Towards a low carbon society. Emotional Text Analysis (ETA) as a support for a European partnership

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Abstract

With its Communication "Europe 2020. A strategy for smart, sustainable and inclusive growth" the European Commission in 2010 committed the Member States to pursue a significant decarbonisation of European society. The European Commission Research & Innovation has encouraged several research projects and exchange of experiences, with the aim of increasing Europe's capacity to achieve this objective.
In this context R&Dialogue Research and Civil Society Dialogue towards a low-carbon society is a project promoted, under 7th Framework Programme, by 17 European organizations in 10 Member States, aiming to improve the dialogue between research and civil society organizations.
Emotional Text Analysis (ETA) was used to identify, at the beginning of the project, the cultural dimensions in the consortium that could better support dialogue. This paper contribution reports about: a) the analysis conducted on 49 English language interviews to project's partners; b) and on how it contributed to develop the collaboration among consortium members towards the achievement of the objectives of the project.

Keywords: Emotional Text Analysis, ETA, co-occurrence, cluster analysis, culture, dialogue, low carbon technology, European partnership.

1. The R&Dialogue project and Emotional Text Analysis (ETA)

The European Union defined in 2010 a strategy for smart, sustainable and inclusive growth which includes 5 specific targets to be achieved by 2020. One of them addresses the challenges of climate change and energy sustainability and sets the following objectives: "Reduce greenhouse gas emissions by at least 20% compared to 1990 levels or by 30%, if the conditions are right; increase the share of renewable energy sources in our final energy consumption to 20%; and a 20% increase in energy efficiency" (European Commission, 2010a, p. 11).

As part of this context and on the basis of the 2010 Work Programme, the 7th European research Framework Programme issued in 2011 a call for proposals encouraging "A more dynamic governance of the science and society" (European Commission, 2010b, p. 7) through Mobilisation and Mutual Learning (MML) activities based on "partnerships between research organizations and societal actors" (*ibid.*) to address specific societal challenges among which the need for Europe of: "Moving towards a low-carbon society" (*ibid.*). In particular, in the words of the Commission's call: "The overarching rationale for developing low carbon

energy technologies, including carbon capture and sequestration technologies, is well established: we must find 'cleaner' energy sources and ways for dealing with their potential environmental impacts. However, the technological solutions that are proposed might not be considered desirable in the specific environments in which they could be deployed. Technologically appealing solutions might miss key socio-economic considerations and elicit public hostility or disinterest. Understanding the nature of various public concerns (e.g. environmental, ethical, economic, cultural…), and taking on board legitimate expectations should influence the relevant research and lead to more broadly acceptable solutions." (*ibid.*).

The call was of particular interest for our research group, which has been working for a number of years on science dissemination issues related to the Geological Storage of CO2 - CGS (Vercelli, Lombardi, 2009; Czernichowski-Lauriol *et al.*, 2009; Vercelli, 2010; Vercelli, Anderlucci, 2011; Vercelli *et al.*, 2013), which is an important technology for reducing CO2 emissions by capturing and storing carbon dioxide (Carbon dioxide Capture and Storage - CCS) in the deep subsurface. CCS is part of the portfolio of technologies that the European Commission has included in the 2020 and 2050 roadmaps for a sustainable energy production, but is still mostly unknown to the wider public and its implementation is facing considerable delays partly related to the gap between research and technological development and public awareness of the technology. Our work in the field, starting from geological research has progressively developed to integrate the perspective of a variety of disciplines leading to the formation of a multidisciplinary team, which now includes geological, engineering, psychosocial and communication expertise. The call provided an excellent opportunity to further develop our work on the social and psychological aspects implied in the development and implementation of new energy technologies. Together with other 16 partners from 10 different European countries (Czech Republic, France, Germany, Greece, Italy, Norway, Portugal, Spain, The Netherlands and the United Kingdom), including research, consultancy and non-governmental organisations, we made a proposal for establishing a dialogue process between research organisations and civil society organisations on 5 low carbon technologies: CCS, Solar, Wind, Biomass, Smart Grids. The project was awarded the grant and started in June 2012 (http://www.rndialogue.eu/).

