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# TRACE OF THE MIDDLE PERSIAN /W/ IN IRANIAN SISTANI DIALECT

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**Abstract:** The Old and Middle Persian *w*, although shifted to *v* in New Persian (NP), is still found in some Iranian languages and some Persian dialects, such as Sistani, Bakhtiari, Roodbari, etc. This study traces the ancient sound *w* of Middle Persian (MP) in the Sistani dialect (SD). SD is spoken in southeastern Iran in Sistan, where its name comes from the Old Persian Sakastana, and its original name Zarangiana comes from the Old Persian Zranka, 'Waterland'. The words of Sakzi, the language of Sistan since ancient times, were found in the translation of the old Qorān-e Qods into Persian, the translation in which *w* can be traced. Sistani has preserved some characteristics of MP, such as initial consonant clusters and long /eː/ and /oː/. The finding of this study is the existence of MP *w* in Sistani that can be interpreted in different ways: 1- *w* as an allophone of the phoneme *v*, which mostly occurs between [o] and the syllable break, 2- *w* as the phoneme descending from MP and still existing in Sistani, and *v* as its allophone in some environments, 3- *w* analyzed as a vowel in the sequence of [ow] forming diphthong [oʊ], 4- *w* is in the halfway of transition: shift of *w* to *v* in some words and still preserved in some other words. However, the shifting process of MP *w* to *v* seems not to be yet completed in this dialect, and it is possible to assume Sistani is a stage between MP and NP. The data for the study was gathered from all districts of Sistan, from non-literate and graduate consultants. The pure Sistani words were used as much as possible. Auditory pretest, articulatory/acoustic phonetics examinations, and Wavesurfer/Praat software were used. The method of analysis was adapted from Burquest (2006). The data were transcribed in IPA, and phonemes/allophonic variations were determined by the contrastive method of minimal pairs, analogous, and complementary distribution patterns. This study can be useful for documentation, and reconstruction of the older Iranian languages, and help show the manner of a shift in ancient sounds.
**Keywords:** Middle Persian, sound *w*, Sistani dialect, New Persian.

**چکیده:** صدای فارسی باستان و میانه‌ی *w* اگرچه در فارسی نو (NP) به *v* تغییر یافته‌است، هنوز در برخی از زبان‌های ایرانی و برخی از گویش‌های فارسی مانند سیستانی، بختیاری، رودباری و غیره دیده می‌شود. این پژوهش به ردیابی صدای باستانی *w* فارسی میانه (MP) در گویش سیستانی (SD) می‌پردازد. SD در جنوب‌شرقی ایران در سیستان صحبت می‌شود، جایی که نام آن از واژه‌ی Sakastana و نام اصلی آن Zarangiana از فارسی باستان، از واژه‌ی Zranka ،به معنای "سرزمین آب"، گرفته شده‌است. واژه‌های گونه‌ی زبانی سکزی، که از زمان‌های قدیم زبان مردم سیستان بوده‌است، در ترجمه‌ی "قرآن قدس" به فارسی یافت می‌شود.در ترجمه‌ی این قرآن، که از جمله قرآن‌های قدیمی و کهن محسوب می‌شود، صدای *w* را می‌توان ردیابی کرد. گویش سیستانی برخی از خصوصیات MP مانند خوشه‌های همخوان اولیه و واکه‌های بلند /eː/ و /oː/ را حفظ کرده‌است. یافته‌های این پژوهش وجود صدای *w*، به جا مانده از MP در گویش سیستانی است که می‌توان آن را به چند روش تفسیر کرد: ۱- *w* به عنوان واجگونه‌ای از واج *v* که بیشتر بین [o] و وقفه‌ی هجایی (پایان هجا) رخ می‌دهد، ۲- *w* به عنوان واجی که از MP به‌جامانده و همچنان در سیستانی وجود دارد و *v* واجگونه‌ی ازآن است که در برخی محیطها دیده می‌شود، ۳- *w* به عنوان یک واکه در ترتیب [ow] که می‌تواند واکه‌ی مرکب [oʊ] را تشکیل دهد، ۴- *w* در نیمه‌راه مرحله‌ی تغییر: تغییر *w* به *v* فقط در برخی کلمات اتفاق افتاده‌است و همچنان در دیگر کلمات باقی مانده‌است. به هر حال، به نظر می‌رسد روند تغییر و تبدیل صدای *w* ، از صداهای MP، به *v* در گویش سیستانی هنوز کامل نشده‌است، و می‌توان سیستانی را مرحله‌ای بین MP و NP فرض کرد. داده‌های پژوهش از تمامی نواحی سیستان، از گویشوان بدون سواد تا فارغ‌التحصیلان دانشگاهی جمع‌آوری گردیده، و تا حد امکان سعی شده‌است از کلمات اصیل سیستانی استفاده شود. پیش‌آزمون شنوایی، آزمون‌های آوایی بیانی/آکوستیک، و نرم افزارهای Wavesurfer/Praat جهت تحلیل استفاده شده‌است. روش تجزیه و تحلیل از Burquest (۲۰۰۶) اقتباس گردیده‌است. داده‌ها در IPA آوانگاری شده‌اند و صورت‌های واج/واجگونه‌ای به کمک الگوهای تمایز، جفت‌های کمینه، قیاس پذیری، و توزیع تکمیلی تعیین گردیده‌اند. این مطالعه می‌تواند برای مستندسازی و بازسازی زبان‌های قدیمی ایرانی مفید باشد و به نشان‌دادن نحوه تغییر آواهای باستانی کمک کند.
**کلمات کلیدی:** فارسی میانه، صدای *w* ، گویش سیستانی، فارسی نو.

