Title: REPRESENTATIONS ON GALAȚI INTEGRATED STEEL PLANT. MODEL FOR A DATA ANALYSIS BY FREE ASSOCIATION OF NOTIONS

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ABSTRACT:
IN THE PAPER HEREIN, A MODEL FOR SOCIAL REPRESENTATION ANALYSIS IS DESCRIBED, BASED ON A METHOD CONSISTING OF THE FREE ASSOCIATION OF NOTIONS. THE SUBJECT OF REPRESENTATIONS HEREIN ARE THE INTEGRATED IRON AND STEEL WORKS OF GALAȚI. THE CONCEPT OF SOCIAL REPRESENTATIONS BELONGS TO SOCIAL PSYCHOLOGY, BEING A VERBALIZED WAY BY WHICH PEOPLE EXPRESS THEIR OWN MODALITY OF THINKING ABOUT VARIOUS SITUATIONS, GROUPS, PEOPLE, AND THINGS, AS A CONSEQUENCE OF THEIR DIRECT OR MEDIATED INTERACTION WITH THE SOCIAL ENVIRONMENT AND UPON ACCUMULATING SPECIFIC EXPERIENCE IN TIME. THE STUDY SAMPLING CONSISTED OF 137 SUBJECTS AND THE QUESTIONNAIRE WAS USED AS A RESEARCH METHOD OUT OF DATA RESULTED BY FREE ASSOCIATIONS, 685 NOTIONS CAME OUT. THREE WORKING SCENARIOS WERE USED AND THE DATA WITHIN THE RESEARCH WERE PROCESSED BY EVOCATION 2005 SOFTWARE.

KEY WORDS: SOCIAL REPRESENTATIONS, GALAȚI INTEGRATED IRON AND STEEL WORKS, FREE ASSOCIATION OF NOTIONS.

INTRODUCTION
Data of the present micro-research have been collected by applying a questionnaire to 137 subjects – 46 male gender subjects and 91 of female gender, out of them 61 being former employees of the integrated works and 76 subjects who have never worked withing the mentioned organization.

For purposes pertaining to the research utility, the subjects were divided into two large groups according to their age: 20 to 49 years old subjects (a more active period from the professional point of view) and 50 to 80 years old subjects (the pre- and retirement period). Data processing was performed by using Evocation 2005 software, processing that has been designed based on the free association of notions.

To explain the association concept, we have undertaken its double meaning as it can be found in psychology: „The first meaning is that of connection established by the subject between two psychic elements (ideas, images). This meaning aspect covers two realities: that

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of an event (mental condition of the subject) and that of the association itself (an idea present in the subject’s mind leads to other ideas, in obvious connection with the first idea). The second meaning is that of association constituent, as the association is a word, image, or associated idea.\textsuperscript{2}

The free association technique consisted in asking the subjects to associate words or phrases that suddenly come to their minds starting from an initial notion. Within our research, we have limited the number of words/phrases to five. The subjects were asked to answer the question “What are the first five words/phrases that come to your mind when you hear a discussion about the Galați steel plant?”

EVOC2005 statistical software was elaborated by Pierre Verges and his partners.\textsuperscript{3}

The hypotheses we have started from were:

1) People who have worked or still work within the steel plant have a significant different view on the organization compared to those who have never worked at the plant.

2) Women and men have a similar representation of the steel plant.

3) There are significant differences between the representations of the steel plant according to subjects’ ages, due to different historical contexts lived.

PROCESSING OF DATA AND RESULTED OUTCOMES

Upon centralizing data resulted from the questionnaire application, a total number of 685 notions were obtained regarding the topic of the Galați steel plant. The same were analyzed by a congruence between the appearance frequency of some notions and the average appearance rank for the respective notions. The tables resulted upon processing made by EVOC2005 software contained four big fields which are detailed as per below.

Field 1 (upper left in the tables of rank-frequency) contains the notions with a frequency above a certain level and a high appearance rank under a certain level, i.e. those notions located in the primary places of an association chain. Notions located in this field are also the elements and central themes of the representation.

Field 2 (lower left in the rank-frequency tables) contains the notions with low frequency and a high appearance rank under a certain level. Notions in this field have an ambiguous status.

Field 3 (upper right in the rank-frequency tables) is gathering notions with a frequency above a certain significant level and a low appearance rank. Resembling those in the previous field, the notions in this field have an ambiguous status too, requiring additional techniques for their clarification.

