

# Reformulation and recontextualization in popularization discourse

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## Abstract

The paper takes into consideration the evolution of the concept of popularization and of its main techniques of realization in the last few decades. At first, the use of definitions in popularization discourse is investigated and compared to the practices followed in argumentative and pedagogical texts. Special attention is then devoted to the strategies of reformulation and of recontextualization that are often adopted in this process, and exemplifications are provided to highlight the main functions fulfilled by the use of these rhetorical tools. The social importance of popularization is subsequently highlighted together with a discussion of the possible manipulative risks that may be encountered, particularly for argumentative or promotional purposes. The analysis carried out shows the great complexity of the popularization system, which implies therefore the adoption of an integrated approach in order to clearly identify and carefully describe the various aspects involved in this process.

**Keywords:** popularization, reformulation, recontextualization.

## Resumen

### *Reformulación y recontextualización en el discurso de divulgación*

El presente artículo se centra en la evolución del concepto de divulgación y de las principales técnicas por las que se ha llevado a cabo en las últimas décadas. En primer lugar se investiga el uso de definiciones en el discurso de divulgación y se compara con las prácticas empleadas en los textos argumentativos y pedagógicos. Seguidamente se presta especial atención a las estrategias de reformulación y recontextualización que más se adoptan en este proceso, al tiempo que se aportan ejemplos que pretenden resaltar las principales funciones que se cumplen con la utilización de estas herramientas retóricas. Después se subraya la importancia

social de la divulgación y se argumenta en torno a los posibles riesgos de manipulación existentes, especialmente aquellos con fines argumentativos o promocionales. El análisis llevado a cabo demuestra que el sistema de divulgación goza de una gran complejidad, lo que trae consigo la adopción de un enfoque integrado que permite identificar con claridad y describir de forma pormenorizada los distintos aspectos implicados en este proceso.

**Palabras clave:** divulgación, reformulación, recontextualización.

## 1. Popularization discourse

The construct of popularization has attracted several studies, although their discussions have not always led to unanimous conclusions. There is a basic consensus, however, as to the role of this process, which is usually identified with the conveyance of specialist knowledge for information purposes. The main factor that distinguishes a popularization from a fully specialized text is the lack of discussion, in the former, of new scientific knowledge added to the discipline's conceptual base. The mere lack of innovative theoretical arguments is not sufficient evidence, however, of a popularization process. Some genres provide no advancement of disciplinary knowledge and yet constitute instances of specialized communication: among these are the review article, the abstract and other genres whose function is mainly informative or comparative of different methodological approaches or research projects. The main criterion for distinguishing between fully specialized texts and popularizations is the different audience targeted. Popularization in fact addresses not an expert group within the discipline but an audience of non-specialists.

A satisfactory profile of textual differences is possible if we consider not only the audience's competence but also the main purpose of such texts. Publications written primarily for non-specialists operate at no fewer than two different levels: pedagogic texts and popularizations. The former aim to provide students with the "secondary culture" (Widdowson, 1979: 51) expected among scholars in the discipline; specialized discourse is presented therefore in "disciplinary" terms, to equip the reader with conceptual and terminological resources suited to the subject content; terminological features are addressed systematically, removing any ambiguity of the meaning of new expressions appearing in the discourse as a form of training for new specialists. Typical examples of such texts are undergraduate textbooks and instruction manuals.

Popularizations target instead a wide reading public and deal with specialized topics in a language close to general discourse and to the layman's everyday experience. The purpose here is chiefly informative and seeks to extend the reader's knowledge rather than develop a secondary conceptual system. Typical forms of this type of discourse are popular scientific magazines, books published for a wide readership, videocassettes and specialized articles in daily newspapers. In popularizations, the illustration of processes and phenomena is less technical – which usually means less specialized terminology. Disciplinary terms are not employed systematically but given occasionally. The different purposes of various text genres also influence the expository technique employed: while pedagogic material shows a constant tendency to assimilate not only the content but also the language and style of the “secondary culture”, popularizations remain as close as possible to the primary culture and its language, introducing select terms in a way that replicates the semantic content of general language.

