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## 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 AN 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.

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**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."<sup>2</sup>

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.<sup>3</sup>

**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

<sup>2</sup> Mihai Curelaru, "Social Representations: Association Based Methods for Collecting Data", in *Social Psychology* magazine, No. 3 (1999), (Polirom: Publishing House, Iași, 1999), 105.

<sup>3</sup> 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				
F r e q u e n c y	Over 12 and equal to 12	Job positions	74	2.081	Destruction	34	3.235	
		Pollution	55	2.655	Sheet/plates, steel	22	3.000	
		Ind. Complex	37	1.351	Production	20	3.000	
		Industry	30	2.767	Sold for nothing to foreigners	19	3.158	
		Development	25	2.560	Disappointment	16	3.750	
	Under 12					Stolen	13	3.846
						Specialists	12	3.917
			Pride	9	2.889	Symbol	10	3.600
			Regret	7	2.714	Hope	10	4.300
			Sponsorships for local actions	7	2.857	Sadness	9	4.000
Dangers			6	2.500	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**

N=46							
		Appearance rank					
		Under 2.9		Over 2.9 and equal to 2.9			
F r e q u e n c y	Over 6 and equal to 6	Job positions	29	2.138	Destruction	9	3.333
	Under 6	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	
				Disappointment	5	4.000	
				Export	5	3.600	
				Closing	4	4.250	
				Symbol	4	3.750	
		Pride	5	2.800	Sold for nothing		
		Technology	4	2.500	to foreigners	4	4.250
		Company	3	2.333	Stolen	3	3.667
		Sponsorships for local actions	3	2.000	Better pensions	3	5.000
				Loss	3	3.667	
				Privatized	3	4.000	
				Low wages	3	4.000	
				Specialists	3	4.333	

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

N=91							
		Appearance rank					
		Under 2.9		Over 2.9 and equal to 2.9			
F r e q u e n c y	Over 12 and equal to 12	Job positions	45	2.044			
	Under 12	Pollution	40	2.400	Destruction	25	3.200
Industrial complex		24	1.417	Sheet/plate, steel	12	3.417	
Industry		22	2.591				
Sold for nothing				Disappointment	11	3.636	
to foreigners		15	2.867	Stolen	10	3.900	
Development		14	2.571	Specialists	9	3.778	
				Sadness	9	4.000	
				Hope	8	4.125	
				Better wages	7	3.429	
		Production	11	2.727	Symbol	6	3.500
		Regret	6	2.833	Loss	5	4.400
	Unemployment	5	2.800	Benefit	4	3.750	
	Nostalgia	5	1.800	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**

		N=29					
		Appearance rank					
		Under 2.9		Over 2.9 and equal to 2.9			
F r e q u e n c y	Over 5 and equal to 5	Job positions	14	1.786			
		Industrial complex	8	1.375	Pollution	14	3.000
		Industry	7	2.286	Sheets/plates, steel	6	3.500
	Under 5	Development	4	2.250	Destruction	4	3.250
		Difficult labour conditions	3	2.333	Closing	4	3.500
		Dangers	3	2.667	Privatized	3	4.333
		Sponsorships for local actions	3	2.333	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**

N=108						
		Appearance rank				
		Under 2.9		Over 2.9 and equal to 2.9		
F r e q u e n c y	Over 12 and equal to 12	Job positions	60	2.150	Destruction	30 3.233
		Pollution	41	2.537	Industry	23 2.913
		Industrial complex	29	1.345	Sold for nothing to foreigners	17 3.000
		Development	21	2.619	Disappointment	14 3.643
		Production	17	2.882		
		Sheets/plates, steel	16	2.813		
	Under 12				Stolen	11 3.727
					Specialists	10 3.800
					Symbol	9 3.667
		Pride	9	2.889	Hope	9 4.222
		Regret	7	2.714	Sadness	9 4.000
		Nostalgia	5	1.800	Loss	7 4.000
		Unemployment	5	2.800	Better wages	7 3.429
		Technology	5	2.400	Apprenticeship	6 3.500
			Export	6 4.000		
			Company	5 3.200		
			A part of my life	5 3.600		
			Downturn	5 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**