Dialogue is a relatively recent concept (Escobar, 2009) and the project is just as much about establishing a dialogue as exploring how this can be done – particularly in the energy context which has a very high level of complexity. Therefore the project has a strong research intervention component which focuses on emotional and cultural factors to support their evoultion in relation to the goals of the project. The Emotional Text Analysis (ETA) (Carli, Paniccia, 2002) has thus been adopted as one of the main tools for exploring the social processes that the project intends to address, As highlighted in the European Commission's call, the challenges of dialogue lie in the way people look at the technologies more than in technological issues of the different low carbon solutions. With ETA cultural aspects can be investigated thus providing useful input to the reflection on the social use of the technologies and on the process through which decision on their implementation are made.

So, the exploration of the social process and of its cultural dimensions, related to the development of a low carbon society, has started in the R&Dialogue project within the consortium itself. Partners would be, of course, the first ones to become involved in trying to understand their own relationship with the objectives and expected results of the project, how they themselves could imagine the dialogue on a low carbon society. In this contribution we report on the analysis we have conducted, with the ETA methodology, on the text of the

interviews to R&Dialogue country teams which include 17 organisations from 10 European countries.

2. Methodology

The Emotional Text Analysis (ETA) has been developed to explore the ways in which a social group emotionally symbolizes a context or theme and how these symbolisations organize the behavior of that group. It has been already used in different contexts with regard to a number of societal challenges (Carli, Paniccia, 2002; Carli, Dolcetti, Battisti, 2004; Dolcetti, Giovagnoli, Paniccia, Carli, 2006; Dolcetti, Romei, 2006; Vercelli, Lombardi, 2009) but it might be useful to recall some basic concepts and put them in relationship to this specific contribution.

Everything we relate to, in our case it could be a low carbon technology, is emotionally represented in addition to being perceived at cognitive level. There are many possible emotional representations. The very basic form of human emotional symbolization of the objects in the real world and of the relationships with them is made in terms of 'friends' or 'enemies'. A different form of emotional relationship is the one in terms of usefulness or uselessness. Friend-enemy and useful-useless are in fact two different emotional systems. These and many others and more complex emotional systems are brought into play and organize contexts of opinions, attitudes and behaviors regarding various social objects and relationships.

In this theoretical model, emotions are not alternative to rationality; the concept is that we properly understand our 'reality' through an 'emotional way of thinking', a thought that is integrated with emotions. Moreover emotions are not individual, they are socially shared, although individuals are the vehicle for their expression. The fact that there are emotional dimensions that we have in common is the normality of our life even if we are unknowing of it; usually we become conscious of it when things change and this common ground is lost (Carli, Paniccia, 1999).

As explained by Battisti and Dolcetti the way emotions are considered in ETA overcomes the distinction between 'primary' and 'secondary' emotions: the first ones expression of innate factors (Ekman 1973; Izard, 1977), the second ones by cultural factors (Damasio, 1994; Izard, 1977). Apart from considering the lack of consensus among researchers about which emotions belong to the first or the second group, in any case in the ETA methodology emotions are considered as socially constructed: the results of a complex historical, contextual and psychological process of emotional meaning attribution to social experience (Battisti, Dolcetti, 2012).

In this framework words are organizers and indicators of a shared affective process (Carli, 1987). We can say with Reinert that they are "Lieux d'énonciation entre les représentations personnelles et les pre-construits sociaux donc partagés"[1] (Reinert, 1993, p. 12). So the language can be seen as an act (Austin, 1975) were emotionality flows and expresses itself through words: a narrow and limited channels for the infinite way of being of the mind, where the symmetrical and the dividing way of being manifest together (Matte Blanco 1975). Emotions refer to relational systems and words are ways to express and share the emotions in a given context.

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[1] "Words are utterances situated between personal representations and social pre-constructions which are shared" (our translation).