Several studies have been devoted to the analysis of the discourse of popularization (for an overview see Shinn & Whitley, 1985; Gregory & Miller, 1998; Myers, 2003). Interest in popular science texts has been shown by scholars working in different disciplinary communities: for example, rhetoricians seeking to relate scientific discourse to other discourses (Fahnestock, 1986), scientists interested in the relation between science and society (Whitley, 1985), science communication scholars interested in the practices of journalists and media professionals (Lewenstein, 1995). A different methodological approach has been adopted in the analysis of case studies in a historical perspective; for example, Bazerman's (1999) study of Edison has shown how this important innovator employed a range of genres and played a variety of roles to popularize his inventions. Other interesting studies in a historical perspective are Cooter and Pumfrey (1994) and Secord (2000), which have investigated the great development of the phenomenon of popularization in the Victorian period.

Another line of research has focused on the linguistic features of popularising texts, often examined in comparison with research articles in scientific journals. Differences have been pointed out at various levels: textual form, sentence subjects, grammatical voice, verb choices, modality and hedging, and rhetorical structure (Myers, 1990, 1991 & 1994; Valle, 1996; Calsamiglia, 2003). Some of the main features investigated are metaphors (Gülich, 2003), narratives (Seguin, 2001), imagery (Miller, 1998) and specific expressive functions (for example, definition, denomination, description,

exemplification, generalization, paraphrase or reformulation) considered typical of popularization discourse.

As regards the definitional function, the research carried out by the present author has shown that terminological definition is realized differently – both in quantitative and qualitative terms – in the various kinds of texts taken into consideration. Terminological definition is not so pervasive in specialized discourse, where the meaning of certain expressions is taken for granted within the disciplinary community. Indeed in specialized discourse, the author only employs definition when a new term is coined, or new meanings are attached to existing words within the discipline or borrowings from other disciplines or the general language. This produces highly subjective utterances, which in English take on the following appearance:

We shall call the unit in which the quantity of employment is measured the labour-unit; and the money-wage of a labour-unit we shall call the wage-unit. (Keynes, 1936/1973: 41, quoted in Gotti, 2011: 183)

My definition is, therefore, as follows: (...) (Keynes, 1936/1973: 15, quoted in Gotti, 2011: 183)

In a pedagogic setting, definitions are quite frequent and typically display the following forms:

*P* is named *x*. (where *x* is the specialized term and *P* its periphrasis)

*x* is *P*.

Definitions in popularizations involve a far more limited use of specialized lexis. Moreover, the first-person subject never appears in definitions from popularizations, whose purpose is informative rather than innovative or interpretative. When definitions are provided, the technique most commonly adopted is juxtaposition – a process whereby the specialized term is followed by its periphrasis, with the two separated by a comma, dash, parenthesis or the disjunctive conjunction “or”:

More than 99 per cent of atmospheric water vapor is in the troposphere, the turbulent, weather-producing zone below about 40,000 feet. (*Discovery*: 40, quoted in Gotti, 2011: 184)

Interestingly, the definition may contain metalinguistic items that encode an authorial comment of the periphrasis. Such comments show that the

popularizer is aware of the semantic approximation inherent in the suggested periphrasis, which is perceived as an imperfect rendering of the original term. This is signalled by such expressions as “a little”, “like”, “a sort of”:

The brain is a sort of computer.

These expressions occur almost exclusively in popularizations, since the degree of approximation is incompatible with the nature of fully specialized texts. Sometimes approximation is signalled by the use of inverted commas, often employed to connote metaphoric uses of language. The following utterance illustrates this type of metalinguistic process:

In addition, the reactor core would be surrounded by a blanket of depleted uranium which, by absorbing neutrons, could be used to “breed” new Plutonium, for reuse in the core. (*Scientific American*: 28, quoted in Gotti, 2011: 188)

## 2. Popularization as reformulation

Popularization has often been described as a reformulation process; that is, a kind of redrafting that does not alter the disciplinary content – object of the transaction – as much as its language, which needs to be remodelled to suit a new target audience. In the process, information is transferred linguistically in a way similar to periphrasis or to intralinguistic translation. This phenomenon is also favoured by the widespread use of metaphor and simile in popularising processes. Both techniques establish a direct link with the public’s general knowledge, which makes the content easier to identify.

