A dialect geography in Yogyakarta-Surakarta isolect in Wedi District: An examination of permutation and phonological dialectometry as an endeavor to preserve Javanese language in Indonesia

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ABSTRACT

This study reveals the status of Javanese isolect in Wedi District, Klaten Regency which is influenced by Yogyakarta and Surakarta isolect. This is a quantitative descriptive study. Our data was collected from the residents of Wedi District, Klaten. The data was collected from 15 points of observation areas (villages) based on a dialectometric triangle. It includes the speech of local people. We employed the listening and speaking method. The listening method was equipped with note taking and tapping techniques, while the speaking method was equipped with by probing, face-to-face, and recording techniques. The techniques to analyze our data included reciprocal understanding, dialectometry, permutation and isogloss file. Based on our analysis, we find that the isolect status is based on different vocabularies, speeches, subdialects and dialects. This shows that the language diversity in the typical isolect still exists. These findings also prove that the Yogyakarta and Surakarta dialect holds isolect diversity as a representation and evidence of language diversity.

1. Introduction

Javanese language is one among thousands of languages in the world that is spoken by approximately 75.5 million people (Conners and Vander Klok, 2016; Nadar, 2007). With such number of speakers, Javanese language is set on 14th most language spoken in the world. In addition to the number of speakers who are generally located on Java, it is also spoken by Javanese communities in Sumatra, Borneo and other islands in Indonesia (Allen, 2013; Ananta et al., 2016; Aryan, 2015; Ningsih and Harahap, 2019). Furthermore, there are also several communities of Javanese speakers abroad, such as in Suriname, New Caledonia, and Javanese villages in Malaysia (Kaur, 2018; Laurence, 2000; Ramele and Yamazaki, 2013; Sekimoto, 1988; Villerius, 2017; Wariyati, 2018).

A study on language in Wedi District, Klaten Regency is conducted as an endeavor to preserve the culture, to develop and enrich the language treasury in the area. Within the linguistics field in particular dialectology, the Javanese language in Klaten presents as a field of linguistic study with its diverse problems (Herawati, 2017; Heriyanto, 2020; Lestari, 2012). Those diversities include a unique speech of Javanese isolect in the western region (with influence from variations of Jogjakarta dialect) and in the eastern region (with the influence of variations of Solo dialect). This study took place in Wedi District, Klaten Regency. Wedi District shares its borders on all four sides: on the west with Jogonalan District, on the east with Bayat District, on the south with Gantiwarno District, and on the north with Central Klaten District.

Based on the data taken from Klaten Office (2019), Wedi District covers a total area of 24.38 km² and population density of 1,864/km². From administrative point of view, Wedi district is divided into 19 villages wherein the majority of the local’s main livelihood is farming as the area covers agricultural potentials. In addition to the local nature that supports the regional economy, tourism is one of their biggest sources of income. This sector is supported by the local natural such as the stretch of southern coast in Klaten Regency, the natural sceneries and other beautiful natural attractions. Like most residents in Klaten, the residents in Wedi District also speak Javanese. However, this is not to say that the speech conversed between one villager to another within the District is exactly the same. As such, the difference will be examined using dialectology. Previous dialectology studies have been conducted using various data sources (see Figure 1).
The data of Javanese isolect in Wedi District were collected by utilizing the listening and speaking methods (Mahsun, 1995; Thomas, 1988). Both methods have their own techniques. The speaking method allowed the authors to conduct face to face meeting and to hold a conversation with the informants. Consequently, contacts/meetings took place between the authors and the informants in every predetermined place. Similarly, the listening method was conducted by recording the conversation, i.e. recording the language used by the informants in collecting the data.

Technically, the speaking methods were taken using a probing technique. The authors set an inducement to the informant so the informants might produce the expected targeted language. The trick was in the form of gloss prepared and arranged earlier in a list of questions (Filippula et al., 2005). Probing techniques serves as a basic technique done in an

2. Research method

This is a quantitative study because we used the data and applies computational analyses within dialectology and permutation (Wieling and Nerbonne, 2015). This study was presented using a descriptive technique. The use of this technique allowed the authors to present the facts of language concerning Javanese language isolect in Wedi District. Based on the linguistic facts, we collected the data for further selection and then mapped it. The technique was employed to provide explanation, interpretation, analysis and data processing.