With ETA we look for the words that more than others carry the emotional dimension, denominated 'dense' words. Such words are selected for the analysis when the text is prepared. The process of selecting dense words also includes a process of reduction of different graphic forms at their common lexeme, with some particularities related to the theoretical framework of the ETA. "With the ETA the aim is to implement a process of deconstruction of the typical linguistic links of the dividing and asymmetrical way of the mind (operational function of language), to achieve the reconstruction of the most common chains of associations between dense words, with the support of the co-occurrences statistical calculation. It's a process which is isomorphic to the psychoanalytic free associations method, that Sigmund Freud developed for his patients and that has long been used also in psycho-sociological intervention" (Battisti, Dolcetti, 2012, p. 97 [translated for this paper]).

From a statistical and linguistic point of view, the technique of the co-occurrences between words allows for the formation of clusters of 'dense' words which reflect the establishment of relations between 'infinite' and 'simmetrycal' logic and specific contexts. Words with a maximum polysemic value, haveing – unlike others – a lesser need of a linguistic context to convey their own emotionality. The resulting clusters are called 'cultural repertoires' of a 'local culture' to underline that they are about emotions in social processes (Carli, Paniccia, 2002).

3. Data collection and analysis

The process to construct the text for an ETA has to follow precise criteria. The interview for collecting the text has to be performed in a way that facilitates as much as possible a free flow expression of the interviewee. With this kind of interview people can start to deconstruct and reconstruct during the interview process their way of emotionally symbolizing on the topic proposed to their attention. The interview to be used for ETA is thus held on the basis of an open-ended question and supporting a process of free association. We are very far from the type of interviews designed to investigate and to collect opinion for inquiries and even more from journalistic interviews (Dolcetti, Battisti, Casuccio, 2008).

The question proposed to the interviewees' consortium members of the R&Dialogue project was: "*Based on your work and your role in the dialogue action towards a low carbon society, what are your objectives and what are the outcomes you would like to achieve in the project? Please tell me what comes to your mind ….*".

Forty-nine persons were interviewed, in English language, in the months of September and October 2012: 5 in the Czech Republic, 7 in France, 5 in Germany, 4 in Italy, 4 in Norway, 8 in Portugal, 3 in Spain, 5 in The Netherlands and 5 in United Kingdom. It is a large number, considering that sixty-eight people composed the overall project team at that time.

The interviews were held by two researchers of Sapienza University of Rome, which is the partner leading the work package on the social process. The analysis and interpretation of data were carried out by the Sapienza team, which comprises multidisciplinary expertise from psychology to energy.

We collected a .txt corpus of 494 kilobytes, formed by 87,348 tokens and 4,729 types; the *hapax* are 1,916. So the TTR (Type/Token Ratio) is 0.054, sufficient for a statistical text approach in this context. Despite having interviewed a large majority of people not English native, the collected text is not stereotypic on a linguistic level.

The statistical analysis of the text's corpus was supported by the software T-LAB (http://www.tlab.it/en/). The elaboration of the data went through the following steps: "a - construction of a data table context units x lexical units (up to 150,000 rows x 3,000 columns), with presence/absence values; b - TF-IDF normalization and scaling of row vectors to unit length (Euclidean norm); c - clustering of the context units (measure: cosine coefficient; method: bisecting K-means; references: Steinbach, Karypis, & Kumar, 2000; Savaresi, Booley, 2001); d - filing of the obtained partitions and, for each of them: e - construction of a contingency table lexical units x clusters (n x k); f - chi square test applied to all the intersections of the contingency table; g - correspondence analysis of the contingency table lexical units x clusters (references: Benzécri, 1984; Greenacre, 1984; Lebart, Salem, 1994)" (Lancia, 2013, p. 75).

The facilities in using personalised dictionaries and the lemmatization in several European language, made us opt for the use of T-LAB in this project, instead of ALCESTE (www.image-zafar.com), more often used for ETA.

4. Results

The analysis produced four clusters. Their reciprocal positions can be visualised in figure 1, a tri-dimensional representation of the factorial space emerged from the ETA.