A trial by jury represents a typical example of the knowledge asymmetries that may exist among the various participants, some of whom are legal experts and some non-experts. The former category comprises professionals such as lawyers and judges, while jurors and witnesses usually have a non-legal background. As jurors and witnesses play a relevant role in a trial, it is of the utmost importance that they should be able to understand all the communication going on in court, including the legal terms used and their implied concepts. As Anesa’s (2012) analysis has shown, there are various moments in which both the judge and the lawyers devote time and efforts to explain the legal jargon the jurors come across.

One of such moments is at the beginning of the trial, when the jury is instructed about the various procedures used in court. The great importance

of this phase has often been underlined, as misunderstanding of legal principles may have a detrimental effect on the outcome of the trial. This explains the vast literature related to the formulation of jury instructions, aiming in particular at the improvement of their comprehensibility (Dumas, 2000, Ellsworth & Reifman, 2000, Heffer, 2008, Tiersma, 2010). As the understanding of these instructions is crucial, the judge often offers to supply further information in case of doubt or incomprehension:

THE COURT: The next phase of the trial is another orientation. This orientation, however, is a little more specific, because it now deals with some of the dos and don'ts of this new job that you have. Like everything else in this state, this has been reduced to a script for me to read. When you realize that this script was prepared by lawyers and judges, it will soon become very apparent to you that this is not only not the most entertaining material you've ever heard, but, in addition to that, it might sound confusing and a little convoluted. Don't worry about it. We're going to be talking about very basic concepts, and I will try to interject where all the legalese is some common-sense approach to this. (Anesa, 2012: 131)

As can be seen, in offering to popularize the legal jargon, the judge adopts a kind of language which is very different from the very formal style typical of his role. The language he uses is simple and the tone is conversational and humorous, comprising sarcastic remarks ("Like everything else in this state, this has been reduced to a script for me to read") and euphemistic comments ("this is not (...) the most entertaining material you've ever heard"). The judge is aware of performing a popularising task and likens his present function to that of a law lecturer:

THE COURT: (...) and so I've never personally taught any law school class, but I'm going to give you a judge's version of legalese 101. Whenever ... we are ruled, the lawyers and I are ruled by what we call objections. Basically the ground rules for how a trial is conducted. And they are rules of evidence. And from time to time a question might be asked and the one lawyer will think that the answer to that question might be objectionable for some reason. So that lawyer is going to say objection and will give me a reason why I should either sustain or overrule the objection. Now, the reason I'm basically here is sort of the referee of this match that's going on. So my job is to make the call. If I overrule the objection, what that means is you're going to hear the question and you will hear the answer. (Anesa, 2012: 137)

As can be seen in the quotation above, to make his words more understandable the judge uses figurative language, comparing his role to that of a referee and using sports expressions (“I’m basically here (...) sort of the referee of this match that’s going on. So my job is to make the call”). Furthermore, the judge provides definitions in simple language, usually recurring to everyday paraphrases:

THE COURT: So overruled means that you get to hear the question and the answer. Sustained means you’ll hear the question but no answer. Don’t dwell on it, worry about it, or hold it against one or the other lawyers. They’re doing their jobs. In other words, that’s just part of the process by which we control the trial. (Anesa, 2012: 138)

Also during the trial, the judge inserts explanations of procedures or legal terms whenever he deems it necessary to facilitate the jurors’ work. Again in doing this he adopts a colloquial tone and a figurative language rich in sports metaphors:

THE COURT: Ladies and gentlemen, since this is the first of probably many of these sidebar conferences, I think we ought to talk about that. The purpose of a sidebar conference is very simple. I have a choice when the lawyers want to talk to me before something that doesn’t directly deal with you. And that is, I can have all of you leave the courtroom or I can make Ophelia here come over here and sit on a step, and we have a little football huddle and we discuss it. Now, don’t strain an ear trying to hear what it is we’re talking about, because if it’s meant for you to hear you’re going to hear it, and if you don’t hear it, you weren’t going to hear it anyway. (Anesa, 2012: 139)

