

Marketing Life after Death. Cryopreservation in the Hope of Resuscitation

Abstract: A small number of companies offer cryonics services to people intending to preserve their bodies after their death, until a moment in the future when medical progress allows the corpses to return to life by treating the condition that caused their life to end. While cryopreservation has long and successfully been used to store organs and tissues, including for reproductive purposes, cryonics has not succeeded yet in reviving dead humans. This study analysed the language used by cryonics providers a) to disseminate the (pseudo)scientific knowledge and technology behind cryonics and b) to market cryonics services through their websites. It found that cryonics discourse is disseminated as scientific discourse, and marketed like other, non-bioethically relevant services and products, in ways potentially misleading for the lay public. Cryonics is furthermore disseminated and advertised based on a negotiable notion of death that does not correspond to recognised ideas of clinical or legal death. Again, this entails a potential risk where stronger social actors may mislead weaker actors into making uninformed life-or-death choices; for this reason, a critical discourse approach can prove suitable to interpret the discourse of cryonics.

Keywords: *critical discourse, cryonics, discourse, ethical debate, marketing, web communication*

1. Background

This study is part of an ongoing funded investigation on end-of-life discourse, conducted from a discourse-analysis perspective.¹ In particular, what is analysed here is cryonics, or cryopreservation ‘in the hope of resuscitation’. A terminological distinction is necessary, to begin with: cryopreservation, i.e. the “process of storing cells, tissue, etc., at very low temperatures (typically around -200°C) in order to maintain their viability”,² is a technique that has long been used in scientific and medical applications, for instance in assisted reproduction, organ donation and transplantation, and stem cell research. Cryopreservation, in itself, is not the focus of this study; the focus is rather one specific application of cryopreservation, better defined by its ultimate purpose: cryonics, i.e. the “practice or technique of cryogenically preserving a person's body with the aim of reviving it in the future; esp. the cryogenic preservation of a person with an incurable disease until such time as a cure is found”.³ This terminological as well as functional distinction is necessary, because mixing a scientifically viable concept (cryopreservation) with one whose validity is still being debated (cryonics) is both a delicate matter and one discursive strategy that, as will be discussed later, is often employed by cryonics

¹ It is also part of an Italian nationally funded research project (PRIN 2015) on “Knowledge Dissemination across media in English”, within the Milan’s Unit on “Knowledge dissemination and bioethics: preliminary issues”.

² “Cryopreservation, n.”, *Oxford English Dictionary*, online version (Oxford: Oxford U.P., March 2019).

³ “Cryonics, n.”, *Oxford English Dictionary*, online version (Oxford: Oxford U.P., March 2019).

providers.

The scientificity (or lack thereof) of cryonics may be derived from a simple review of the research articles investigating it or mentioning it published in the last few decades: a search in the *PubMed* database for the term ‘cryonics’ only returns 18 papers published between June 1979 and August 2018.⁴ On the other hand, a search of English-language newspapers worldwide in the database *LexisNexis* returned 2525 texts published between 21 Nov. 1971 and 4 Apr. 2019,⁵ showing that cryonics may not be an interesting subject for scientists yet, but it seems to be such for journalists and lay readers.

Companies currently offering cryonics services worldwide are only a handful; three of them are based in the USA, one in Russia (Table 1). A fifth provider, Oregon Cryonics (US), was founded in 2005 and only recently (2015) began operating in the market; however, since it offers head-only cryopreservation, it has not been considered in this review.⁶

Company	Country	Service(s) offered	Price	Patients
<u>Alcor Life Extension Foundation</u> (website accessed 31 March 2019)	AZ, US	Head only Whole body	From \$ 80,000 From \$ 200,000	167
<u>Cryonics Institute</u> (website accessed 31 March 2019)	MI, US	Whole body	From \$ 29,250 (+\$ 500-100,000 stand-by costs)	174
<u>KrioRus</u> (website accessed 16 April 2019)	Moscow, Russia	Head only Whole body	\$ 15,000 (Russians) \$ 18,000 (foreigners) \$ 36,000	65
<u>TransTime</u> ⁷ (website accessed 16 April 2019)	CA, US	Whole body?	\$ 150,000	3

Table 1: Providers of cryonics services worldwide

2. Aims, corpus and methods

This study addressed the general research questions of how scientific knowledge is about cryonics disseminated, and for what purpose(s). More specifically, it proposed a discursive analysis of the language used a) to disseminate the (pseudo)scientific knowledge and technology behind cryonics and

⁴ *PubMed*, advanced search.

