

Mental Ingredients as a route to Emotion Markup Language.

The case of Pride

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ABSTRACT

The paper proposes an approach in terms of “mental ingredients” for the XML representation of emotions. Mental ingredients are cognitive components of the emotional event consisting basically of beliefs and goals. Analyzing emotions through their mental ingredients may account for the subtle nuances in the ways they are felt and expressed by different people or in different contexts. In this paper we present an example of mental ingredient analysis of pride, demonstrating how this method allows to distinguish “*being proud of*” something from being a “proud” person, and to distinguish three types of pride: *dignity*, *superiority* and *arrogance* pride.

1. INTRODUCTION

Setting an Emotion Markup Language is an important endeavour for the simulation of multimodal communication in Virtual Agents, and relevant first steps have been done so far. Yet, the very analysis of emotions and of their differences has not yet started in this XM language. Emotions so far are simply named by their name in a natural language, and only some specification about intensity is added. But intensity variation is not the only difference we can find in how different types and tokens of the “same” emotion are felt and expressed, say, by different people or in different contexts. Single emotion experiences differ for many nuances in nature, antecedents, and function. And to capture these nuances, a finer grained analysis is required to go into the semantics of an emotion.

In this paper, starting from a model of mind, social interaction and emotions in terms of goals and belief, we propose the notion of “mental ingredients” as a tool to build a Markup Language sensitive to subtle nuances of emotions.

After overviewing the main notions of our model we present the notion of “mental ingredients” and the ways to discover them (Sect.2). Then, to exemplify, we present an analysis of pride. By relying on the notions of power, image and self-image (Sect.3), we distinguish “being proud of” as an emotion (Sect.4) from “pride” as a personality trait (Sect.5), while finding three types of pride: *dignity*, *superiority*, and *arrogance* pride.

2. THE MENTAL INGREDIENTS OF EMOTIONS

According to a model of mind and social interaction in terms of goals and beliefs [1], the life of a natural or artificial, individual or collective system consists of pursuing *goals*. A goal is a regulatory state not realized in the world: when the system perceives a discrepancy between the actual state of the world and the regulatory state, to realize that goal, by making use of its beliefs of the world and of its action capacities, it devises and performs a plan where each action aims at one goal and possibly to one or more supergoals, with all goals and supergoals finally aiming at the final goal to achieve. Since some goals are much more important than others – they are “terminal” goals like survival, reproduction, power over resources, being loved, image, self-image [2] against which all others are simply subgoals – in some animals the device has developed of emotions. Emotion is an adaptive device thanks to which when a terminal goal is, or is likely to be, achieved or thwarted, a complex internal state is triggered in the system, encompassing cognitive aspects, feelings, physiological reactions, expressive displays and tendency to action, that monitors the achievement or thwarting of the important goal at issue.

The mental ingredients of an emotion [3, 4, 5, 6] constitute the cognitive aspects of the emotional event; they are the beliefs and goals that we must assume are represented in the mind of a person when feeling that emotion.

To find out the ingredients of an emotion, the method of conceptual analysis – possibly along with semantic analysis – can be used in conjunction with empirical studies. In conceptual analysis you produce examples and counterexamples of the emotion under study, to discover the necessary and sufficient conditions to feel it, and it may add to a semantic analysis of the terms linked to that emotion in one or more languages. In empirical studies you submit interviews and questionnaires to people to test whether the ingredients hypothesized are in fact present in the feelings and cognition of subjects.

An interesting issue is that of the “prototypical” cases of emotions. For any emotion there are some prototypical cases in which a high number of ingredients (i.e., necessary conditions) are present, and some “peripheral” cases in which only some are. The ingredients that are necessarily present in both prototypical and peripheral cases are the “core” ingredients of the emotion, to which others may add from case to case, whereas the prototypical cases contain both the “core” and other characterizing ingredients. For instance, in the “sense of guilt” the ingredient of *responsibility* is necessarily present in its most typical cases (e.g. if you guilty because you run over someone while being drunk),

but in other cases, for example the survivors' guilt, no responsibility is present, and yet guilt may be felt. So the only "core" ingredient of guilt, necessary in both prototypical and peripheral cases, is the sense of *inequity*., while *responsibility* is necessary only in prototypical cases.