This popularising task is often performed by lawyers too, who are anxious to make sure that the legal terms employed are understood correctly. In fulfilling this function, they too recur to figurative language and analogies with personal experiences. For example, to explain the difference between “simple negligence” and “gross negligence” a lawyer might provide the following exemplification based on an everyday situation: “Simple negligence occurs when you are eating a plate of beans and you spill a bean on your tie. When you spill a whole knifeful of beans on your tie, that’s gross negligence” (quoted in Aron, Fast & Klein, 1996: 12). Analogies and exemplifications are often used by lawyers to explain abstract legal principles and to make elusive legal concepts more easily understandable. To increase its effectiveness, figurative language is often used in a personalized way, commonly involving

the jurors themselves, as can be seen in the following explanation of the notions of “actual possession” and “constructive possession”:

MR. DUSEK: And you heard there was actual possession and constructive possession. You are in possession of the badge that’s on you now. You have active control of that. These water bottles in front of you, you have constructive possession of them. You have control over them, but you do not have active control of them. It’s not in your possession right now. (Anesa, 2012: 177)

Particularly in the concluding phase of the trial, when the attorneys in their closing arguments are trying to convince the jury of their own theses, the explanation of terms is sometimes made more vivid and personal by reference to a particular tragic moment in one’s life. This can be seen in the following quotation, where the defendant’s lawyer is trying to make sure that the concepts of “proof beyond reasonable doubt” and “abiding conviction” are perfectly clear to the jurors:

MR. FELDMAN: And you have to take those words and feel whether you’re so convinced that the conviction will never, never go away. It’s so strong that it’s the kind of belief you have that if you’ve got a loved one on a respirator, a terrible decision to have to make, somebody dying, it’s on you to make the decision to pull the plug. Only with an abiding conviction would you do so. (Anesa, 2012: 190-191)

The use of striking figures of speech such as the ones seen here also has a very important argumentative function and this explains why they are so frequently and skilfully employed by lawyers in their speeches not only to clarify terms and concepts but also to persuade the jury.

### **3. Popularization as recontextualization**

Popularization often involves not only a reformulation of specialized discourse, but also a “recontextualization” (Calsamiglia & Van Dijk, 2004: 370) of scientific knowledge originally produced in specific contexts to which the lay public has limited access. This recontextualization implies a process of adaptation of popularization discourse to the appropriateness conditions of the new communicative events and to the constraints of the media employed, which have become quite varied in their nature and are often used in an



integrated way. A typical example can be found in health information, which has become pervasive in the media occurring in news stories, documentaries, medical and science programs, health promotion campaigns. All these media are used to cover advances in medical treatments and new drugs, alert their audiences to health risks, promote the value of taking care of the self and act as advocates for change on socio-political issues like medical funding and health service delivery (Gwyn, 2002; Seale, 2002 & 2004). However, this new communicative approach generally involves a transformation of the original discourse, as the knowledge to be disseminated is recreated in a different communicative situation for the lay audience.

In the media, the journalist or reporter assumes a very active role as manager of the reformulation of the text produced by specialists and now destined for a new public. In this approach, the journalist carries out a creative re-elaboration which implies more than mere terminological adjustments and involves all linguistic levels from the structure of the new text to its communicative function, from a change in register to a consideration of the public's prior knowledge of the subject matter. Moreover, the final text is dependent on the extremely hierarchical internal organization of the media, as each news item is usually subjected to revision at different levels. According to this new approach, popularization is thus not just seen as a category of texts, but as a recontextualization process that implies relevant changes in the roles taken on by the actors and institutions involved, and their degree of authoritativeness.

The recontextualization process starts from a first structuring step by means of which the encoder first addresses his/her audience and tries to arouse their interest by creating a "scenario" (Moirand, 2003: 177) – that is, sketching out a possible situation which might engage with the interlocutors' everyday activities. Also in presenting the information, in order to facilitate the interlocutors' comprehension the journalist tries to align with their everyday experience through the mention of facts and concepts that are typical of daily life. To make his/her presentation more convincing, the popularizer commonly chooses those illustration procedures – basically, metaphors and concretizations – which help him/her explain even complex facts. The comparison with everyday reality and the recourse to concretization is meant to facilitate comprehension of abstract information and distant situations.