Figure 1: Cultural space
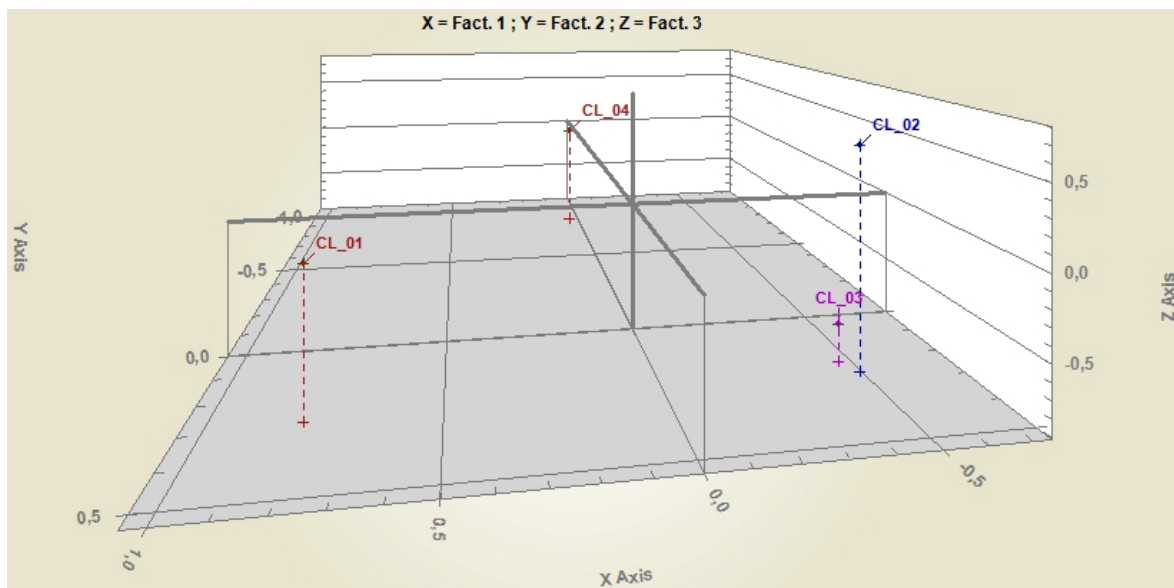
The tree factors, emerged from the output of this ETA, have the following weight: first factor 42.38%, second factor 32.24% and third factor 25.37%.

In the figure 2 we present the data about the relation clusters-factors underlining the most significant relation between them.

Figure 2: Variables' coordinates

VARIAB	COOR-1	COOR-2	COOR-3
CL_01	*0.7962*	0.2846	0.0014
CL_02	- 0.4944	0.2678	*0.5505*
CL_03	-0.4944	0.2188	*- 0.6531*
CL_04	0.0344	*- 0.8546*	0.0278

Cluster 1 is substantially related to one of the first factor's poles. If we look at this factor we can see an opposition between cluster 1 and clusters 2 and 3. Clusters 2 and 3 instead are significantly related and opposed on the third factor. The cluster 4 is strictly related to the second factor.

Before presenting, for each cluster (cultural repertoires), the list of the 'words' belonging to it and an interpretation of its co-occurrences, in figure 3 we can see some information about the clusters' elementary contexts.

Figure 3: Elementary contexts of the clusters

CL_1	CL_2	CL_3	CL_4
Elementary Context: 422 of 1735 (24.33%)	Elementary Context: 451 of 1735 (25.99%)	Elementary Context: 427 of 1735 (24.61%)	Elementary Context: 435 of 1735 (25.07%)

4.1 The four cultural repertoires[2]

Cultural repertoire 1. The words with the highest χ_2 (see parenthesis) in this cluster are: **energy** (572.11), **renewable** (211.17), **build** (110.07), **biofuel** (97.82), **wind** (90.59), **produce** (88.37), **electricity** (87.23), **biomass** (78.25), **solar** (76.70), **sustainable** (59.46), **plant** (50.74), **nuclear** (47.32), **heat** (46.46), **strategy** (41.03), **economy** (35.89), **power e (energy)** (35.51), **reduce** (34.47), **consume** (34.36), **fuel** (33.82), **price** (32.64).