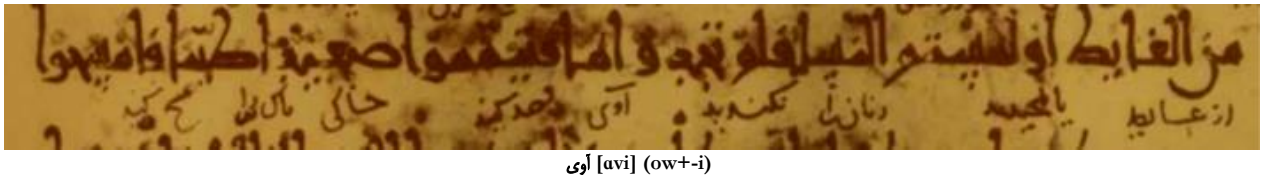
## I. Introduction

Sistan is a border region in southeastern Iran and southwestern Afghanistan. One portion of Sistan is part of the Iranian province of Sistan and Baluchestan, and the other portion is part of the Nimrooz Province in Afghanistan. The original name of Sistan, Drangiana or Zarangiana, comes from the Old Persian *Zranka*, 'waterland' (Schmitt, 1995), and the Old Persian 'Sakastana', 'land of the Sakas', as a source for the name, became later known as Sijistan and then as Sistan (Bosworth, 1997).

Sistani, regarded as a dialect of standard Persian, belongs to the southwestern group of Iranian languages (Windfuhr, 1989; Bearman *et al.* 2003). Iranian Sistani Dialect (SD) is spoken in different towns of the Iranian Sistan: Zabol, Zahak, Bonjar, Nimrooz (Adimi), Hamoon (Mohammad Abad), and Hirmand (Dust Mohammad), and in about its 885 inhabited villages with slightly varied forms (Okati, 2018). It has its own specific features in different disciplines of phonology, morphology, and syntax, making it somehow different from Standard Persian (Okati *et al.*, 2009, 2010). This dialect is also spoken in some places outside the Sistan region (Dusti, 2001).

Since ancient times, Sakzi has been the name of the people and language of Sistan. The translation of the old *Qorān-e Qods* into Persian and *Tārix-e Sistān*, in which Sakzi words can be found, are of the most ancient

sources of the SD (Mohammadi Khamak, 2000). Comparing the present SD with Sakzi words shows that this dialect is likely to be the survivor of the ancient Sakzi language (*Ibid.,* VII). Some of these words in the translation of the *Qorān-e Qods* (Ravaqi, 1985) are as follows: /ʃow/ 'night', /ɑvi/ (ow+-i) 'some water', /kʉt/ 'deaf'. The following is the figure 1 of the word /ɑvi/ (ow+-i) 'some water' taken from *Qorān-e Qods* (Okati, 2018):



**اوی [ɑvi] (ow+-i)**

**Figure 1. Qorān-e Qods, Nesa/43, [ɑvi] 'some water' (Ravaqi, 1985: 34).**

Some characteristics of Middle Persian (MP) and Classical New Persian (NP), such as initial consonant clusters and the long vowels /eː/ and /oː/, are preserved in SD (Windfuhr, 2011, Okati, 2018). The sound *w*, descending from Old Persian into MP, has shifted to *v* in NP. But this shift has not been occurred in all Iranian languages, for example *w* is still found in Balochi words such as *gwask* 'calf' (Korn, 2005), and in Kurdish words such as *xwehr* 'bent' (Chyet, 2003). Also, the *w* sound is still found in some Persian dialects such as Bakhtiari, e.g., *ruwah* 'fox', though it has changed to *b* in some words of this dialect, e.g., *wahīg* 'kid' changed to *bīg* (MacKenzie, 1990; Taheri, 2016). Roodbari dialect is another example of Persian dialects that maintained the *w*, e.g., *mɐɯa* 'fruit', *dɐəw* 'demon' including the labialized forms such as $x^{w}ah$ 'sister' (Abolghasemi, 2013; Seddiqi Nezhad and Motallebi, 2018). The sound *w* of MP is even though disappeared in the Farsi variation of NP, it is however pronounced in Dari and Tajiki variations of NP and is dealt with as a phoneme (Lazard, 1963; Sadeghi, 1978; Zomorrodian, 1995).