This analytic approach enables the researcher to focus not only on the final text but also on the intermediate steps of the communication process, which

constitute important stages in which the message is reformulated according to the new addressees. The reformulation process may have relevant consequences as in some cases it can, in turn, have an impact on the original texts produced by scientists (see Lewenstein, 1995). The communication of science is thus seen as a cyclic process in which discourses on science interact dynamically, the scientific community providing knowledge for dissemination among the general public, and popularization, in turn, critically influencing the production of scientific knowledge.

Some new forms of popularization have also blurred the clear-cut distinction between authors and audience of popularizing texts. This is the case of Wikipedia, which – by allowing real-time publication of individual content without any previous editorial revision – facilitates a continual cooperation between writers and readers in the elaboration of the various entries (Ray & Graeff, 2008). This feature confers a high degree of instability on these texts, which become fluid and increasingly dynamic. The multiple authorship of the popularizing items has also weakened their generic integrity, as the various entries have a highly heterogeneous style, mixing the traditional form of the encyclopedic entry with other generic forms such as those of travel guides, scientific review articles, manuals, advertisements, obituaries or magazine articles. Moreover, thanks to the technological affordances offered by the new medium the entries have become more complex, combining the texts with other resources, such as links to further Wikipedia articles, inclusion of pronunciation of the words and other hypertextual options.

The provision of health information is widely distributed across the media by means of television, radio, newspapers, magazines and the Internet, and provides a constant and readily accessible supply of health care information and advice. To fulfil their informative and educational function, the media try to reach all kinds of people, of all ages, and therefore also make use of those channels which are meant to reach specific audiences, such as publications targeted at men, women or teenagers. Although their common goal is to inform about advances in medical treatments and new drugs, warn about health risks, and promote the value of taking care of the self, they do so in different ways and using the style and language which is appropriate to the audience they are addressing.

For example, the analysis carried out by McKay (2006) shows that to talk about health risks, teen magazines like *Dolly* and *Girlfriend* make use of a type

of “teenspeak” – that is, a language which imitates the jargon of teenagers and which tries to convey a conversation-like quality as in advice from peers. Some of the features of this teenspeak identified by McKay (2006: 316-317) are the following:

- Imitations of teen slang like “bestie” for “best friend”, “fave” for “favourite”, “spesh” for “special”.
- Prolongation of vowels, for example “Dolly Doctor Confidential SOOO Totally Sealed” or “tooooooo gross”.
- Overuse of “cos” for “because”.
- First Person plural (“We all love chocolate”).
- Representations of typescript which attempt to mimic conversation and “scream” drama, concern, innuendo: exclamation marks, scare quotes, stress, question marks, dollar signs, bullet points and increasingly larger font size to indicate increasing importance.
- Questions like “How far are other girls going?”; “The ugly disease, could you have it?”; “Will your year be magic or tragic?”; “What’s wrong with my love handles?”; which are meant not only to reinforce the narrow concerns but also the alleged insecurities of this group.
- Directives like “Fix your freaked out skin” or “Read this now”.

To convey health information, rather than an argumentative or informative approach, the articles often recur to personal narratives by those who have experienced a health threat or an illness and want to share their experiences with an audience already intensely interested in personal, emotional details. In order to enable readers to benefit from the experiences of others, these individuals’ stories are recontextualized as “reality” situations: for example, “How I beat anorexia”; “I had a secret abortion at 16”; “How mental illness changed my life”. Similar experiences are often clustered together in multiple mini-narratives, accompanied by photographs, usually not of the persons concerned but of the “generic” type, with images of young women or a group. These texts are often accompanied by sidebars or text boxes containing additional information. Indeed,

[w]hile adult personal narratives (related to, say, cancer survival, overcoming medical odds, or dealing with mental illness), may convincingly incorporate

wider and wiser perspectives and evaluations of the meanings of the experience, teen narratives are less able to do this credibly, and need to extend other discursive strategies. (McKay, 2006: 318)

