ]

(17a)

(17b)

SyllCon  
 (Davis and Shin 1999).

가

가

가

가

(17b)

가

:

가

가?

가

- (18) a. [ ]<sup>11</sup>  
 b. [ ], [ ], [ ], [ ]  
 c. [ ], [ ], [ ], [ ]

(18a)

(/t+/l/ [ll]). (18b)

(18c)

/n/ /l/

[ll]

:

가

<sup>10</sup> / / [ ]

<sup>11</sup> [ ]

4.

- (19) a. :
- |            |   |       |       |   |
|------------|---|-------|-------|---|
| Vietnam    | < | > * < | >     |   |
| picnic     | < | > * < | > * < | > |
| technology | < |       | > * < | > |
| treatment  | < |       | > * < | > |
| fitness    | < | > * < | >     |   |
| partner    | < | > * < | >     |   |
| department | < |       | > * < | > |
- b. /l/ :
- |         |   |       |   |  |
|---------|---|-------|---|--|
| Hitler  | < | > * < | > |  |
| medley  | < | > * < | > |  |
| Atlanta | < | > * < | > |  |
| Oakland | < | > * < | > |  |
| topless | < | > * < | > |  |

(19) /l/ 1  
가 가 가  
가

(Kang 2003).

가 (Perception only Hypothesis)

(Catford 1977, Hardcastle and Roach 1979, Ladefoged 2005).  
가  
Henderson and Repp(1982) 58%  
Davidson(2011)

Davidson(2011)

가



<sup>12</sup> 가  
 SyllCon  
 Silverman(1992)  
 ‘picnic’ [ SyllCon 가  
 SyllCon, Dep-V>>  
 IDENT(nas)  
 SyllCon, \*[\_]/+nas/ >> \*[\_]/i/  
 2  
 (Boersma and Hamann 2009).  
 SyllCon  
 [kn]( ‘picnic’) /k<sup>h</sup>i.n/  
 |kn| ( |kukne| ‘ ’) /ŋ.n/  
 Boersma and Hamann(2009) ‘picnic’  
 가 , (21) [ ] \*[\_]  
 ]  
 Boersma and Hamann(2009: 30)  
 \*[no voice]/(V)-tense(V)/ \*[no noise]/+asp/  
 tense(V)/ \*[no voice]/(V)-  
 \*[no noise]/+asp/ [ ]  
<sup>13</sup> (21)  
 Boersma and Hamann(2009) SyllCon  
 ‘picnic’ \*[\_] [ ]  
 SyllCon [ ]  
 \*[\_] [ ] | | / / ‘picnic’  
 / /

<sup>12</sup> \*[\_]/+nas/

\*[\_]/i/

가  
가

<sup>13</sup> Davidson(2011)  
[ ] \*[\_]/+asp/

[

## 가 (Recoverability Hypothesis)

(22)

가?  
 가 . Boersma and Hamann(2009)  
 \*[\_]/+nas/ 가  
 가 가  
 가 'picnic' \*[\_]  
 가 /piknik/ 가 /piɳnik/ 가 \*[\_]  
 ]  
 Boersma and Hamann(2009) \*[no voice]/(V)-  
 tense(V)/가 \*[\_]/+nas/

(23)

[ <sup>ph</sup> ɪ k ̣ n ɪ k ̣]	SyllCon	*[C̣] / /	*[_] /+nas/	*[no voice] /(V)-tense(V)/	*[no noise] /+asp/	*[_] /i/
/p <sup>h</sup> ik.nik./	*!					
/p <sup>h</sup> iŋ.nik./			*!			
/p <sup>h</sup> i.ki.nik./				*!		*
<del>noisy</del> /p <sup>h</sup> i.k <sup>h</sup> i.nik./					*	*
/p <sup>h</sup> i.nik./		*!				

( )

14

Kang(2003)

<sup>14</sup> 'picnic' [ ] \*[\_] ,  
 \*[no noise] /+long/ 가

가

(24) a.

center < >, winter < >, computer < >,  
 candy < >, camping < >, member < >

b.

building < >, Milton < >, golden < >, filter < >

SyllCon

( )

1

가 가

Davidson(2011)

가

가 (Perception

only Hypothesis)

가

가

(Davidson 2011)

가

가 (Recoverability Hypothesis)

가 가

가

가

가

가



가

가

<sup>15</sup>

### 5.

Kang(2003)

가

1

(2)

(25=(2)) Kang (2003: 237)

chapter	<	>	[ts <sup>h</sup> æp.t <sup>h</sup> ʌ]
octave	<	>	[ok.t <sup>h</sup> a.pi]
napkin	<	>	[næp.k <sup>h</sup> in]
doctrine	<	>	[tok.t <sup>h</sup> i.Lin]

‘chapter’

\*[ ]가

[ ]  
1

가

(26=(4))

a.

victory < >, Vacteria < >], cocktail < >, factory  
< >, octave < >, McDonald < >, doctrine < >  
>, doctor < >, helicopter < >, captain < >

b.

napkin < >, >(187,000), < > (440,000),  
sitcom < > (7,110,000), < > (29,100)

‘napkin’ < / > ‘sitcom’ < / >

가

<sup>15</sup>

‘Stanley’

\*<

>가

<

>

<

>가

[ ]

/n+l/ [ll]

가

가

Berent et al.(2007)

가

/nl/

/tl/

?