The dynamic nature of language brings about continuous changes in languages occurring gradually over time. This study traces the ancient sound *w* of MP in Sistani, a Persian dialect, to investigate its existence and its status in this dialect and its connection to the *v* sound.

## II. Literature review

There are several studies made on the SD spoken in different areas of Sistan. In none of them the sound *w* is explicitly studied. In some of these works, such as Weryho's *Sistani-Persian Folklore* (1962), which is a general study of the pronunciation, grammar, and vocabulary of this dialect in the Sistan region of Iran, the phonemes are not specified, and they can only be derived from the transcriptions, where the status of *w* is not clear. The Russian linguist Gryunberg (1963), who studied phonology and morphology of the SD of Sarakhs in Turkmenistan, has not worked on the consonants and only distinguishes eight vowels /ü/, /i/, /e/, /ə/, /ɑ/, /u/, /ŭ/, /ɑ̇/ in the vowel system of this dialect without referring to any diphthongs containing *w*. He (*Ibid*) mentions that there are no considerable differences between consonants of this dialect and those of Persian. Lazard (1974) describes verb morphology in the SD in the town of Zabol and its suburbs. In his observation, he shows *w* as part of a diphthong, /öw/, in this dialect. Omrani, (1996), Barjasteh Delforooz (1996), Dusti (2001), and Ahangar (2003) described the phonological system of the SD spoken in Zabol, Posht-e Ab district, and the village of Sekuhe in Iranian Sistan. They present *w* in /ow/ as part of a diphthong. On the Iranian SD, some glossaries are also published, among which Mohammadi Khomak (2000) and Shahnazi (2020) are more comprehensive than the others. Likewise, in the other printed documents, *w* is just presented as part of a diphthong in these two works.

## III. Methodology

The modern generative phonology was used as the framework, and the functional approach of Burquest (2006) was used for the phonological analysis in this study. The data was gathered by interviewing more than 50 male/female consultants from all different districts of Sistan with a range of literacy from non-literate to graduate degrees. The author herself is a native speaker of Sistani. It has been tried to use pure Sistani words, which are less affected by Persian, and not Persian/Arabic loan words. The speech sounds have been examined through articulatory and acoustic phonetics (Roach, 2010). The analysis of the data was started with an auditory pretest. Afterward, the Wavesurfer and Praat software were used to obtain more certain judgments by means of spectrograms (spectrograms are not presented in the study), which show acoustic characteristics of language segments (Sepanta, 1998). The phonemes under investigation were transcribed in the IPA symbols (International Phonetic Association, 1999) and have been determined by contrastive methods of minimal pairs and analogous environments. For allophonic variation, complementary distribution patterns have been

investigated[1]. Phonemes are shown in slashes / /, and allophones and phonetic representations are presented in square brackets [ ].

## IV. Analysis and Result

Out of the analysis, the finding of this study is the existence of MP *w* in Sistani that can be interpreted in four different ways as follow:

### IV.1. *w* as an allophone of the phoneme *v*, mostly occurs between [o] and the syllable break

To start with the analysis, first contrast *v* with another phoneme, e.g., /f/, via minimal pairs and analogous environment, shown in Table 1, to see if *v* has a phonemic status:

**Table 1. Comparing [f] to [v]: Showing the phonemic status of *v*.**

| | |
|---|---|
| ['fɑ:l] 'fortune' | ['vɑ:l] 'fine material' |
| ['kʰe:f] 'enjoy' | ['de:v] 'beast' |
| ['lɑ:f] 'blanket' | ['bdɑ:v] '(you) run' |
| [kʰa'fa:] 'shroud' | [kʰa'val] 'watermelon' |

[f] and [v] are in contrast in ['fɑ:l] and ['vɑ:l] as the minimal pairs. Also, to confirm this, by considering an analogous environment, words ['de:v] and ['ke:f] are near minimal pairs as they are both made of a plosive + a long vowel + a fricative, so [v] and [f] occur in the same environments and this can prove that they are two separate phonemes. To argue more about this analogous environment, say if the feature [-voicing] of [k] in ['ke:f] or in [kʰa'fa:] caused the occurrence of voiceless [f] in these words, we have the word [kʰa'val] in which [k] is also cooccurred with voiced [v], so, the reasoning above for the separation of [f] and [v] can be confirmed. The distinctive feature of both sounds is [+anterior], i.e., they are produced at or in front of the alveolar ridge (Berquest, 2006). As a result:

[f] → /f/: voiceless, labiodental, fricative phoneme
[v] → /v/: voiced, labiodental, fricative phoneme

Then by contrasting *v* and *w*, shown in Table 2, the allophonic relationship between the two sounds is investigated:

**Table 2. Comparing [v] to [w]: Showing *w* as the allophone of *v*.**

| | |
|---|---|
| [po.'ve:me] 'my feet' | ['pʰow] 'foot' |
| [ʃo.'vɑ] 'nights' | ['ʃow] 'night' |
| ['go.ve] 'a cow' | ['gow] 'cow' |
| [ga:. 'lo.ve] 'a melon' | [ga:'low] 'melon' |
| [o.'va.ra] 'the waters' | ['ow] 'water' |
| ['tʰva:ɹ] 'axe' | |
| [va:'di] 'to find' | |
| ['de:v] 'beast' | |