In this context the word which attracts the large number of associations is **energy** – force of expression (and with a broader meaning of power), activity, operation; from active, working, but also in the sense of urge, press hard, push drive compel – associated with **renewable** – the idea of a force that is always new, and it is powered again and again. We have here a very strong emotion of activity linked to one of endlessness. The third word – **build** – brings the idea of construction and growth. The following word, **biofuel** on one side evokes the relationship with the life itself, on the other the right for fuel. The word **wind**, another renewable source, is air in motion. All this brings to **produce and electricity**. Produce contains the word 'duce', dux or duke, a leader, somebody who brings things into being. Electricity comes from amber as something that with friction can attract other substances.. Renewable sources appear to have autonomous power, since they bring life in themselves, thus they can be directly considered, without delay, for immediate production. It could be said that with renewable sources in hands one feels powerful. At the same time they need a leader, a guide that brings them into being. Then we have the word **biomass**, as if to say that of this renewable living power there is a big quantity. With **solar**, comes to mind limpidity, light, but also a great energy that doesn't stop burning and giving life to us. But this process needs some kind of control, has to be **sustainable** – kept at a certain level, not over or under its possibilities – and has to take root in the ground like a **plant** and grow like a plant towards the sun. Plant in fact is also 'industrial power plant' something very bulky, which has taken roots in the territory to produce energy that, like the sun, is perceived as an important element for the life. Hence we move to **nuclear**, something's heart but also atomic energy, a very powerful energy derived from nature but also very hazardous. Then **heat**: warmth, fervour but also 'a single course in a race', 'a single intense effort', perhaps it is the issue of temperature,

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[2] During the interpretation phase of ETA the study of etymology is an important tool for a deeper understanding of the emotional meaning of the clusters of words. In this analysis we used an online open access etymological dictionary: http://www.etymonline.com). In this paper we can only partially refer to this part of the process, readers pleased consider this is in the background of what we will say about the words.

of global warming that comes up and the feeling that there is only one chance which requires an intense effort: it is a matter of life or death. So a **strategy**, that etymologically means 'office or command of a general' seems necessary.. The thought goes to **economy**, "to thriftily manage the household', a more domestic, private dimension. Then electricity again in another form: **power** – 'ability to act or do; strength, vigour, might' and especially in battle 'efficacy; control, mastery, authority, military force'. Follows the word **reduce** – derived from the Latin 'ducere' so we have again a dimension of leadership but which now comes reduce - 'lower, diminish, lessen'. **Consume**, could be the object of what should be reduced, but also an alternative way of doing things: on one side thriftily on the other using up, bringing to fulfilment, without the possibility of coming back. The word **fuel** appears again (we have previously seen it in biofuel), it comes from focus – fire, it is a bundle of firewood, something pertaining the hearth and represents the right to 'demand material for making fire'.

This cluster speaks of a new energy that can be built, which is important for life and has a strong "domestic" relevance, meaning the home and the right for energy as something very important for everyone. In this cluster there is the presence of a number of energy technologies; there seems to be a continuous movement of forces, a leading process to produce power, to have the rights to do it, hopefully in a more sustainable way. It appears as a uniquely technological dimension, no word here relates to people, at the same time it conveys the feeling of someone who has the power to make things happen. We can imagine that this could be the area of confidence for consortium partners, who are all very competent on the technologies; when they think in terms of implementation of low carbon energy technologies they have a sense of power, of being the ones who can make this happen, who can in fact lead the process. This appeared in the project life in many discussions about what the project was about: technologies and their implementation or dialogue? In the absence of any relationship the strong power dimension can "reduce", "bring back" those energies, which appeared to be new and able to "renew" the energy system, to something not really desirable, as it has happened with nuclear, a great idea with a very dark side and which is a common representation of the disillusion with technology. It can probably be said that in the absence of a "relationship", i.e. a shared and collective assumption of responsibility, energy production falls in the exercise of power and the potential to renew the energy system and build new life opportunities is lost.