This study is based the dialectology approach (Bailey et al., 1997; Thomas, 1987). Data for the study was collected from the residents in Wedi District, Klaten regency. It includes the residents’ normal speech. Based on 19 villages in Wedi District, 15 villages were designated as the observation areas based on a dialectometric triangle pattern that interconnected RA (research area). Those villages include Canan Village (DP 1), Kalitengan Village (DP 2), Gadungan Village (DP 3), Pandes Village (DP 4), Dengkeng Village (DP 5), Pesu Village (DP 6), Birit Village (DP 7), Pasung Village (DP 8), Trotok Village (DP 9), Sukorejo Village (DP 10), Kadibolo Village (DP 11), Sembung Village (DP 12), Melikan Village (DP 13), Jiwowetan Village (DP 14) and Kadilanggon Village (DP 15). We compared all RAs for their respective isolect status based on the percentages of dialectometry and permutation calculation. Equally important was the informants who were determined based on the age criteria i.e. at least 40 years old, never traveled abroad, and still had a complete sense of speech. In addition, Nothofer list of questions has helped the authors to collect the linguistic data that were truly reasonable during the time of speaking. There were 838 glosses and we used a few sentences as the instruments to collect the data needed (Adelaar, 2017; Nothofer, 2007).

Figure 1. Map of Wedi District, Klaten Regency, Central Java. (Source: original documentation courtesy of the author).
advanced technique in the form of advanced conversational techniques. This technique requires the authors to visit every RA and to converse with the informants. In addition to face-to-face technique, the authors also employed an advanced technique e.g. recording. The recording technique was used to complete the notes on the contents of each gloss. One of the problems we had was time limitation. This was because most of our informants worked as farmer. Consequently, the authors had to visit every RA several times. The data collection phase was completed when the data needed was available with clarification (both lexical and phonological). The next phase was data analysis. In practice, there were several methods that might be used in dialectological study i.e. the method of mutual understanding, lexicostatistic, diometrics, Homals and isogloss documentation (Mahsun, 1995; Chambers and Trudgill, 1998).

In this study, the authors analyzed the data using a method of mutual understanding, a dialectometry method to determine the vocabulary distance between one AR and another, and to find the differences or similarities on their isolect status between ARs compared. The method's limitation will be then complemented with permutation method, and isogloss documentation. The three methods were basically related to one another in data analysis. Eventually we found out the status of Javanese isolects in Wedi district. We used the criteria for determining isolect to be defined as language, dialect, sub dialect, or no difference based on Seguy formula (Lauder, 1993; Trudgill, 1986).

\[
\frac{(s \times 100)}{n} = d\%
\]

Note:
S: The number of differences compared to other observation areas
n: The number of maps compared
d: The distance of vocabulary in percentage

The findings are presented in percentage of vocabulary from the RAs which determine the status of the isolect with the following criteria:

- **Phonological differences**
  - 17 % and above: considered as language difference
  - 12-16 %: considered as dialect difference
  - 4-11 %: considered as sub-dialectal difference
  - 4-7 %: considered as speech difference
  - 0-3 % and below: considered as no difference

3. Results and discussion

3.1. The result from dialectometry isolects calculation in Wedi District based on phonological analysis

The phonological dialectometric results were done based on the data which were collected at Wedi District. The data were gathered from the questions in the form of gloss from Nothofer. The data showed that there were phonological differences which were calculated using Seguy.
Table 2. Phonological permutations.