The data in Table 2 shows that [w] only occurs between [o] and the syllable break ([o] — #), and [v] occurs elsewhere, so they are in complementary distribution. It seems, in the final position, [v] changes to [w], and whenever it is adjacent to an affix, it reoccurs, e.g., ['ʃow] 'night' + plural marker [-ɑ] → [ʃo.'vɑ] 'nights'. Since [v] has the wider distribution, it can be the phoneme and [w] is considered as its allophone, i.e., there is an allophonic relationship between them:

[v] → [w] [o] — # [v] → [v] elsewhere

As a result:
[v] → /v/: voiced, labiodental, fricative phoneme
[w] → [w]: voiced, labial-velar, approximant allophone of /v/

The distinctive feature of /v/ is [+anterior] and of [w] are [+anterior, +back].

[1] "A minimal pair is a pair of words which differ in meaning and which show the two units (two phonemes) to be contrasting in identical environments. Contrast in analogous environments is the difference between two phonetically similar segments that occur in two separate words and have similar adjacent sounds. If neither segment has been modified or affected by its environment, the segments are separate phonemes" (Okati, 2018: 28-29). If the two sounds are in complementary distribution, they are different variants of the same phonological segment, and then an allophonic relationship exists between them. Complementary distribution is the mutually exclusive relationship between two phonetically similar segments. It exists when one segment occurs in an environment where the other segment never occurs. Complementary distribution is related to the phonemics principle which says that sounds tend to be modified by their environments (Burquest, 2006: 3).

### IV.2. *w* as the phoneme descending from MP and still existing in Sistani, and *v* as its allophone in some environments

There are many data that contain *w* as one of their sounds, though limited in position. As the second interpretation, *w* can probably be taken as a phoneme, and *v*, besides being a phoneme, plays the role of allophone of *w* in some environments too. Table 3 shows some examples:

**Table 3. Comparing [w] to [v]: Showing *w* as a phoneme and *v* playing as its allophone in some environments.**

| | |
|---|---|
| ['pʰow] 'foot' | [po've:me] 'my feet' |
| ['ʃow] 'night' | [ʃo'vɑ] 'nights' |
| [ga:'low] 'melon' | [ga:'love] 'a melon' |
| ['ow] 'water' | [o'vara] 'the waters' |
| ['gow] 'cow' | ['gove] 'a cow' |
| ['gow] 'cow' | ['gova ba:r] 'take the cow' |
| ['gow] 'cow' | [govo gos'la] 'cow and calf' |
| ['drow] 'harvest' | [drovo das'ta] 'harvest and bundle' |
| ['ɣow] 'wood, stick' | [ɣovo ɣov'ki] 'act of fighting with stick' |
| ['dow] 'swear' | [dovo dov'ki / dovdow'ki] 'act of swearing each other' |
| [ʃow'go:ʃ] 'eavesdropping' | |
| ['lowʃ] 'melon rinds' | |
| [em'ʃow] 'tonight | |
| [owdɑ:'ri] 'irrigation' | |
| [dow'ry] 'large tray' | |
| [row'ɣa] 'kind of red grape' | |
| ['kowʃ] 'shoes' | |
| ['kowl] 'desire' | |
| ['kowɹ] 'shout' | |
| [gow'dɑɹ] 'herdsman' | |
| ['lowɣ] 'lip' | |

Examples in Table 3 show the occurrence of [w] in many words, in medial and final positions. Those in word final position, change to [v] when adjacent to an affix, such as:

[o] 'and' in ['gow + o + gosla] → [govo gos'la] 'cow and calf',
[-ɑ] the plural marker in ['ʃow + -ɑ] → [ʃo'vɑ] 'nights',
[-e] 'a, one' in [ga:'low + -e] [ga:'love] 'a melon',
[-a] the object marker in ['gow + -a + ba:r] ['gova ba:r] 'take the cow'.

As there is a wide distribution of [w] in many words, and it is displaced by [v] just in certain environments, the argumentation of [w] as a phoneme and [v] as the allophone seems not unlikely:

[w] → [v] / — affix  [w] → [w] / elsewhere

As a result:
[w] → /w/: voiced, labial-velar, approximant phoneme
[v] → [v]: voiced, labiodental, fricative allophone of /w/ (in certain environments)

The distinctive features of /w/ are [+anterior, +back] and [v] is [+anterior].