Cultural repertoire 2. The words with the highest χ_2 (see parenthesis) in this cluster are: **people** (200.08), **change** (146.02), **difficult** (113.21), **time** (79.1), **feel** (76.14), **group** (67.75), **need** (54.96), **behaviour** (38.82), **trust** (36.43), **easy** (35.08), **interact** (30.93), **hard** (30.70), **understand** (30.24), **reason** (29.12), **engage** (26.12), **climate change** (24.00), **live** (23.55), **value** (23.04), **planet** (21.67), **honest** (20.25).

The word which attracts the largest number of associations is the word **people**, that means humans considered as a group or in indefinite numbers, but also a multitude, crowd, throng, and is derived from the word 'persona' which in Latin meant actor's mask, character in a play and only later 'human being'; follows the word **change**, from the Greek bend, turn around, and then we have the word **difficult**, something hard to do or accomplish, demanding considerable effort or skill, arduous. The feeling is a lack of ability to act. The people are changing but they don't know what to do, it is difficult. The word time suggests that we have little time left to change and however difficult it is time to. Then comes the word **feel**, to touch, to perceive, to be conscious of an emotion or sensation. **Group** defines in another sense the previous concept of people: a number of persons being together for some reason, some common **need**. Need seems to evoke a dependence from something assumed as

necessary, that requires some course of action. This word also means compulsion, duty, hardship, distress, and also errand, business. The next word **behaviour** confirms some sense of self-restraint to behave, to 'have or bear oneself in a particular way'. The next word in the cluster is **trust**, help, confidence followed by **easy**, not difficult to deal with. Then comes **interact**, that bears the meaning of acting on each other and then again a word related to the difficulties: **hard**. It is hard to **understand** the **reason** to **engage** for **climate change**.

This cluster is opposed to the cultural repertoire 1 on the first factor. While cluster 1 expresses a sense of power, a glorious idea of fighting for and leading the implementation of low carbon technologies, cluster 2 seems to tell us how the partners feel when they think of the project in terms of people and of what people should do (behaviour). They don't feel at ease at all, things are changing and people now want to be considered, but this is confusing. The fact itself of being in a group for making a dialogue is strange, it is perhaps necessary but what are we supposed to do? This cluster seems to convey a feeling of paralysis coming from the contemporary presence of different and contrasting and difficult to distinguish elements. Something needs to be done but it's really frustrating not to know what or how to do it. It appears like partners live the disappointment that people don't function like technologies, don't always follow the 'reason' and the mechanistic perspective that has worked with technologies cannot work with people.

Cultural repertoire 3. The words with the highest χ_2 (see parenthesis) in this cluster are: **try** (164.17), **science** (89.10), **interest** (80.40), **social** (76.00), **idea** (73.07), **problem** (64.02), **help** (44.50), **solution** (38.70), **ngo** (36.50), **pollution** (34.27), **psychology** (31.68), **research** (29.76), **communication** (25.86), **job** (24.95), **danger** (22.37), **academy** (21.78), **revolution** (20.42), **step** (19.92), **simple** (19.83), **criterion** (18.94).

This context of words starts with **try**, the ground sense of this word is to 'separate out (the good) by examination', while later it assumes the sense of 'to test, attempt to do' and still later 'to subject to some strain'. What is the project attempting to do? In this context the word try open to the idea of **science**. In some sense also the project and its objectives can be thought of as a test in the field of science. **Interest** is the next word, which historically refers to a 'legal claim or right; concern; benefit, advantage'; from the Latin 'interesse' 'to be between' it has come to mean 'compensation for loss' or 'to concern, make a difference, be of importance'. The feeling is that the project can be an opportunity, we can try with science but something can get in between science and the common interest (social), some other interest. The word **social**: 'characterized by friendliness or geniality', but also 'allied, associated'. It is interesting to note that this term is not immediately associated to the traditional idea of science. The use of the two terms 'social science' is first documented in 1811 and up to our time the discussion on the statute of this discipline is still being discussed. Since we are in the framework of a European project, it's worthwhile to recall that the European Commission has recognised the importance of this area of science also creating a specific part of the Framework Programme called Socio-economic Sciences and Humanities. After social emerges the word **idea**, the root of this word is 'to see' and to know through a 'vision'; an idea is the 'archetype of a thing in the mind of God', an 'ideal prototype'. This idea in this context seems related to a **problem** – 'a difficult question proposed for solution and also something that is put forward. **Help**: 'support, succour; benefit, do good to' and also 'cure, amend'. Then we have **solution**: 'to loosen, untie, dissolve', so again the root of to 'divide and cut apart'. This word shows that while a desirable state is reached something else is lost. Any solution can be seen as the subsequent stage of the problem, the opening to another problem. The next word is **ngo**, non governmental organisations, a kind of organisation that is