Field 4 (lower right in the rank-frequency tables) gathers peripheral issues of the representation, containing the low frequency notions, under a certain level and a low appearance rank, above a certain level.

Results arising from the research on the steel plant representations were grouped in several tables, depending on the population we have studied. The first table displays the rank-frequencies for the entire sampling. Here the five notions in the first field can be observed (upper left corner), with the highest frequencies and appearance rank, thus reaching a central position in the general association chain. The notions are, in the following order: “job

\textsuperscript{2} Mihai Curelaru, “Social Representations: Association Based Methods for Collecting Data”, in Social Psychology magazine, No. 3 (1999), (Polirom: Publishing House, Iași, 1999), 105.

\textsuperscript{3} For more details on the prototypical and categorial technique of Verges, see Curelaru, Mihai, Social Representations, (Polirom: Publishing House, Iași, 1996), 111-116.
positions”, “pollution”, “industrial complex”, “industry”, and “development”, as central themes of the representation that people figured out themselves about the steel plant.

Fields 2 and 3 contain notions with ambiguous status (in the table, upper right and lower left corners) which require applying additional research techniques to clarify their status in the mental “map” of the people’s representation on the integrated steel plant. Such notions are: “destruction”, “steel sheets/plates”, “steel”, “production”, “sold for nothing to foreigners”, “disappointment”, “stolen”, “specialists”, “pride”, “regret”, “sponsorships for local actions”, “dangers”.

Field 4 contains general peripheral issues with low frequencies and appearance rank, like those of “symbol”, “hope”, “sadness”, “export”, “loss”, “closing”, “better wages”, “company”, “downturn”, “apprenticeship”, “privatized”, “unemployment”.

Table 1 Table of rank-frequency for the entire sampling lot

| N=137 |
| --- |
| **Rank of appearance** |
| **Under 2.9** | **Over 2.9 and equal to 2.9** |
| **Frequency** | |
| **Over 12 and equal to 12** | |
| Job positions | 74 | 2.081 |
| Pollution | 55 | 2.655 |
| Ind. Complex | 37 | 1.351 |
| Industry | 30 | 2.767 |
| Development | 25 | 2.560 |
| **Under 12** | |
| Pride | 9 | 2.889 |
| Regret | 7 | 2.714 |
| Symbol | 10 | 3.600 |
| Hope | 10 | 4.300 |
| Sadness | 9 | 4.000 |
| sponsorships for local actions | 7 | 2.857 |
| Export | 8 | 3.625 |
| Loss | 8 | 4.125 |
| Closing | 7 | 4.000 |
| Better wages | 7 | 3.429 |
| Company | 7 | 3.143 |
| Downturn | 6 | 3.833 |
| Apprenticeship | 6 | 3.500 |
| Privatized | 6 | 4.000 |
| Unemployment | 6 | 3.000 |

The ways that women and men mentally represent the integrated steel plant are not differing too much, thus our first hypothesis is verified. This can be noticed in the two tables below. As central elements, men point out: “job positions”, the steel plant being an “industrial complex”, “facilitated development”, “steel and sheets/plates” as products. Women, besides men, add some shades related to: “pollution”, “industry”, and “selling of the integrated steel plant for nothing to foreigners”, but leave apart “sheets/plates and steel” produced in the plant, elements that can be found in field 2 (upper right), with an ambiguous status, next to that of “destruction”. In the same ambiguous status area, there can be found notions of “pride”, issued by men, and “nostalgia”, issued by women.

Both for men and women, a total of 28 peripheral issues of integrated steel plant representation appear, with a less significant number of appearances.
Table 2 Table of rank-frequency for the male population in the sampling lot

| Frequency | Under 2.9 | Over 2.9 and equal to 2.9 |
|-----------|-----------|--------------------------|
| N=46      |           |                          |

| Appearance rank | Job positions | 29 | 2.138 |  | Destruction | 9 | 3.333 |
|-----------------|---------------|----|-------|---|-------------|---|-------|
|                 | Ind. Complex  | 13 | 1.231 |  | Production  | 9 | 3.333 |
|                 | Development   | 11 | 2.545 |  | Industry    | 8 | 3.250 |
|                 | Sheet/plates, steel | 10 | 2.500 |   | Pollution   | 5 | 3.333 |

For frequency

| Frequency | Under 6 and equal to 6 |
|-----------|-------------------------|
| Pride     | 5 | 2.800 |
| Technology| 4 | 2.500 |
| Company   | 3 | 2.333 |
| Sponsorships for local actions | 3 | 2.000 |