### IV.3. *w* analyzed as a vowel in the sequence of [ow] forming diphthong [oʊ]

The following step is to analyze the sequence [ow] to see if it has gradually changed to diphthong [oʊ] and formed a phoneme. To show [oʊ] as a phoneme, it should be contrasted to other vowel sounds, e.g., /o/ and /o:/. The contrast is shown in Table 4:

**Table 4. Comparing [oʊ] to [o]/[o:]: Showing probable change of *w* to [ʊ] forming diphthong [oʊ].**

| | |
|---|---|
| ['o] 'that' | ['oʊ] 'water' (or ['ow]?) |
| ['ɣʰol] 'cesspool' | ['ɣʰoʊl] 'wish' (or ['ɣʰowl]?) |
| ['kʰol] 'all, entire, hug' | ['kʰoʊl] 'desire' (or [kʰowl]?) |
| ['loɣ] 'paralysed hand' | ['loʊɣ] 'big lip' (or [lowɣ]?) |
| ['tʰo] 'you' | ['moʊ] 'grapevine' (or ['mow]?) |
| [a:r'mo:] 'wish' | [oʊ'ri] 'rabies, mad' (or [ow'ri]?) |
| ['do:l] 'drum' | ['doʊl] 'way, form' (or ['dowl]?) |
| ['ko:ɹ] 'blind' | ['koʊɹ] 'shout, wail' (or ['kowɹ]?) |
| ['ʃo:ɹ] 'salty' | ['ʃoʊɹ] 'consult' (or ['ʃowɹ]?) |
| ['o:] 'yes' | ['poʊ] 'foot' (or ['pow]?) |

Based on the data in Table 4, it can be argued that [oʊ] and [o]/[oː] are in contrast in the minimal pairs above, such as ['kʰol] 'all' and ['kʰoʊl] 'desire', ['koːɹ] 'blind' and ['koʊɹ] 'shout'. All three sounds occur in the same syllabic patterns: V, CV, CVC, and can be found in word-initial, medial, and final positions. So, each of them can be taken as a phoneme:
[o] → /o/: back, close-mid, rounded phoneme
[oː] → /oː/: back, close-mid, rounded long phoneme
[oʊ] → /oʊ/: diphthong phoneme

**IV.4. *w* is halfway through transition: shift of *w* to *v* in some words and still preserved in some other words**

By this interpretation, to show the gradual shift of *w* to *v*, the phonemic status for both sounds should be represented in some data. At the same time, their allophonic conditions resulting from certain environments should also be shown in some other data. Table 5 depicts examples of such data, the data that have also been represented in the above tables:

**Table 5. Comparing [w] to [v]: Showing the gradual shift of *w* to *v*.**

| | |
|---|---|
| 1) ['pʰow] 'foot' | [po'veːme] 'my feet' |
| 2) ['ʃow] 'night' | [ʃo'vɑ] 'nights' |
| 3) [gaː'low] 'melon' | [gaː'love] 'a melon' |
| 4) ['ow] 'water' | [o'vara] 'the waters' |
| 5) ['gow] 'cow' | ['gove] 'a cow' |
| 6) ['gow] 'cow' | ['gova baːr] 'take the cow' |
| 7) ['gow] 'cow' | [govo gos'la] 'cow and calf' |
| 8) ['drow] 'harvest' | [drovo das'ta] 'harvest and bundle' |
| 9) ['ɣow] 'wood, stick' | [ɣovo ɣov'ki] 'act of fighting with stick' |
| 10) ['dow] 'swear' | [dovo dov'ki / dovdow'ki] 'act of swearing each other' |
| 11) ['lago 'low] 'stout' | ['lago 'lovija] 'he/she is stout' |
| 12) [ow'ɣo] 'Afghan' | ~ [aːv'ɣo] ~ [aːf'ɣo] 'Afghan' |
| 13) [ow'sɑːɹ] 'bridle' | ~ [aːv'sɑːr] ~ [aːf'sɑːr] 'bridle' |
| 14) [dowte'laːb] 'volunteer' | ~ [dɑːvte'laːb] 'volunteer' |
| 15) [ow'zɑːɹ] 'tool' (also genital organ) | ~ [aːvzɑːr] ~ [aːbzɑːr] 'tool' |
| 16) ['kowʃ] 'shoes' | ~ [kavʃ] ~ [kabʃ] ~ [kafʃ] 'shoes' |
| 17) ['lowɣ] 'lip' | ~ [labɣ] 'lip' |
| 18) [owdɑː'ri] 'irrigation' | [vaː'di] 'to find' |
| 19) ['kowl] 'desire' | ['vɑːl] 'fine material' |
| 20) [row'ɣa] 'kind of red grape' | ['veːl] ~ ['beːl] 'wandering' |
| 21) [ow'ri] 'mad, insane' | [vo'zu] ~ [bo'zu] 'ablution' |
| 22) ['lowʃ] 'melon rinds' | ['tʰvaːɹ] 'axe' |
| 23) [dow'ry] 'large tray' | [deː'vɑːl] 'wall' |
| 24) ['kowɹ] 'shout' | [kʰa'vaːl] 'water melon' |
| 25) [gow'dɑɹ] 'herdsman' | [bjɑː'vo] ~ [bjɑː'bo] 'desert' |
| 26) [ʃow'goːʃ] 'eavesdropping' | ['dvɑ] 'curse' |
| 27) ['tow] 'high temperature' | ['deːv] ~ ['deːb] 'beast' |
| 28) ['row] 'down' | ['ʃeːv-a] ~ ['ʃeːb] 'steep, slope' |
| 29) [ow'bɑːl] 'sin, punishment' | |
| 30) ['ow] 'water' | |

The data in Table 5 above can analyze the gradual shift of *w* to *v* as follow:
-The first 11 examples can be used to show the phonemic status of *v* and the allophonic status of *w*, with the same result obtained for the same data and the same purpose represented in Table 2 above.