| DP No. | % | Status | DP No. | % | Status | DP No. | % | Status |
|--------|---|--------|--------|---|--------|--------|---|--------|
| 1-2    | 6 | BW     | 3-12   | 8 | BS     | 7-9    | 7.5| BW     |
| 1-3    | 7 | BW     | 3-13   | 7 | BW     | 7-10   | 5.5| BW     |
| 1-4    | 11.5 | BS | 3-14 | 6.5 | BW | 7-11 | 5.5 | BW |
| 1-5    | 12 | BD     | 3-15   | 6.5 | BW | 7-12 | 8.5 | BS     |
| 1-6    | 9.5 | BS     | 4-5    | 6 | BW | 7-13 | 8.5 | BS     |
| 1-7    | 9.5 | BS     | 4-6    | 8 | BS | 7-14 | 4 | BW     |
| 1-8    | 7.5 | BW     | 4-7    | 15.5 | BD | 7-15 | 9 | BS     |
| 1-9    | 9.5 | BS     | 4-8    | 11 | BS | 8-9 | 6 | BW     |
| 1-10   | 8 | BS     | 4-9    | 7 | BW | 8-10 | 7.5 | BW |
| 1-11   | 10.5 | BS | 4-10 | 7.5 | BW | 8-11 | 7 | BW     |
| 1-12   | 8 | BS     | 4-11   | 6 | BW | 8-12 | 6.5 | BW     |
| 1-13   | 9 | BS     | 4-12   | 6 | BW | 8-13 | 6 | BW     |
| 1-14   | 10.5 | BS | 4-13 | 8 | BS | 8-14 | 6.5 | BW |
| 1-15   | 9.5 | BS     | 4-14   | 10 | BS | 8-15 | 6.5 | BW |
| 2-3    | 9 | BS     | 4-15   | 9 | BS | 9-10 | 9 | BS     |
| 2-4    | 9 | BS     | 5-6    | 7 | BW | 9-11 | 8 | BS     |
| 2-5    | 10.5 | BS | 5-7 | 14.5 | BD | 9-12 | 6 | BW     |
| 2-6    | 4 | BW     | 5-8    | 8.5 | BS | 9-13 | 6.5 | BW     |
| 2-7    | 11 | BS     | 5-9    | 8.5 | BS | 9-14 | 7 | BW     |
| 2-8    | 2.5 | BK     | 5-10   | 7.5 | BW | 9-15 | 5 | BW     |
| 2-9    | 2 | BK     | 5-11   | 10 | BS | 10-11 | 8 | BS |
| 2-10   | 4.5 | BW     | 5-12   | 10 | BS | 10-12 | 8 | BS |
| 2-11   | 5 | BW     | 5-13   | 4.5 | BW | 10-13 | 7 | BW |
| 2-12   | 3 | BK     | 5-14   | 9 | BS | 10-14 | 8 | BS |
| 2-13   | 10 | BS     | 5-15   | 10.5 | BS | 10-15 | 6 | BW |
| 2-14   | 6.5 | BW     | 6-7    | 5 | BW | 11-12 | 8.5 | BS |
| 2-15   | 6 | BW     | 6-8    | 2.5 | BK | 11-13 | 10 | BS |
| 3-4    | 11.5 | BS | 6-9 | 2 | BK | 11-14 | 4 | BW |
| 3-5    | 9 | BS     | 6-10   | 4 | BW | 11-15 | 10.5 | BS |
| 3-6    | 8.5 | BS     | 6-11   | 4.5 | BW | 12-13 | 16 | BD |
| 3-7    | 7.5 | BW     | 6-12   | 10.5 | BS | 12-14 | 10 | BS |
| 3-8    | 10 | BS     | 6-13   | 6.5 | BW | 12-15 | 5.5 | BW |
| 3-9    | 7.5 | BW     | 6-14   | 5.5 | BW | 13-14 | 7.5 | BW |
| 3-10   | 8.5 | BS     | 6-15   | 3 | BK | 13-15 | 6.5 | BW |
| 3-11   | 10 | BS     | 7-8    | 6 | BW | 14-15 | 5 | BW |

Note:
BK (Different Vocabulary).
BW (Different Speech).
BS (Different Sub dialect).
BD (Different Dialect).

The Figure 2 shows that there are two dialect border lines found in RA 7, and 12. This means that there are two RAs whose isolects have different speech, the thicker yellow line represents the differences in vocabulary, the thinner red lines represents the differences in speech, the thicker yellow line represents subdialect differences, and the thick blue line represents the dialect differences. The Figure 2 shows that there are two dialect border lines found in RA 7, and 12. This means that there are two RAs whose isolects have different speech, the thicker yellow line represents the differences in vocabulary, the thinner red lines represents the differences in speech, the thicker yellow line represents subdialect differences, and the thick blue line represents the dialect differences.