Table 3 Table of rank-frequency for the female population in the sampling lot

| Frequency | Under 12 and equal to 12 | N=91 |
|-----------|--------------------------|------|

| Appearance rank | Job positions | 45 | 2.044 |  | Destruction | 25 | 3.200 |
|-----------------|---------------|----|-------|---|-------------|---|-------|
|                 | Pollution     | 40 | 2.400 |  | Sheet/plate, steel | 12 | 3.417 |
|                 | Industrial complex | 24 | 1.417 |   |             |   |       |
|                 | Industry      | 22 | 2.591 |   |             |   |       |
|                 | Sold for nothing to foreigners | 15 | 2.867 |   |             |   |       |
|                 | Development   | 14 | 2.571 |   |             |   |       |

For frequency

| Frequency | Under 12 |
|-----------|----------|
| Production| 11 | 2.727 |
| Regret    | 6 | 2.833 |
| Unemployment | 5 | 2.800 |
| Nostalgia | 5 | 1.800 |

Disappointment | 11 | 3.636 |
Stolen | 10 | 3.900 |
Specialists | 9 | 3.778 |
Sadness | 9 | 4.000 |
Hope | 8 | 4.125 |
Better wages | 7 | 3.429 |
Symbol | 6 | 3.500 |
Loss | 5 | 4.400 |
Benefit | 4 | 3.750 |
Apprenticeship | 4 | 3.250 |
Downturn | 4 | 4.250 |
Company | 4 | 3.750 |
Pride | 4 | 3.000 |
A part of my life | 4 | 3.500 |
Dangers | 4 | 3.000 |
Impoverishment | 4 | 4.750 |
Sponsorships for local actions | 4 | 3.500 |
Should we compare the next two tables of rank-frequency for ages in the interval of 20 to 49 years with the ones for the interval of 50 to 80 years, we shall notice that, in total, the younger in the sampling lot quote almost half of the number of notions compared to the elders (14 notions vs. 27), thus resulting a more tinted and richer representation of the integrated steel plant in the elder ones’ vision. This outcome partially confirms the third starting hypothesis, that of significant differences among steel plant representations per age categories due to various historical contexts lived. Overall, content differences are not too big although notions which don’t have a significant appearance for the younger subjects can be observed for the category of elder subjects; like those of: “development”, “production” (field 1), “nostalgia”, “regret”, “pride” (field 2). Seniors’ category displays an affectionate approach to the integrated steel plant compared to the younger subjects, being more concerned for the future of the plant, issuing notions like: “destruction”, “sold for nothing to foreigners”, “disappointment” (field 3). The younger subjects show a distant attitude and “see” the plant in a neutral manner, detached, as something pertaining to industry (field 1), with “difficult labour conditions” and “dangers” (field 2), its existence being quite pragmatically justified related to “development” and the advantage of “sponsorships for local actions”.

Table 4 Table of rank-frequency for the age category of 20 to 49 years old subjects in the sampling lot

| Frequency | Appearance rank | N=29 |
|-----------|-----------------|------|
| Under 5   |                 |      |
|            | Development     | 4    | 2.250 |
|            | Difficult labour conditions | 3 | 2.333 |
|            | Dangers         | 3    | 2.667 |
|            | Sponsorships for local actions | 3 | 2.333 |
| Over 5 and equal to 5 | Job positions | 14 | 1.786 |
|            | Industrial complex | 8 | 1.375 |
|            | Industry        | 7    | 2.286 |
| Over 5 and equal to 5 | Pollution | 14 | 3.000 |
|            | Sheets/plates, steel | 6 | 3.500 |
| Under 5   |                 |      |
|            | Destruction     | 4    | 3.250 |
|            | Closing         | 4    | 3.500 |
|            | Privatized      | 3    | 4.333 |
|            | Production      | 3    | 3.667 |
|            | Low wages       | 3    | 4.000 |
Table 5 Table of rank-frequency for the age category of 50 to 80 years old subjects in the sampling lot

| Frequency | Under 12 | Over 12 and equal to 12 |
|-----------|----------|-------------------------|
| Job positions | 60 | 2.150 |
| Pollution | 41 | 2.537 |
| Industrial complex | 29 | 1.345 |
| Development | 21 | 2.619 |
| Production | 17 | 2.882 |
| Sheets/plates, steel | 16 | 2.813 |
| Appearance rank | | |
| Destruction | 30 | 3.233 |
| Industry | 23 | 2.913 |
| Sold for nothing to foreigners | 17 | 3.000 |
| Disappointment | 14 | 3.643 |