3. DIMENSIONS AND INGREDIENTS

But what beliefs and goals are really relevant as ingredients of an emotion? Emotions can be distinguished in terms of several dimensions [6], and the value an emotion assumes against each dimension can be taken as a possible relevant ingredient.

The dimensions posited in our model are the following:

a. **MONITORED GOAL:** since the function of emotions is to monitor the state of achievement or thwarting of adaptive goals, they differ for the goal they monitor, and this ingredient is relevant, to the extent that we can group various emotions into "types" depending on the type of their monitored goal [2]. So, *shame* [7] and *pride* belong to the emotions of image and self-image, because they share the ingredient that those goals are at stake, while *guilt* and *gratitude*, for example, belong to the emotions of equity.

b. **VALENCE:** Emotions are positive (e.g. *joy*, *satisfaction*, *pride*) when a goal is achieved, negative (*sadness*, *anger*, *shame*) when one is thwarted.

c. **TIME:** some emotions are felt after the goal is achieved or thwarted (see *joy* or *sorrow*), others are felt during (*enthusiasm*) or before goal achievement or thwarting (*hope* and *fear*)

d. **DEGREE OF CERTAINTY:** Some emotions are felt when one their achievement or thwarting is certain (e.g. *joy* and *sadness*), some when it is only likely or possible (*hope*, *fear*), and some in both cases (one may feel *shame* both after an actual defeat and only if fearing it).

e. **ADDITIONAL COGNITIVE ELEMENTS:** some emotions include specific expectations, causal attributions, evaluations. E.g., *disappointment* implies not only goal thwarting but also previous expectation of success.

f. **POWER OF CONTROL:** the "potency" dimension [8], i.e. the Agent's self-evaluation and self-attribution of power of control (see *fear* vs. *anger*).

g. **ARGUMENTAL STRUCTURE:** some emotions (like *love*, *hate*, *envy*, *admiration*) are "intrinsically social" in that they are felt necessarily *towards* someone else, others (like *joy*, *enthusiasm*, *sadness*) are "individual" emotions since they do not require a second argument in their argumental structure. Others have both an individual and a social version: I can be afraid of the storm, or be afraid of my boss.

h. **INTENSITY:** similar emotions may differ in intensity: see *fear* vs. *terror*, *annoyance* vs. *anger*, *rage* or *fury*. This has to do with the arousal level, presumably determined by the importance of the monitored goal.

4. POWER, EVALUATION, IMAGE AND SELF-IMAGE: A DEFINITION IN TERMS OF GOALS AND BELIEFS

To exemplify the analysis of an emotion in terms of its ingredients we now present an analysis of pride. Before doing so, we must present the notions of power, evaluation, image and self-image in terms of our model.

Power can be firstly defined as a notion concerning a single Agent [9]. A has the "power of" goal *g* if A is likely to achieve *g*, and this depends on both external and internal resources of A. If world conditions (external) are favourable and A is able (internal) to perform the necessary plan of action, A has "power of" with respect to goal *g*. The notion of *evaluation* can be defined in terms of "power of": an evaluation is a belief about how much some object, event, person have the "power of" necessary to achieve some goal [10]. A system very often needs to conceive of evaluations: about world conditions, adequacy of actions, respective importance of goals. In fact, lack of power may stem both from lack of resources and from the necessity of choice: if achieving goal *g* prevents A from achieving *q*, A must choose between them, and lacks the "power of" for either of the two.

If A lacks the resources to achieve *g*, but another Agent B is endowed with them, A may depend on B to achieve *g*. From this *dependency* the social devices stem of *adoption* and *influence*. If A depends on B, A can achieve *g* only if B "adopts" A's goal *g*, i.e., if B puts one's actions and resources to the service of A's goal. So, A and B may have the goal to influence each other: A may want to influence B to adopt A's goal *g_A*, and B may want to influence A to pursue B's goal *g_B* in exchange. As A depends on B, B has the "power to influence" A. This gives B "power over" A. (Here are two *social* notions of power, entailing at least two agents).