-The first 11 examples plus the ones from 18 to 30 can be analyzed as data representing the phonemic status of *w* and the allophonic status of *v* in certain environments, as it is also indicated for the same data and purpose in Table 3.

-The examples from 12 to 17 show the free variations of words containing *w* or *v*, as well as the rest of the examples down to 30 can be used for the analysis of *w* and *v* to show them as both being phonemes as both have occurred in the same environments, e.g., medial and final positions. Some data such as ['deːv] ~ ['deːb] 'beast' show the free variation of *v* and *b*, the

word that was [dew] in MP and still exists in some Persian dialects (see Introduction section).

## V. Discussion and Conclusion

The result of the analysis shows the existence of MP *ẘ* in SD that can be interpreted in different ways:

**Interpretation A**: Based on the analysis in section 4.1, *v* in SD can be proved to possess a phonemic status as it contrasts with another sound such as /f/, and *ẘ* as the allophone of *v,* which occurs in a certain environment. It can be argued that the phoneme /w/ of MP has changed to [w], an allophone of phoneme /v/ in Sistani. The existence of /w/ in Balochi and Kurdish, the Persian sisters, and the shift of /w/ in MP to v/b in NP as well as in some words in SD, such as walg/warg (MP)→ barg (NP) baːlg (SD), or āwāz/wāng (MP)→ āvāz/bāng (NP)→ āvāz/bāng (SD) (Mackenzie, 1990), as evidence, can support this interpretation.

The allophone [w] reappears as /v/ in the affixed forms, e.g. [gow] 'cow'→ [govara] 'the cows', [grow] 'pledge'→ [grove] 'in pledge', and [drow + o + dasta] → [drovo dasta] 'harvest + and + bundle'. This can be a proof of the allophonic relationship between /v/ and [w]. However, there are words such as [dowri] 'large tray', [rowʧa] 'kind of red grape', and [kowʃ] 'shoes' that do not have any affixed or other forms to show the reappearance of the /v/ in these words. Through the analysis, these words have been treated and explained either as words having diphthong [oʊ], or as having a sequence of [ow]. The appearance of /v/ here may also be taken as an intervening consonant between two vowels for the sake of easier pronunciation. However, it seems more reasonable to not think of /v/ as an intervening element as there are many words (see Table 6) in which the /w/ in MP has evolved to /v/ in the NP. The sound *ẘ* has also remained as an allophone in the Bakhtiari language in words such as (taken from Anonby and Asadi, 2014) [xow] → /xoʊ/ 'good', [taw] → /taʊ/ 'fever' (it seems in Bakhtiari [w] stayed somewhere between [w] and [v], i.e., /ʊ/). In addition, there are words in which [v] appears in their affixed forms not only before a vowel but also adjacent to a consonant that can support the [v] as not being a mediator: [dow] 'swear' → [dow + o + dow + ki] → [do**vo** do**vk**i or do**v**do**w**ki] 'act of swearing each other', [ʧow] 'wood' → [ʧow + o + ʧow + ki] → [ʧo**vo** ʧo**vk**i] 'act of fighting with a stick'. In these examples, in the affixed forms, [v] even is not always changed to [w] after [o] when occurring in the same syllable, [d**ow** → d**ow**.ki or d**ov**.ki]; this may be allowed just in some certain forms; more related investigation is needed.

**Interpretation B**: The result of analysis in section 4.2 can indicate that *ẘ* as the phoneme descending from MP still exists in Sistani, and *v* acts as its allophone in some environments. Table 3 above shows the occurrence of *ẘ* in open and closed syllables and in the medial and final positions in many words. As *ẘ* has a wide distribution and is found in many words, and as it only changes to *v* when adjacent to an affix in the word's final position, it can be taken as a phoneme and the *v* as its allophone. So far, this interpretation has never been investigated by other researchers in any related studies.

**Interpretation C**: The result in section 4.3 can also discuss *ẘ*, in the sequence of [ow], as changing to [ʊ] and forming diphthong [oʊ] in this dialect (see Lazard, 1974; Ahangar, 2003). Based on minimal pairs, some words can be either treated as having diphthong [oʊ] restricted mainly in closed syllables or as the sequence [ow]. According to the data, because [w] appears after [o] in open syllables (usually at the end of the word), there is a possibility for words such as [kowʃ] 'shoes' to be treated as words having [ow] and not [oʊ]. As there is no lexical evidence in the speech of speakers to show the reappearance of [v] in such words (may be due to the historical reasons or the structure of the words), they can either be treated as words having diphthong [oʊ] or words having the sequence [ow]. Regarding the data and the minimal pairs, it is possible to argue that the diphthong mainly occurs in closed syllables and those in open syllables are a sequence of [ow].