defined based on what it is not. The expression "non governmental organisation" has been mentioned for the first time in the context of the United Nations. These organisations usually represent ideas, problems and solutions, of our society that don't easily find attention from governmental organizations and the European Commission fostered, in the call to which R&Dialogue participated, the dialogue between research organizations and NGOs. The next word in the cluster is **pollution**: desecration, defilement, to soil, contaminate, smear, mud and filth and also 'discharge of semen other than during sex'. The word conveys at the same time the feeling of intentional damage and of an involuntarily act. Is maybe for such an ambivalence that there is a need for **psychology**, 'the study of the soul' and later 'the study of the mind'; today also a profession which deals with relationships.

In this cultural repertoire the partners seem to feel like old fashioned explorers, may be naive. Like in cluster 2 they don't know the way forward and how to solve the problem, but the emotion is let's try, don't worry. We can study the problem, bringing in new disciplines (social, psychology) and new subjects (NGOs), we can better understand and find ideas and solutions. At the same time this is potentially radical, a possible revolution which evokes feeling in danger, some different interest could come in between. It is as if this cluster has to do with unintended consequences (pollution, danger), which on one side it proposes to tackle, on another one it fears to suffer.

Cultural repertoire 4. The words with the highest χ2 (see parenthesis) in this cluster are: **learn** (236.81), **country** (177.89) **involve** (119.53), **europe** (105.95), **technology** (96.31), **develop** (87.54), **national** (84.45), **discussion** (49.19), **deal** (42.67), **school** (40.18), **decide** (37.28), **workshop** (36.39), **deployment** (33.76), **team** (32.99), **stakeholder** (30.51), **talk** (29.86), **experience** (28.76), **separate** (27.39), **formal** (26.36), **policy** (23.40).

The first word, **learn** recalls the relationship with knowledge, as well as its objective and also the EC direction for the project to carry on a mutual learning action. **Country** means land but also 'contrada', meaning something opposed. So country is the land for learning but also its limit. **Involve**, has a number of meanings: envelop, surround, overwhelm. The word **Europe** recalls something broad and where the project also finds conclusion (in the myth Europe is the place where the sun sits down): one objective for the project is to bring to Europe the lesson learned in each County. **Technology** has the meaning of 'a speaking, discourse, treatise, doctrine, theory, science' on 'word, art, skill, craft, method, system'. **Develop** means 'unroll, unfold, unwrap' (opposite of envelop) and also 'bring something which has been obscurely cached by a machinery', like a photographic camera, to become something intelligible, an image. Then comes the word **national** and brings the idea of a more structured and modern aggregation of citizens. Nation also refers to the place where one is born, to the origins. It seems to us is emerging an emotional process of constructing affiliation, membership, where it is possible to be involved in a learning process about technology development. With the word **discussion** enters the scene the idea of investigation, examination, judicial trial. Also with the meaning of doing something which is not smooth, of not letting something whole, homogeneous. The involvement could be interesting but also in some way dangerous. The next word, **deal**, reinforces the idea of dividing, separating, but also of sharing, bestowing, dispensing. Then arrives the word **school**, of which the original notion is 'leisure' which passed to 'otiose discussion' then 'place for such', later with the meaning of 'people united by a general similarity of principles and methods'. In somehow the project could be like a school. The following word is **decide** with is figurative meaning of cutting off with one stroke. The word **workshop** brings the idea of a gathering to study together. Then in the cluster we have **deploy** another word with a similar symbolic meaning

of others already considered: 'to unroll, unfold, scatter, lay fold, twist, plait'. There are in this cluster continuous movement linked to the learning process and also several context where to do it, also the next word **team** goes in this way. Team is a word used in sports, with the idea of something that can be done inside a regulated context, in a given timeframe and also being fun, within a scheme internally collaborative and externally competitive.