So, for example, *Girlfriend's* "The Big Issue" (March, 2004) includes regular information on obesity and diet in a mix of personal experience, advice from dieticians, a separate personal narrative in the sidebar, a block of information from weight management experts, and another of celebrity attitudes to weight and body shape; a URL for facts and advice is included. A later article in *Dolly*, "Obesity Crisis: How Not to be a Victim" (June, 2004) uses advice from a health professional interspersed with short paragraphs of personal experience accompanied by editorial evaluations like:

These days, Naomi's and Renee's low activity levels are seen as "normal", but our weight problems are made worse because we're not eating any less to compensate for being "couch potatoes". (McKay, 2006: 319)

In "I had a Secret Abortion at 16" (*Girlfriend*, March, 2004) the accompanying text box gives statistics on teen pregnancy, vague contraceptive advice, warnings about sexually transmitted infections, a directive to talk to an adult "you trust", and a website for more information. *Dolly's* feature on abortion (December, 2003) also uses personal stories, weblinks and includes text boxes on facts including cost, the legal situation and contraception, and offering alternatives to abortion from a Christian organization. As McKay remarks,

The multi-faceted approach to teen health risk messages allows separate voices to come through where peers can tell it like it is, celebrities can be quoted, and where expert voices position young women together into seeking help, finding solutions, or dealing with friends who are taking risks. (McKay, 2006: 319)

#### 4. Social importance of popularization

As a result of the recontextualization process, the mass media are no longer seen as passive mediators of scientific knowledge, but as active participants in the production of novel information and new opinions about science and scientists, often including views that do not derive from scientific sources. Nowadays information technology, biology and biotechnology have made

spectacular advances and have become the stars of the sciences. The importance of their findings and their great relevance to our everyday life well justify the growing interest evinced by the population, concerned as they are about the quality of life as a first priority. Viewed from this new perspective, popularization often provides explanations in terms of the social meaning of the events in question, which is indicative of an increased social awareness of risks. As scientific or technological innovations also have political implications, their presentation in popular forms may pose a challenge to traditional views and established behaviour. Rather than “explaining” science, this new type of popularization sets out to explain the social meaning of such events, with the consequent creation of interdiscursive texts mixing informative and explanatory discourse with other scientifically-unrelated matters of more general public concern.

Moreover, the wider the debate, the bigger the number of different speech communities that have to be targeted by the media: the political, scientific, economic, industrial, professional and business worlds, that is, communities which are, themselves, not only mediators of the original scientific discourse but also generators of their own opinions. The monological intertext (that is, the voice of science or of a particular given scientific community) makes way, then, for a plurilogal intertext (Moirand, 2003), made up of the opinions of the different communities called upon by the mediator. The latter, in turn, may be torn between several different enunciative poles, many of which – although not possessing the knowledge of the experts in the field – may be very powerful in influencing the political and economic worlds.

In this process of interdiscursive expression, the recontextualization of scientific knowledge may run the risk of deviation and utilization for other ends. Their dependence on other institutions and organizations for most of their information and advertising often makes media managers and journalists deeply consider what and especially how to publish (or not to publish) about science, scientists and scientific knowledge, as part of a complex process of news production (Bell & Garrett, 1998). Therefore, the main focus of the analysis of popularization discourse is no longer on how scientists make their style closer to the limited knowledge of a lay audience, but on how journalists work to comply with various concomitant constraints such as public interest and concern, market demands, the newspaper’s ideological slant, and competition from other types of media. An example of how information can be presented in a biased way is the following introductory paragraph explaining the concept of genetic engineering:

Genetic engineering enables scientists to create plants, animals and micro-organisms by manipulating genes in a way that does not occur naturally. These genetically modified organisms (GMOs) can spread through nature and interbreed with natural organisms, thereby contaminating non “GE” environments and future generations in an unforeseeable and uncontrollable way. (URL: <http://www.greenpeace.org/international/en/campaigns/agriculture/problem/genetic-engineering/>)

This paragraph is not meant to be a neutral or objective presentation, as the use of evaluative words such as by “manipulating”, “contaminating”, “unforeseeable”, “uncontrollable” explicitly assigns negative connotation to the scientific process described. It is not at all surprising to find that the rest of the text goes on arguing against the use of genetic engineering as part of Greenpeace’s campaign against GMOs.