Frequencies:
- Pride: 9, Frequency 2.889
- Regret: 7, Frequency 2.714
- Nostalgia: 5, Frequency 1.800
- Unemployment: 5, Frequency 2.800
- Technology: 5, Frequency 2.400
- Stolen: 11, Frequency 3.727
- Specialists: 10, Frequency 3.800
- Symbol: 9, Frequency 3.667
- Hope: 9, Frequency 4.222
- Sadness: 9, Frequency 4.000
- Loss: 7, Frequency 4.000
- Better wages: 7, Frequency 3.429
- Apprenticeship: 6, Frequency 3.500
- Export: 6, Frequency 4.000
- Company: 5, Frequency 3.200
- A part of my life: 5, Frequency 3.600
- Downturn: 5, Frequency 4.200

The first hypothesis, according to which people who have worked or still work in the integrated steel plant have a representation of the organisation significantly different against the one of those who never worked in the steel plant, was wholly disproved. No significant differences have been identified between the two categories, as it can be noticed in the tables below.

Table 6 Table of rank-frequency for subjects in the sampling lot who have worked or still work in the steel plant

| Frequency | Under 12 | Over 12 and equal to 12 |
|-----------|----------|-------------------------|
| Job positions | 33 | 2.152 |
| Pollution | 16 | 2.750 |
| Industry | 14 | 2.214 |
| Industrial complex | 13 | 1.385 |
| Appearance rank | | |
| Destruction | 16 | 2.875 |
| Sheets/plates, steel | 12 | 3.250 |

Frequencies:
- Sold for nothing to foreigners: 10, Frequency 2.400
- Production: 9, Frequency 2.778
- Development: 6, Frequency 2.500
- Company: 5, Frequency 2.400
- Technology: 4, Frequency 2.500
- Disappointment: 7, Frequency 3.714
- Specialists: 7, Frequency 4.286
- Stolen: 6, Frequency 4.000
- Symbol: 6, Frequency 3.833
- Sadness: 6, Frequency 4.167
- Apprenticeship: 5, Frequency 3.800
- Export: 5, Frequency 3.200
- A part of my life: 5, Frequency 3.600
- Better wages: 4, Frequency 3.250
- Impoverishment: 4, Frequency 4.750
- Pride: 4, Frequency 3.250
Table 7 Table of rank-frequency for subjects in the sampling lot who have never worked in the steel plant

| N=76 |
| --- |
| **Appearance rank** |
| **Under 2.8** | **Over 2.8 and equal to 2.8** |
| **Frequency** | **Job positions** | **Destruction** | **Industry** |
| Over 12 and equal to 12 | 41 | 2.024 | 18 | 3.556 |
| Pollution | 39 | 2.615 |
| Industrial complex | 24 | 1.333 |
| Development | 19 | 2.579 |
| Under 12 | **Sheets/plates, steel** | 10 | 2.700 |
| **Regret** | 6 | 2.333 |
| **Pride** | 5 | 2.600 |
| **Production** | 11 | 3.182 |
| **Disappointment** | 9 | 3.778 |
| **Sold for nothing to foreigners** | 9 | 4.000 |
| **Hope** | 9 | 4.333 |
| **Stolen** | 7 | 3.714 |
| **Downturn** | 6 | 3.833 |
| **Loss** | 6 | 4.000 |
| **Sponsorships for local actions** | 6 | 3.000 |
| **Specialists** | 5 | 3.400 |

In order to facilitate the processing of data, we relied on a procedure for creating category labels. The same are selectively presented in the table below:

Table 8 List of the main category labels used

| 1. Job positions | 1. (Low, high) wages |
| --- | --- |
| 2. Living potential | 2. |
| 3. Job | 3. |
| 4. Labour force | 4. |
| 5. Poorly paid labour force | 5. |
| 6. Labour | 6. |
| 7. Hard labour conditions | 7. |
| 8. The main employer in Galați | 8. |
| 9. Children would like to work and stay in the country | 9. |
| 10. Putt bread on the tables of people in Galați | 10. |
| 11. Meant jobs for many people | 11. |
| 12. Saving of Galați city | 12. |
| 13. Survival | 13. |
| 14. Qualification | 14. |