Adoption multiplies the "power of" to achieve goals of people, thanks to resource exchange; but to decide whose goals to adopt we need to evaluate others, as to their dependency on us, their capacity or willingness to reciprocate: so we form an image of them. Our *image* is the set of evaluative and non-evaluative beliefs that others conceive of about us. We strive to present a positive image of ourselves to have others adopt our goals, and thus to gain more "power of". The image we present is generally functional to the type of adoption we aim at: to hire you as a real-estate agent I evaluate you as to your extraversion or argumentation skill, to choose you as a friend, as to your affective qualities. In rare cases we obtain adoption by presenting a image of lack of power (e.g. when people help us out of compassion); but in general to be adopted we must show an image of power in some areas (so they adopt our goals because they esteem us). To choose whether to adopt A's or B's goals, C will compare their respective power.

Therefore, we all have a "goal of image" and a "goal of positive image" (goal of esteem), that often has a comparative valence: we have the goal of being evaluated better than others, as having "more power than" others. As a consequence, the goals against which we want to be positively evaluated by others make part of our *goal of (positive) image*.

Besides an *image* of us to others, we also have a *self-image*: evaluative and non-evaluative beliefs about ourselves. Evaluations about ourselves – beliefs concerning our power to achieve goals – allow us to decide which goals to pursue; but positive self-evaluations (a high *self-esteem*) gives us confidence and help us achieve our goals. So we also have a *goal of (positive) self-image*, a *goal of self-esteem*.

The goals of image and self-image are thus very important terminal goals of people, and their thwarting or achievement are monitored by two important emotions: shame and pride. In fact [7], we feel shame when we think that what we are or we do may cause others or ourselves to have a negative evaluation of us.

In the same vein, we feel pride as we focus on positive qualities of ourselves, or on some achievement that we consider due to our own capacities or efforts, or anyhow linked to our own identity.

5. THE MENTAL INGREDIENTS OF PRIDE

To give an example of ingredient analysis, we now analyze two different mental states connected to the emotion of pride, expressed by the words “*proud of*” and “*proud*” respectively, differing because one refers to a feeling about a single event and the other to a steady state. As put forward by classical works on anxiety and other emotions [11], we posit that pride may be both a state and a trait, and view being “*proud of*” something as an emotion felt in a specific situation, and being a “*proud*” person as a personality trait.

5.1. The ingredients of “being proud of”

The “core” ingredients of an emotion can be seen as the necessary conditions to feel it. In this case, by wondering what can one be proud of, and why, we find the following ingredients of “*being proud of*”. A feels proud of *p* when:

1. *A believes that ((A did p) or (A is p) or (p has occurred))*
2. *A believes p is positive*
3. *A believes p is connected to / caused by A*
4. *A wants to evaluate A as to p*
5. *A wants to evaluate A as valuable*
6. *A believes A is valuable (because of p)*

Let us see them in detail.

1. A may feel proud of an *action* (e.g., you ran faster than others) or a *property* (you are stubborn, you have long dark hair), or simply an *event* (your party has won the elections);
2. this action, property or event is evaluated by A as *positive*, i.e., as something which is a useful means for some goal of A’s;
3. *p* is seen by A as caused by himself, or anyway as an important *part of his own identity*. I can be proud of my son because I see what he is or does as something anyhow stemming from myself; or be proud of the nice weather of my country just because it is *my own* country. Additional ingredients, possibly present only in the prototypical cases, are that one can be proud only of things one attributes to internal controllable causes [12, 13]; but in less prototypical cases the action, property or event may be simply connected to, not necessarily *caused* by oneself;
4. what is positively evaluated is part not only of one’s identity, but of one’s *goal of self-image*: something against which one *wants* to evaluate oneself positively;
5. A has the goal of evaluating himself positively as a whole: he has a goal of self-esteem;

6. evaluating *p* positively causes a positive evaluation of oneself as a whole: A’s *self-esteem* is enhanced;
If conditions 1 – 4 are fulfilled, A’s goal of self-image (n.5) is achieved (n.6), and A feels a positive emotion: A is “proud of” *p*.