Based on the mapping of dialectometry in phonology, we can state the term Dengkeng, Birit, Kadipolo and Jiwowe dialect. Dengkeng dialect is a term for the isolect found in RA 5 in relation to RA 7 isolect. The relationship between the two isolect is that they are of different dialect, hence RA 7 is set as a distinctive dialect, in this case, we call it Birit dialect. RA 12 and 13 are called Kadibolo and Jiwowetan dialect status respectively.

3.2. The result of phonological permutation calculation

Based on the calculation of phonological permutation of Wedi District, we can state the term Dengkeng, Birit, Kadipolo and Jiwowe dialect. Dengkeng dialect is a term for the isolect found in RA 5 in relation to RA 7 isolect. The relationship between the two isolect is that they are of different dialect, hence RA 7 is set as a distinctive dialect, in this case, we call it Birit dialect. RA 12 and 13 are called Kadibolo and Jiwowetan dialect status respectively.
was not in the lexical and phonological dialectometry. Table 2 also shows that the status of speech difference and subjacent difference is more dominant compared to other statuses.

### 3.3. The description of phonological differences

The followings are presentation of phonological differences found in each RA. There are differences in two phonemes and also differences in three phonemes. However, all of them are dominated by differences in two phonemes that appear in every RA. In general, 104 phonological differences were found in every RA. These differences include differences in the vocal and consonants. Phonological differences have the same position as lexical differences in determining the status of isolec. Phonological and lexical differences produce the percentage which, in the later stage, determines the status of isolec in each RA.

#### 3.3.1. Correspondence of sound -a- ~ -ə-

Table 3 presents the correspondence analysis results of sound -a- ~ -ə-.

#### 3.3.2. Correspondence of sound -i- ~ -i-

Table 4 shows the correspondence analysis results of sound -e- ~ -i-.

#### 3.3.3. Correspondence of sound -i- ~ -I-

Table 5 presents the results of correspondence analysis of sound -i- ~ -I-.

#### 3.3.4. Correspondence of sound -a- ~ -e-

Table 6 shows the correspondence analysis results of sound -a- ~ -e-.

#### 3.3.5. Correspondence of sound -a- ~ -i-

Table 7 shows the correspondence analysis results of sound -a- ~ -i-.

#### 3.3.6. Correspondence of sound -u- ~ -U-

Table 8 presents the results of correspondence analysis of sound -u- ~ -U-.

#### 3.3.7. Correspondence of sound -n- ~ -n-

Table 9 shows the correspondence analysis results of sound -n- ~ -n-.
3.3.11. 
Correspondence of sound -o- ~ -u-.
Table 13 is the correspondence analysis results of sound -o- ~ -u-.

3.3.12. 
Correspondence of sound -e- ~ -i-.
The followings are the correspondence analysis results of sound -e- ~ -i- (see Table 14).

3.3.13. 
Correspondence of sound -u- ~ -o-.
Table 15 shows the correspondence analysis results of sound -u- ~ -o-.

3.3.14. 
Correspondence of sound -i- ~ -I- ~ -e-.
Table 16 is the correspondence analysis results of sound -i- ~ -I- ~ -e-.