As for the [ow], two interpretations have led to two findings. First, because the [w] sound found in the data has been interpreted as the allophone of /v/ (which occurs in a certain environment), [ow] can be treated as a sequence of a vowel plus a consonant, V + C (o + w). Also, [ow] as V + C can be fitted into the syllable patterns of this dialect. So, with this interpretation, [ow] cannot act as diphthong because, according to the permitted syllable patterns in SD, if [ow] was a diphthong, a CC cluster could occur after it. However, it never allows a following CC cluster in the same syllable, for the [w] itself as a consonant occupies one of the C positions of the allowed cluster CC (and not CCC) in the coda. Besides, it is not economical to create a new phoneme while this sound can be interpreted via the existing sounds in the inventory; see examples (Okati, 2018):

| ['ʃow] 'night' | ['ow] 'water' | ['khowʃ] 'shoes' | [ow.dɑː.'ri] 'irrigation' |
|---|---|---|---|
| CVC | VC | CVCC | VC.CV.CV |

The second interpretation is taking [ow] as diphthong [oʊ]. In words such as [dowri] 'large tray', [rowʧa] 'kind of red grape', [lowʃ] 'melon rind', [kowl] 'desire', and [kowɹ] 'shout' that do not have any affixed or other forms in the lexicon to show the reappearance of /v/ (such as [gow] 'cow' → [gove] 'a cow'), the sequence [ow] can be taken as a diphthong, [oʊ], occurring mainly in closed syllables but with the restriction of not allowing consonant clusters after it. With this interpretation, these types of words have been listed as

the words containing diphthong to be compared with other words in the analysis section; some of them made minimal pairs with other words, which means the diphthong is in contrast and so it can be a phoneme. If [ow] is taken as diphthong [oʊ] in all words containing it, then the [v] could be thought of as a mediator occurring between two vowels, such as in [(gow) goʊ + -e] 'cow'→ [(gove) goʊve] 'a cow'; in this case, the evolution of [w] to [v] or the existing of [w] as an allophone in the genetically related varieties to SD is ignored. Besides, the form [goʊve] is odd in Sistani, so in this case, [v] cannot be a mediator, and the correct form will be [gove (go.ve) ← gow. + -e]. As a result, it is possible to suggest two different interpretations: first to say that in SD there is no positions and open and closed syllables. It changes to *v* only when it is adjacent to an affix. Moreover, the examples 12 to 17 in Table 5, which show the free variations of *v* and *w* in different words, can also be interpreted as showing the orientation of *w* towards gradual shifting to *v*/*b*. These examples, together with the rest of the examples down to 30, can also argue both *w* and *v* as phonemes, for both sounds are occurring in the same environments, but with the gradual shift of *w* to *v* observed in the free variations, e.g., [ow'ɣo] ~ [aːv'ɣo] 'Afghan'. Some data such as ['deːv] ~ ['deːb] 'beast' show the free variation of *v* and *b*, the word that was [dew] in MP and still exists in some Persian dialects (see Introduction section). Looking at the existing /w/ sound in the system of MP (MacKenzie, 1990) and changing it to /v/ or /b/, and in some cases to /g/, in NP and consequently in SD as a Persian dialect, could be taken as the evidence to show the existence of *w* and its connection and the gradual shift to *v*. However, *w* can still be found as a phoneme in the system of some genetically related languages to Persian such as Balochi and Kurdish, or as an allophone in other Iranian language varieties such as Bakhtiari language (Anonby and Asadi, 2014).

There are many words of MP in which [w] is located in different positions, and many of them reached NP, having [v] or [b] instead. Based on the changes, SD seems to be in some stages between MP and NP; there are some examples shown in Table 6: diphthong at all and that [w] is the allophone of /v/ after [o] in the syllable break like [gow] and [kowʃ], and wherever [w] is not tautosyllabic with [o], i.e., not being in the same syllable, it turns to the phoneme [v] such as in ['gow] 'cow' → ['go.ve] 'a cow'. Or vice versa, that it means there is no allophone [w], and instead, all the sequences of [ow]s are diphthongs. The second suggestion is that both [oʊ] and [ow] exist in Sistani: a) as a diphthong, [oʊ], but mostly in the closed syllables, e.g. [kowɪ → koʊɪ] 'shout' that is in contrast with [koːɪ] 'blind', and b) as a sequence of V + C, [ow], with the [w] as the allophone of /v/ occurring after [o] at the syllable break, e.g. [ʃow] 'night', [gow.dɑɪ] 'herdsman'. The second suggestion shows both the existence of [w] as an allophone and the probability of changing of [ow], in some cases, to a diphthong but with the restriction of not allowing a CC cluster after it. However, some data can be listed both under the words having allophone [w], or having diphthong [oʊ]; this can also support Interpretation D below.