In recent times there has been growing awareness of topics where misunderstanding or lack of proper communication between experts and non-experts can lead to failures in the very activity being undertaken. An important case in point is explanation about diseases and treatments as presented in face-to-face interaction between doctors and patients or reported in medical journals or information leaflets included in medical products. Indeed, in the medical field there has been a great change in the last few decades in the amount of information made available to people other than the traditional learned intermediaries – the doctors, pharmacists and other medical workers. Many countries have adopted policies which mandate that adequate information be made available about treatments, medication and surgical procedures so that people can participate in an informed way in the management of their own health. The sources of data, however, are not always as transparent and objective as they need to be.

There are at least three kinds of “consumer information” documents that are available when a member of the public consults a medical practitioner and is prescribed a course of treatment. When the consumer buys the prescribed medication, it will normally be accompanied by documentation giving details of how the medication is used, what it does, what side-effects it might have, what contraindications there are, the name of the pharmaceutical company that produces the medication, and so on. Second, there is documentation that the doctor may have available in his/her office, which includes, for example, general printed material about diet, exercise, health management or information about specific conditions. Third, there is documentation available in the doctor’s waiting-room, which people may

choose to pick up, take away and read. These leaflets are usually glossy and contain catchy phrases to better attract the readers. These features are meant to enhance the main function of these texts, which, far from exclusively offering information and advice, are mainly advertisements for specific products. Sometimes this is relatively obvious, as the name of the product advertised is prominently displayed in the text. Of course, there is also a mention of its claimed medical benefits, and this, accompanied by the placement of the leaflets in the racks of the doctor's waiting-room, carries the implication that the medical professionals endorse these claims. In other cases, instead, the advertising function of the leaflet is not so obvious. For example, some leaflets meant to promote the use of specific drugs point very strongly to the conclusion that only medication can be effective. Only in the fine print can people realise that the leaflet is produced by a well-known pharmaceutical company that produces this kind of medication.

In other cases the implications of a message derive from the ambiguity of the text. An example could be the leaflets on osteoporosis analysed by Hall (2006). These are written in a style which is typical of a public-good popularising text, providing relevant information as a reply to a series of questions such as "Why do we need calcium?", "Could I be at risk of developing osteoporosis?", "Can osteoporosis be prevented?". This is the typical approach adopted in well-written documents aiming to inform, raise awareness and cause the reader to take action. The authoritativeness and seriousness of the leaflets is enhanced by the use of small-font footnotes referring to the medical literature. However, if examined more closely, the leaflets are shown to possess a promotional function, as they are meant to persuade readers to buy products of the company that has issued the brochures. This process is carried out through a range of steps. At first the leaflets try to persuade readers that they need more calcium than they are currently getting:

A lot of people think having a few cups of tea or coffee with milk per day plus a yoghurt is enough, but it isn't.

Then they criticise people who try to integrate their calcium intake as a normal part of their everyday diet by insinuating that they are actually making partial or wrong choices according to their own personal likes and dislikes:

Many people limit their intake of these calcium rich foods due to personal dislikes, avoidance of fats, cholesterol, or lactose, or simply dieting for weight control.

The solution to this unsatisfactory state of affairs is found in the suggestion of a specific product to be bought:

Taking a calcium supplement such as Caltrate is a simple, economical way to ensure you get adequate calcium every day.