3.3.15. 
Correspondence of sound -a- ~ -u-.
Table 17 shows the correspondence analysis results of sound -a- ~ -u-.

3.3.16. 
Correspondence of sound -i- ~ -u-.
Table 18 shows the correspondence analysis results of sound -i- ~ -u-.

3.3.17. 
Correspondence of sound -p- ~ -k-.
Table 19 shows the correspondence analysis results of sound -p- ~ -k-.

3.3.18. 
Correspondence of sound -d- ~ -j-.
Table 20 shows the correspondence analysis results of sound -d- ~ -j-.

3.3.19. 
Correspondence of sound -p- ~ -k-.
Table 21 shows the correspondence analysis results of sound -p- ~ -k-.

3.3.20. 
Correspondence of sound -b- ~ -w-.
Table 22 shows the correspondence analysis results of sound -b- ~ -w-.

3.3.21. 
Correspondence of sound -a- ~ -e-.
Table 23 shows the correspondence analysis results of sound -a- ~ -e-.

3.3.22. 
Correspondence of sound -p- ~ -m-.
Table 24 shows the correspondence analysis results of sound -p- ~ -m-.

3.3.23. 
Correspondence of other sounds.
Table 25 shows the correspondence analysis results of other sounds. Based on the findings on isolates in Wedi District, Klaten Regency by the RAs, it could be concluded that the phonological level that shows the differences in vocabulary is located in 6 RAs. The RAs which show differences in speech are found in 15 RAs. The RAs which show differences in dialect are found in 4 RAs.

Based on the previous analysis, there are layers of society (associative stylistics) that determine the speech level used among Wedi residents. The layers are classified into several levels, namely the grass root layer (i.e. lowest layer), the middle layer and the upper layer (top layer) (Dwiraharjo, 2006; Gumperz, 2009; Rampton, 2010). The grass root layer or the lowest layer consists of people whose speeches sound tough. The middle layer consists of people with a neutral style or popular. In reality, although not all generally applied, we endeavor to uncover the extent of social strata that comes from observing all villages studied (Bernstein, 1960; Jansma and Jelsma, 1987).

The result also demonstrates the abundant variations of Javanese language, in particular the speech in Wedi District. Javanese people are diverse both in social, and regional. Findings of this study are also in line with that of Agustina on variations of Javanese language used in the market. During the interaction of buying and selling, Javanese people use a variety of Ngoko and Kromo styles [46]. Javanese people use both Ngoko dus and naive Ngoko style. On the other hand, Javanese also use refined Kromo and naive Kromo style. This confirms that Javanese culture has a
high degree of variations. The study of Javanese language variations has also been carried out by many authors which demonstrate that Javanese language is rich in meanings and extremely unique in the world (Agustine, 2013; Day, 1978; Mardikantoro and Maretta, 2016; Pujiyanto, 2007). In general, this study also shows the language diversity within the framework of diversity as an asset of Indonesian people. This is in line
Table 19. Correspondence of sound -ŋ - ~ -m-

| No. | Gloss (Number) | Affix I Using -ŋ- | Affix II Using -m- |
|-----|----------------|-------------------|-------------------|
| 1   | Melihat [seeing] (547) | ŋaiati | namati |
| 2   | Melirik [seeing at glance] (548) | ŋiři? | míři? |

Table 20. Correspondence of sound -d- ~ -j-

| No. | Gloss (Number) | Affix I Using -d- | Affix II Using -j- |
|-----|----------------|-------------------|-------------------|
| 1   | Dada [chest] (9) | Də̆tə | Jə̆tə |
| 2   | Rusa [deer] (395) | Kidə̆y | Kijə̆y |

Table 21. Correspondence of sound -p- ~ -k-

| No. | Gloss (Number) | Affix I Using -p- | Affix II Using -k- |
|-----|----------------|-------------------|-------------------|
| 1   | Asap [smoke] (419) | paʔuʔ | kaʔuʔ |
| 2   | Kabat [fog] (462) | paʔuʔ | kaʔuʔ |

Table 22. Correspondence of sound -b- ~ -w-

| No. | Gloss (Number) | Affix I Using -b- | Affix II Using -w- |
|-----|----------------|-------------------|-------------------|
| 1   | Malam [night] (473) | baŋj | waŋj |
| 2   | Bergerak [moving] (511) | Obah | Owaŋh |

Table 23. Correspondence of sound -a- ~ -o-

| No. | Gloss (Number) | Affix I Using -a- | Affix II Using -o- |
|-----|----------------|-------------------|-------------------|
| 1   | Mengigiti manusia [biting a man] (594) | baŋj | waŋj |
| 2   | Mengigiti serungga [biting an insect] (595) | Obah | Owaŋh |

Table 24. Correspondence of sound -p- ~ -m-

| No. | Gloss (Number) | Affix I Using -p- | Affix II Using -m- |
|-----|----------------|-------------------|-------------------|
| 1   | Menjemur [dried in the sun] (618) | ŋape pepe pepe pememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememememem
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