Beside being connected to the goal of self-image, being “*proud of*” is also linked to the goal of image: one feels evaluated positively by others, beside by oneself. So we may hypothesize two more ingredients:

7. *A wants B to evaluate A as to p*
8. *A believes B believes A is valuable (because of p)*

For example, before my colleagues in a foreign college, I can be proud of Italia’s victory in the football championship since this gives me the image of one belonging to a champion country.

But if the goal of image before others is sometimes a condition for feeling proud of something, it is not always a necessary condition. To feel “*proud of*” something one may simply evaluate himself positively, not necessarily must he feel evaluated positively by others. In this, pride is exactly symmetrical to shame. One is sincerely ashamed before others only if one is ashamed before oneself [6], that is, only if the value one is evaluated against makes part not only of one’s goal of image before others but also of the image one wants to have of oneself. For instance, if I do not share some value (say, to be a very macho man) and others evaluate me against it, but for my own self-image this is not a relevant value, I do not feel shame if I don’t look very macho to others, while, should I happen to look so, I will not feel proud of it. In conclusion, one is *proud of* something that fulfils his goal of image only if it also fulfils his goal of self-image. But in general, both goals of image and self-image are monitored by the emotion of “*being proud of*”.

Another ingredient possibly present in cases entailing actions or properties of A is victory. Sometimes, doing or being *p* makes you *win* over someone else, i.e., it implies showing others and yourself that you have been stronger or better than another.

Furthermore, if your having more power than another comes to be assumed as not a single occurrence but as a steady property, this results in the assumption that you are *superior to others*. The following ingredients can respectively be added for these cases:

9. *A believes A once was superior to B with respect to p*
10. *A believes A is always superior to B with respect to p*
11. *A believes A is in general superior to B*

A has more power than B as to *p* in a specific situation (n.9), but hence he feels in general superior to B with respect to *p* (n.10), and finally superior to B as a whole (n.11).

In conclusion, being “*proud of*” something is a positive emotion that A feels when A believes that something happened, or that he was or did something, which causes him to have a positive image of himself. And if he attributes this achievement to himself, he evaluates himself as an autonomous person, one who does not depend on others – even, one superior to others.

5.2. The ingredients of “proud” and “pride”

So far we have seen the emotion of *being proud of* something. Yet, if we take the adjective *proud* by itself, or the noun *pride*, we do not refer to a single emotion felt about some specific event, but to a steady state of a person, something like a personality trait. “*Proud*” as a personality trait refers to a person for whom his

goal of self-image of being autonomous, i.e. not depending on others' help, has a priority before all other goals.

As mentioned above, emotions are linked to goals in that they monitor their state of achievement or thwarting. But also personality traits can be viewed as linked to goals [14]: having a particular personality means that you, as opposed to others, consider a particular goal as more important than others do, to the extent that should that goal be in conflict with another goal, you would certainly choose to pursue it, even if at the expense of the other. For instance, an extroverted person is one for whom the goal of communicating to others has a higher value than one of protecting one's privacy.

So, if *being proud* is a personality trait, a "*proud*" person will have a steady tendency to attribute a high value to his goals of image and of self-image, and more specifically, the goal of being believed by others, and of believing oneself, an autonomous person. We may consider two sides of autonomy: self-sufficiency and self-regulation. An Agent is self-sufficient when he owns all the (material and mental) resources he needs to achieve his goal by himself, that is, when he does not depend on others' help. On the other hand, an Agent is self-regulated when he can decide by himself which goals to pursue, when and how: in a word, when he is free. Think of the pride of growing nations, when they finally conquer their independence: freedom is the bulk of pride. And the two sides of autonomy are strictly connected: if you are self-sufficient – you have all the resources you need, and you need not others' adoption – you can afford self-regulation – you have the right to be free.

6. TYPES OF PRIDE

As contended by others scholars [13, 15, 16], there are various types of pride. Based on our ingredients analysis, we distinguish three types of pride.

6.1. Dignity pride

A first type is "*dignity pride*": a kind of pride in which one does not want to be considered superior to other people but simply to be acknowledged one's right not to be dominated or considered inferior by others.