As they may be accused of fraudulent behaviour, the authors of these leaflets state their claims in a prudent way, with frequent use of hedging and tentative language. Typical expressions are: “you *may* be at risk”, “it *can* proceed without symptoms”, “a high level *can* cause problems”, “these factors *may* increase your risk”, “*usually* there are no serious complications, *but...*” (examples from Hall, 2006: 278). In this way the leaflets arouse anxiety in the readers, which is further increased by a series of questions such as “Have you broken a bone after a minor bump or fall?” and “Do you regularly drink heavily?” An affirmative answer to any of these will lead you to believe that “you may be at risk of getting osteoporosis”. The recourse to calcium supplements is then suggested as a final solution to the problems caused by osteoporosis. At the end of his analysis of these pseudo-informative materials, Hall (2006: 282) comes to the following conclusion:

It seems to me that this is exactly what the advertising material dressed up as an information leaflet does. It creates the illusion (...) that readers can self-diagnose, weigh risks and make informed choices through their access to authoritative information, but its real purpose is to persuade readers that whatever their health problem, whether they have a specific condition or are members of an at-risk population, the solution in the form of a purchasable product is at hand.

## 5. Concluding remarks

The analysis carried out in this paper has shown the great complexity of the popularization system, which implies therefore the adoption of an integrated approach in order to clearly identify and carefully describe the various aspects involved in this process. This integrated approach should cover at least the following areas:



### **a. Cognitive dimension**

The communication of knowledge primarily concerns important changes in the cognitive dimension, deriving from the interaction between specialized knowledge and its popularization. The study of the cognitive dimension should then deal with the analysis of textual phenomena such as thematization, denomination and reformulation, which are involved in the transformation of specialized knowledge into media discourse. This kind of analysis also implies a detailed account of the cognitive structures of different types of knowledge as well as of the strategies of knowledge management of the participants (van Dijk, 2003), which presupposes a theoretical component usually ignored in studies of popularization.

### **b. Discourse analysis**

The study of popularization implies an investigation of its forms in terms of textuality, thus aiming to highlight its various components at different levels:

- intratextually, within a single article, computer hypertext or specific radio/television programme;
- intertextually, in different articles, hypertexts or radio/television programmes as well as in their source events and texts;
- interdiscursively, with the analysis of phenomena such as generic bending, generic borrowing, generic hybridization (Bhatia, 2004: 128).

This complex view of textual analysis will greatly benefit from the insights coming from the exploration of the context and text/context relations strictly connected with the actualization of popularising discourse (Duranti & Goodwin, 1992).

### **c. Critical discourse analysis**

In view of the important social role played by the phenomenon of popularization, the analysis of its texts should not neglect the perspectives of critical discourse analysis (Fairclough, 1992), which can be very helpful in identifying the purposes and functions of textual practices in their move across different settings and discourse communities. The insights deriving from this approach may highlight interesting underlying dynamic patterns and changing trends determined by specific experiences and interests, as well as conflicts and power relations present in more general social environments.

#### **d. Media studies**

As popularization has become an important branch of journalism, the investigation of its relationship with other established genres such as the general article and the report will outline its belonging to a complex system in which popularization constitutes a part of a continuum (Myers, 2003) and is strictly connected with the other parts with which it interacts interdiscursively, thus giving rise to more complex and hybrid forms (as in the case, for example, of blogs; see Blanchard, 2011; Berkenkotter, 2012). Moreover, the informative role of a massive spread of knowledge needs to be interpreted in comparison with other functions of the media, particularly with their entertaining aim and their need to reach the widest audience for commercial purposes.

#### **e. A semiotic approach**

As popularization is now practised in a multiplicity of forms (films, hypertext programs, interactive packets, etc.) a multimodal approach is needed to properly interpret the use and function of their various constitutive elements, not only text but also visuals, sounds and other semiotic systems (Kress & van Leeuwen, 1996 & 2001; Rose, 2001; van Leeuwen & Jewitt, 2001). This wider analysis will enable the researcher to interpret not only the more traditional genres, but also to better understand the products of the latest technologies and their use of visual elements, complex layouts, objects, embodied movement and other semiotic codes (Lemke, 1998; Miller, 1998).

#### **f. An interdisciplinary approach**

The wide debate on the issues discussed in this paper and the results of recent research projects carried out in this field can thus lead us to the conclusion that in order to reach a full understanding of the complex phenomenon of popularization, the analytical approach should favour the adoption of close interdisciplinary contact and integration, and rely on the methods and findings of the research traditions of different fields.

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