In this cultural repertoire the project objective is seen in terms of learning which is related to a country – Europe dimension, a learning about technology. Maybe with the aim to develop a national discussion and create a "school of thought" which makes decisions and works together for deployment like a team. Partners here appear to be thinking the project as an opportunity to overcome the difficulties of deployment at national level thanks to the "embrace" of Europe. There is the idea of working together, also with the stakeholders. At the same time is appears that, like at school, there will be somebody who will tell others what to do or how to do it. Europe for instance, but it could also be the partners telling others. This could be a pleasant feeling but could turn critical, especially when we consider the problematic dimensions emerging in the other clusters.

4.2. Discussion

We can look at the four clusters as part of the same picture. As pieces of a puzzle that only when put one near the other, each one in its own place, they deploy their full meaning. The first cluster guides us with regard to the starting point of the consortium: 17 organisations with a high level of expertise in some energy technology area. Here the partners feel safe, they know what to do – they have "power". But as soon as they start to think about the project, it's specific goals, they feel a bit uncertain, whether it is about technology or dialogue, what are they supposed to do? They would like somebody to tell them, like it happens at school (cluster 4) but this is not going to work.

This has been reflected very strongly in the life of the consortium, with many and passionate discussions about what the project was about, how it should be managed and even the attempt to give up the scientific independence of the project in favour of some trendy approach well established at the European Commission level. Something that in cluster 4 emerges as Europe's "embrace".

Thanks to the outcomes of this ETA, it was easy for us of the Sapienza team to see, although very tough to live it through, that the conflicts and confusion were well justified by those less reassuring feelings that could be guessed reading clusters 2 and 3. The common notion that problems are related to persons who don't want to change, produces a terrible frustration which discourages from even considering that work can be done *with* people for solving problems. Also the science that has been developed to do this is systematically underutilized and undervalued. 'Trying' is left as the only chance, with all the risk of being visionary.

In cluster 2 we find the full complexity of the emotional position of the consortium: bits and pieces of the living sensation come together but are not at all integrated. They are so difficult to manage that the effect is paralysis. We have seen this in the project going on for months.

It helped a lot to stay with the situation and gradually bring some of this fragments together. A rigorous reference to the form and the substance of the project, to its stated objectives, tools and processes was fundamental to help the integration of this emotional complexity.

Within this framework, the disclosure of shared emotional dimensions detected, did foster at least a partial shared thinking and understanding of what was happening in the relationship with the given topic and among the people involved. More still needs to be done. Learning

together has been part of this process and we probably need to better explore how this dimension makes sense in the consortium.

5. Conclusions

The R&Dialogue project aims to establish a social dialogue among stakeholders on the development of a low carbon society. It seemed important to explore the emotional dimensions of the partners themselves at the start of the project, the way they were entering in the process and to support our awareness about our own culture as a group. We did this using the Emotional Text Analysis (ETA). This was done within the hypothesis that our intention of structuring a dialogue process would carry collective unconscious components. Finding out about them, through a tool such as ETA, has helped us recognise shared cultural dimensions, better identify problems and development factors for the group.

In this respect ETA is a very interesting tool because it can be used by those in charge of taking care of the social process in the relationship with the participants, listening and giving attention to what they say, to their "words". This not only can be a value in terms of research intervention but also in terms of dialogue. It can provide living and dynamic material for building the dialogue action. With respect to other approaches, it allows for a deeper understanding of how people get involved in the social process: all that people bring in the dialogue, intending the whole cultural dimension that is in the background of explicit objectives. It is a big help in understanding difficulties but also the specific nature of the process and what can carry it forward.

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