As we saw, a *proud* person has a goal of image and of self image both of self-sufficiency and of self-regulation. He wants to appear self-sufficient, that is, able to do anything he needs all by himself. And, being not dependent on others, he does not want anyone to have power over him: he claims his right to be free. This is a basic sense of pride ("*dignity pride*") that does not entail superiority. The proud person simply claims to his right of being treated as a peer, with same status, same rights, same freedom as the other. He wants to be acknowledged his worth as a human being, and the consequent right to be addressed respectfully and not to be a slave to anybody.

12. *A wants A/B believes A has all the resources A needs*
13. *A wants A/B believes A does not depend on B*
14. *A wants A/B believes A has not less power than B*
15. *A wants A/B believes B has not power over A*
16. *A wants B believes A has the dignity of a human*

Coherent with this image and self-image of self-sufficiency and self-regulation are the *proud* person's typical behaviours: he does not want to beg or make requests, and sometimes refuses offers and invitations. Asking, but also accepting offers or invitations, would imply needing others' help, hence not being autonomous. Thanking means acknowledging being indebted, hence in need of others' help. Apologizing implies that you acknowledge your faults, and that to be forgiven you humiliate yourself in front of the other; but humiliation (the opposite of pride) typically implies that you have less power than another, or even that the other has power over you.

6.2. Superiority pride

In other cases, the proud person not only wants to be acknowledged his own worth, but also feels superior to other people. He believes he has a higher worth than others, and wants this superiority to be acknowledged.

17. *A wants A/B believes A is superior to B*

We call this type "*superiority pride*". This proud person's behaviour is characterized by taking distance from the other. Like in "*dignity pride*", he also does not want to ask, thank or apologize, he sometimes refuses offers and invitations, and shows very sensitive to offense. He does not ask, thank or apologize because he does not want to feel dependent; he does not accept offers or invitations if he assumes they are not worth of him – for instance, if he thinks he is considered a "second choice". Others should look for him, invite him, make offers to him as a first choice, because he is the best: and doing so would count as symbolic acknowledgement of his worth. Finally, his low threshold for feeling offended – due to the law that the higher the status, the heavier the offence [17] – implies he feels very important, and superior to others.

These behaviours point to both goals of image and self-image. The *proud* person highly cares his goal of self-image, particularly his goal of feeling autonomous; but also considers his goal of image very important, suffering if in situations of power comparison he results as having less power than another: being *proud* is linked to a competitive attitude. Further, should someone have power over him, the goal of self-regulation, an important part of autonomy, would be thwarted for the *proud* person.

6.3. Arrogance pride

In "*superiority pride*" the proud person pretends he is superior to the other, while in "*dignity pride*" he only claims to being on the same level as the other, not inferior to him. In a third type, "*arrogance pride*", the *proud* person is, at the start, on the "down" side of the power comparison: A has less power than B, but wants to challenge, to defy the power of B. This is the "*hubristic pride*" distinguished by Tracy [13, 15]: the "*proud*" person blatantly displays he is autonomous and not submitted to another. He challenges another person or institution that has more power than he and possibly power over him. In some cases the challenge to power, at least apparently, does not come from the less powerful, but from the more powerful one in a dyad. For example, in the so-called "arrogance of power", one who is powerful and abuses of his power is somehow challenging the power of law.

7. CONCLUSION

In this paper we have argued for an approach in terms of “mental ingredients” to the XML representation of emotions. Only a representation that decomposes emotions into their basic components might account in a flexible way for the subtle nuances we find in the different occurrences of an emotion, in the way it is felt and expressed, and in how it fulfils its biological function. To give an example of how the analysis into mental ingredients works, we have presented an analysis of pride, and discovered that it may be viewed both as an emotion felt in a particular situation and as a steady state – a personality trait – that characterizes some persons more than others. The analysis into ingredients allowed us to distinguish three different types of pride, *dignity*, *superiority* and *arrogance* pride. In further work we will show how this analysis may also give an insight into the specific function of the different types of pride. We will also explore the hypothesis that the articulated and flexible tool of the ingredient analysis may be of use in predicting the type of expressive display typically induced by each specific type of pride.

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