N=61						
		Appearance rank				
		Under 2.8		Over 2.8 and equal to 2.8		
F r e q u e n c y	Over 12 and equal to 12	Job positions	33	2.152		
		Pollution	16	2.750	Destruction	16 2.875
		Industry	14	2.214	Sheets/plates, steel	12 3.250
		Industrial complex	13	1.385		
	Under 12				Disappointment	7 3.714
					Specialists	7 4.286
					Stolen	6 4.000
		Sold for nothing to foreigners	10	2.400	Symbol	6 3.833
		Production	9	2.778	Sadness	6 4.167
		Development	6	2.500	Apprenticeship	5 3.800
		Company	5	2.400	Export	5 3.200
		Technology	4	2.500	A part of my life	5 3.600
					Better wages	4 3.250
					Impoverishment	4 4.750
			Pride	4 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	Over 12 and equal to 12	Job positions	41	2.024	Destruction	18	3.556	
		Pollution	39	2.615		Industry	16	3.250
		Industrial complex	24	1.333				
		Development	19	2.579				
	Under 12	Sheets/plates, steel	10	2.700	Production		11	3.182
		Regret	6	2.333	Disappointment	9	3.778	
		Pride	5	2.600	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	<ol style="list-style-type: none"> <li>1. (Low, high) wages</li> <li>2. Living potential</li> <li>3. Job</li> <li>4. Labour force</li> <li>5. Poorly paid labour force</li> <li>6. Labour</li> <li>7. Hard labour conditions</li> <li>8. The main employer in Galați</li> <li>9. Children would like to work and stay in the country</li> <li>10. Putt bread on the tables of people in Galați</li> <li>11. Meant jobs for many people</li> <li>12. Saving of Galați city</li> <li>13. Survival</li> <li>14. Qualification</li> </ol>
2. Industrial complex	<ol style="list-style-type: none"> <li>2.1. The biggest integrated plant ever built in Romania</li> <li>2.2. The biggest integrated plant in the South-East of Romania</li> <li>2.3. Big, huge, mastodon</li> <li>2.4. Ambitious project</li> <li>2.5. Romanians' power of building heavy industry</li> <li>2.6. Brilliant of the national economy</li> <li>2.7. 6 blast furnaces</li> <li>2.8. Communism</li> <li>2.9. Immense</li> </ol>
3. Pollution	<ol style="list-style-type: none"> <li>a. Toxicity</li> <li>b. Industrial pollutants</li> <li>c. Black</li> <li>d. Dirt</li> <li>e. Dust</li> <li>f. Waste</li> </ol>



4. Industry	<ul style="list-style-type: none"> <li>a. Strategic industrial facility</li> <li>b. Production capacity</li> <li>c. Metallurgy</li> <li>d. Steel industry</li> <li>e. Performant industry</li> <li>f. A wonderful industry for Romania</li> <li>g. Help for the national industry</li> <li>h. Iron and steel producer</li> </ul>
5. Sold for nothing to foreigners	<ul style="list-style-type: none"> <li>a. Sold for nothing</li> <li>b. A losing deal for Galați</li> <li>c. Sold</li> <li>d. Foreign owners</li> <li>e. Indians</li> <li>f. Globalization</li> </ul>
6. Destruction	<ul style="list-style-type: none"> <li>a. It should have not been destroyed but revamped</li> <li>b. Pain in heart for the destruction</li> <li>c. Looted</li> <li>d. Bankruptcy</li> <li>e. Social decay</li> <li>f. Ruin</li> <li>g. Wreck</li> <li>h. A disaster after the Revolution of '89</li> <li>i. Degradation</li> <li>j. Demolition</li> <li>k. A ghost steel plant nowadays</li> <li>l. The ones who wanted to break it down have succeeded!</li> <li>m. 5 blast furnaces shut down</li> <li>n. Sorry for its destruction</li> </ul>
7. Development	<ul style="list-style-type: none"> <li>a. Economic and social heartbeat</li> <li>b. Yet a powerful position</li> <li>c. Performance</li> <li>d. Rapid development</li> <li>e. Prosperity</li> <li>f. It was a real force for Galați</li> <li>g. Very good for Galați</li> <li>h. Ingenuity, innovation</li> <li>i. Support for the local economy</li> <li>j. Big help for many families</li> <li>k. Modification of the population structure</li> <li>l. Important steel exporter</li> </ul>
8. Technology	<ul style="list-style-type: none"> <li>8.1. Qualitative products</li> <li>8.2. Excellence</li> <li>8.3. High technology</li> </ul>
9. Stolen	<ul style="list-style-type: none"> <li>9.1. Theft</li> <li>9.2. Political interests</li> <li>9.3. We were robbed</li> <li>9.4. Illegal businesses</li> <li>9.5. Corrupted Romanian managers of the steel plant</li> </ul>
10. Downturn	<ul style="list-style-type: none"> <li>10.1. Present decay</li> <li>10.2. It has not withstood</li> <li>10.3. Many shops closed</li> <li>10.4. Dismissals</li> </ul>
11. Hope	<ul style="list-style-type: none"> <li>11.1. Hope for a revival</li> <li>11.2. Recovery</li> </ul>
12. Dangers	<ul style="list-style-type: none"> <li>12.1. Labour accidents</li> <li>12.2. Dangerous work environment</li> </ul>
13. Disappointment	<ul style="list-style-type: none"> <li>13.1. Anger</li> </ul>

	13.2. Lack of interest 13.3. Botched privatization
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## 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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