| 2. Industrial complex | 2.1. The biggest integrated plant ever built in Romania |
| --- | --- |
| 2.2. The biggest integrated plant in the South-East of Romania | 2.2. |
| 2.3. Big, huge, mastodon | 2.3. |
| 2.4. Ambitious project | 2.4. |
| 2.5. Romanians’ power of building heavy industry | 2.5. |
| 2.6. Brilliant of the national economy | 2.6. |
| 2.7. 6 blast furnaces | 2.7. |
| 2.8. Communism | 2.8. |
| 2.9. Immense | 2.9. |

| 3. Pollution | a. Toxicity |
| --- | --- |
| b. Industrial pollutants | b. |
| c. Black | c. |
| d. Dirt | d. |
| e. Dust | e. |
| f. Waste | f. |
| 4. Industry          | a. Strategic industrial facility  |
|                     | b. Production capacity           |
|                     | c. Metallurgy                    |
|                     | d. Steel industry                |
|                     | e. Performant industry           |
|                     | f. A wonderful industry for Romania |
|                     | g. Help for the national industry |
|                     | h. Iron and steel producer       |
| 5. Sold for nothing to foreigners | a. Sold for nothing |
|                     | b. A losing deal for Galați      |
|                     | c. Sold                         |
|                     | d. Foreign owners               |
|                     | e. Indians                      |
|                     | f. Globalization                |
| 6. Destruction      | a. It should have not been destroyed but revamped |
|                     | b. Pain in heart for the destruction |
|                     | c. Looted                       |
|                     | d. Bankruptcy                   |
|                     | e. Social decay                 |
|                     | f. Ruin                         |
|                     | g. Wreck                        |
|                     | h. A disaster after the Revolution of ‘89 |
|                     | i. Degradation                  |
|                     | j. Demolition                   |
|                     | k. A ghost steel plant nowadays |
|                     | l. The ones who wanted to break it down have succeeded! |
|                     | m. 5 blast furnaces shut down   |
|                     | n. Sorry for its destruction     |
| 7. Development      | a. Economic and social heartbeat |
|                     | b. Yet a powerful position      |
|                     | c. Performance                  |
|                     | d. Rapid development            |
|                     | e. Prosperity                   |
|                     | f. It was a real force for Galați |
|                     | g. Very good for Galați         |
|                     | h. Ingenuity, innovation        |
|                     | i. Support for the local economy|
|                     | j. Big help for many families   |
|                     | k. Modification of the population structure |
|                     | l. Important steel exporter      |
| 8. Technology       | 8.1. Qualitative products       |
|                     | 8.2. Excellence                 |
|                     | 8.3. High technology            |
| 9. Stolen           | 9.1. Theft                      |
|                     | 9.2. Political interests        |
|                     | 9.3. We were robbed             |
|                     | 9.4. Illegal businesses         |
|                     | 9.5. Corrupted Romanian managers of the steel plant |
| 10. Downturn        | 10.1. Present decay             |
|                     | 10.2. It has not withstood      |
|                     | 10.3. Many shops closed         |
|                     | 10.4. Dismissals                |
| 11. Hope            | 11.1. Hope for a revival        |
|                     | 11.2. Recovery                  |
| 12. Dangers         | 12.1. Labour accidents          |
|                     | 12.2. Dangerous work environment|
| 13. Disappointment  | 13.1. Anger                     |
CONCLUSION

As shown, we have verified whether differences between the ways women and men mentally represent the integrated steel plant exist. Out of our study, it came out that no significant difference exist on the mentioned aspect. By contrary, we have identified an interesting representation difference on age categories due to various historical contexts lived for different generations. In terms of representation content, the same was not significantly different among subjects in the sampling lot, although notions which do not significantly occur for the younger subjects can be noticed at the elder ones: “development”, “production”, “nostalgia”, “regret”, “pride”. The seniors’ category displays a more affectionate approach on the integrated steel plant compared to younger people’s category and seem to be more concerned about the steel plant’s future. For the seniors, a significant occurrence can be observed for terms like “destruction”, “sold for nothing to foreigners”, “disappointment”. The younger subjects appear more detached and “see” the integrated steel plant in a neutral manner, as being something pertaining to “industry”, having “hard labor conditions” and with “dangers”, its existence being pragmatically justified, related to “development” and the advantage of “sponsorships for local actions”. People who have worked or still work within the integrated steel plant have no significantly different representation on the organization compared to those who have never worked for the plant.
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