가 가  
가? 가 가  
가 가  
가

.

Kang(2003)

Boersma and Hamann(2009)

.

?

가

.

(27)

a.

/t/ :  
victory < >, Vacteria < >, cocktail < >, factory  
< >, octave < >, McDonald < >, doctrine < >  
>, doctor < >, helicopter < >, chapter < >, captain  
< >

b.

/k/ :  
i. /t/ : sitcom < > < >  
ii. /p/ : napkin < >, < >

.

.

, 가

가  
가

가

/tk/

/kt/

가

(Surprenant and Goldstein 1988, Byrd 1996, Zsiga 2000).

가

and Repp(1982)

가  
가

. 가 , Henderson

:

16.5%,

Davidson(2011) 70%, 87.5% . Zsiga(2000)  
가 (place order effect)

가 (27) . (26)  
/t/ /k/

/k/ , /p/가 /p/ 가  
: [ ] ~ [ ] 'napkin'. /k/ 가  
/t/ /k/가  
: [ ] \* [ ] 'actor'.<sup>16</sup> 가

가  
가 가 (Perception only Hypothesis)

가 (Recoverability Hypothesis)

가 가  
가 가

. 3 (15) k>p>t

가 : [ ] vs. [ ] \* [ ].  
가 가

. 가 , /tk/가 [kk]  
/tk/ /kk/  
/t/ /k/ .  
/kt/

Hypothesis) 가 (Recoverability  
가

Hypothesis) 가 (Recoverability  
가

<sup>16</sup> 'napkin' [ ] 가

## 가 (Recoverability Hypothesis)

## 6.

가

가

(28)

(28=(5a))

Vietnam < >, picnic < >, technology < >,  
treatment < >, fitness < >, partner < >,  
magnetic < >, magnesium < >

‘picnic’ [k]가 < 가 > ?

(29)

(29) : pop music < > [ ]  
nick name < > [ ]  
back number < > [ ]  
Big Mac < > [ ]

, (28)

(29)

가

[ ] ‘Big Mac’ < >  
[ŋ]

가  
(Oh 2012).  
가

- (30) /l/ <sup>17</sup>  
a. : Hitler < >, medley < >, topless < >  
b. : hot line < > [ ], upload < > [ ]  
\*[ ]  
<top> [ ] \*[ ]가 [ ]  
<topless> [ ] <topless>가 <  
> [ ]  
<upload> \*[ ]  
<less>가  
<upload>  
<up>  
<upload>가 <up>+ <load>가 < > + < >  
<sup>18</sup>

가

Oh(2012)

## 7.

<sup>17</sup> /l/ [I] [II] (Oh 2012). /l/  
[II]  
<sup>18</sup> (paradigm uniformity) 가 'make up' <  
> < > , [ ] [ ] 가  
\*< > 가 , [ ] [ ] 가  
Oh(2012) Oh(2012)



가 . Kabak and Idsardi(2007)

. Kabak and Idsardi(2007: 38, 42)

가  
cm-cɪm, jm-jɪm, cɪ<sup>h</sup>-cɪt<sup>h</sup>, jɪ<sup>h</sup>-jɪt<sup>h</sup> /c/가  
가  
A' 0.61 A'  
가  
A' 1 1  
km-kɪm, km-ɲɪm, lɪn-lɔn, lɪ<sup>h</sup>-lɔt<sup>h</sup>  
가  
A' 0.91 0.98  
km-kom, gɪ<sup>h</sup>-gɔt<sup>h</sup>, gm-gom A'가 0.74  
0.85  
Kabak and Idsardi(2007)

가  
/km/ /ɲm/ . Kabak and Idsardi(2007)

가  
(cf. Steriade 2001).  
(km-kɪm)

Kabak and Idsardi(2007) 가  
, Davidson(2011)  
Kabak and  
Idsardi(2007)

		Kabak and Idsardi(2007)
/gt <sup>h</sup> -got <sup>h</sup> /	/gm-gom/ /g/	/km-ɲm/
Kabak and Idsardi(2007)		/cm-cɪm/ /gt <sup>h</sup> -got <sup>h</sup> / /gm-gom/ A'
/cm-cɪm/ A'		

가 . Kabak and Idsardi(2007)  
 /kt<sup>h</sup>/ /kot<sup>h</sup>/ /kt<sup>h</sup>/ /kot<sup>h</sup>/  
 A' 0.94 . Kabak and Idsardi(2007)  
 /kt<sup>h</sup>/가 /kt<sup>h</sup>/ /kot<sup>h</sup>/ .  
 /kt<sup>h</sup>/ (place order effect)

.		가
/t/	가	가
.		/kt <sup>h</sup> /    /kot <sup>h</sup> /

Kabak and Idsardi(2007)

가 가  
가 , 가 가 가 가

가



가

(Davidson 2007: 262).

가

(Oh 2012).

. 1991. : 1990 . :

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