**Interpretation D**: The analysis in section 4.4 can result in the argumentation of taking *w* as in the halfway of transition: shift of *w* to *v* in some words and still preserved in some other words. The first 11 examples of the data in Table 5, although can support the interpretation A, in which *w* is taken as an allophone of *v*, they can also, along with examples 18 to 30, show the phonemic status of *w*, and *v* as its allophone in certain environments, because, as mentioned above, *w* appears in different environments that is in medial and final positions and open and closed syllables. It changes to *v* only when it is adjacent to an affix. Moreover, the examples 12 to 17 in Table 5, which show the free variations of *v* and *w* in different words, can also be interpreted as showing the orientation of *w* towards gradual shifting to *v*/*b*. These examples, together with the rest of the examples down to 30, can also argue both *w* and *v* as phonemes, for both sounds are occurring in the same environments, but with the gradual shift of *w* to *v* observed in the free variations, e.g., [ow'ɣo] ~ [aːv'ɣo] 'Afghan'. Some data such as ['deːv] ~ ['deːb] 'beast' show the free variation of *v* and *b*, the word that was [dew] in MP and still exists in some Persian dialects (see Introduction section). Looking at the existing /w/ sound in the system of MP (MacKenzie, 1990) and changing it to /v/ or /b/, and in some cases to /g/, in NP and consequently in SD as a Persian dialect, could be taken as the evidence to show the existence of *w* and its connection and the gradual shift to *v*. However, *w* can still be found as a phoneme in the system of some genetically related languages to Persian such as Balochi and Kurdish, or as an allophone in other Iranian language varieties such as Bakhtiari language (Anonby and Asadi, 2014).

There are many words of MP in which [w] is located in different positions, and many of them reached NP, having [v] or [b] instead. Based on the changes, SD seems to be in some stages between MP and NP; there are some examples shown in Table 6:

**Table 6. Gradual shift of *w* to *v* and SD in a stage between.**

| MP | SD | NP | English |
|---|---|---|---|
| gɑw | gow | gɑv | 'cow' |
| aswɑr | svɑ:r | savɑr | 'rider' |
| dwɑzdah | dvɑ:zda | davɑzdah | 'twelve' |
| rawɑdʒ | ravɑ:dʒ | ravɑdʒ | 'current' |
| awɑz | ɑ:vɑ:z | avɑz | 'song' |
| we:wag | gi:va ~ be:va | bive | 'widow' |
| de:wɑr | de:vɑ:l ~ devɑ:l | divɑr | 'wall' |
| walg/warg | ba:lg | barg | 'leaf' |
| graw | grow | gero(v) | 'pledge' |
| tɑwɑn | tɑ:vo | tɑvɑn | 'obligation' |
| ʤɑwe:d | ʤɑ:ve:d | ʤɑvid | 'eternal' |
| ʃawgɑn | --- | ʃo:gɑn | 'polo' |
| warf | barf | barf | 'snow' |
| wɑd | bɑ:d | bɑd | 'wind' |
| wattar | bata:r | battar | 'worse' |
| go:ʃwɑr | goʃvɑ:ra | guʃvɑre | 'ear-ring' |
| awe:rɑn | ve:ro: | virɑn | 'ruined' |

To sum up, as there has been *w*, and not a *v*, in the sound inventory of MP, it can be concluded that the *v* in NP and its dialects is descended from *w* in MP. Regarding this, it can be argued that the shift of *w* to *v* is not yet accomplished in Sistani as one of the Persian dialects. That is why there are still many words containing *w*, taken as a phoneme, in Sistani that in the time of affixation will change to *v* (as an allophone) for the case of easier pronunciation. Of course, as another possible interpretation, *v* can be taken as a phoneme (and *w* as an allophone, see Table 2) in some words, e.g., [ve:rona] 'ruined', in which the shift of MP *w* to *v* is accomplished; this word was written by *w* in MP: [awe:rɑn].

The final interpretation can be the occurrence of the gradual shift of *w* to *v* in Sistani words that is not yet completed. By providing evidence for the existence of *w* in SD, it can somehow certify the SD as an intervallic stage between Middle and Modern Persian. It has preserved the *w* and some other features such as initial consonant clusters from the MP[2]. In the Modern Persian, it seems that [w] in the combination [ow], which still exists in Sistani, has been disappearing mainly in the colloquial dialect, leaving a long [o:] behind, e.g. [nowruz] > [no:ruz] 'No:ruz', [dowlat] > [do:lat] 'government'.

This study can be useful in reconstructing the phonological system of older Iranian languages. Etymological research can also take advantage of this kind of study and help show a shift in ancient sounds.

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[2] For [w] in the alphabet of MP see http://www.iranchamber.com/scripts/pahlavi_script.php, and Omniglot.com's page on MP scripts: "MP (Pahlavi) script developed from the Aramaic script and became the official script of the Sassanian empire (224-651 AD). It changed little during the time it was in use, but around the 5th century AD, it spawned a number of new scripts, including the Psalter and Avestan scripts".

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