⁵ *LexisNexis*, advanced search, English-language newspapers, www.lexisnexis.com/.

⁶ News of a cryonics company set up in India appeared in 2018, followed by news of its closure soon afterwards; the business field is quite recent, so new companies may enter it soon.

⁷ Data on TransTime from www.cryonics.org.

b) to market cryonics services through the websites of companies offering them. To do so, a corpus was collected comprising texts from selected pages from the four cryonics providers' websites, as specified in Table 2.

Alcor	Cryonics Institute	KrioRus	TransTime
Homepage	Homepage	Homepage	Homepage
About Cryonics	Membership	About us History Mission Staff	About
What is Cryonics? Cryonics procedures Cryonics Myths Frequently Asked Questions Alcor Book Scientists' FAQ Problems of Cryonics Notable Quotes	Case reports	Services Human cryopreservation Pets cryopreservation Other services	Advisory Board
About Alcor Alcor's Mission Alcor's History Why Scottsdale Photo Gallery Video Library Alcor Staff Board of Directors Scientific Advisors Member/Patient Stats Member Profiles	About Cryonics Frequently Asked Questions Common Myths about Cryonics The Case for Cryonics Robert Ettinger Biography	Our patients Cryopreserved people	News
Membership General Membership FAQ	About CI History/Timeline Guide to Cryonics Procedures Directors & Officers Patient Details Member Statistics Human Cryostasis	About cryonics Timeline of cryonics	Resources
	The CI Advantage	FAQ	Contact Us
		Contact us	
<i>Tokens</i> 33,496 <i>Words</i> 28,492	<i>Tokens</i> 27,516 <i>Words</i> 21,919	<i>Tokens</i> 11,956 <i>Words</i> 9,999	<i>Tokens</i> 793 <i>Words</i> 663

Table 2: Sections of websites considered for the corpus, accessed 17 April 2019

Only the specific webpages within the sites that were deemed to contain texts with a popularising and disseminating function were selected. Other sections and pages, for instance those dealing with legal and economic aspects, were the subject of another investigation⁸ and, as such, were not considered here. Table 2 shows that the largest and most populated websites are those of Alcor and Cryonics Institute, which also feature the most ‘patients’ or cryopreserved people (Table 1). The Eurasian competitor, KrioRus, has a website about half the size of the first two, although the parts considered here are those in English (the Russian version is expectedly more extensive). TransTime has apparently not updated its website since 2016. The website is made up of five main sections corresponding to single webpages with sparse information (the number of tokens is about 1/30 of the largest two); since 2015, it has had an active page on Facebook, so it may be hypothesised that it has chosen this channel as its favourite means of contact with the public.

With these data, the study intended to discuss the themes and semantic fields emerging or not emerging from the discourse on cryonics as laid out by the cryonics services providers in the selected sections, which mostly have an informative function for the public. In particular, the various themes will be differentiated between general and specialised.

Overall, this was intended as a small, qualitative linguistic study, looking in particular at: a) semantic fields (retrieved through lexical analysis by means of *SketchEngine*)⁹ characterising the main themes dealt with when disseminating and promoting cryonics, and b) the lexico-grammatical peculiarities of the discourse of cryonics providers; results were interpreted from a Critical Discourse Studies (CDS) perspective,¹⁰ also briefly touching upon the philosophical notion of death,¹¹ and the presence and role of metaphors¹² and humour.¹³ By dissemination, a discursive view of it is intended here, which takes into consideration the notion of knowledge as “all kinds of contents which make up a consciousness and/or all kinds of meanings used by respective historical persons to interpret and

⁸ Kim Grego, “‘Legally Dead, Illegally Frozen?’ The Legal Aspects of Cryonics as Discursively Constructed Online by Providers and the Media”, in Vijay Bhatia and Girolamo Tessuto, eds., *Social Media in Legal Practice* (provisional title) (London: Routledge, 2019 forthcoming).

⁹ Adam Kilgarriff and Pavel Rychlý, *SketchEngine*, (Brighton: Lexical Computing, 2003), www.sketchengine.eu.

¹⁰ Ruth Wodak, ed., *Language, Power and Ideology: Studies in Political Discourse* (Amsterdam and Philadelphia: Benjamins, 1989); Norman Fairclough, *Discourse and Social Change* (Cambridge: Polity Press, 1992); Norman Fairclough, *Analysing Discourse: Textual Analysis for Social Research* (London: Routledge, 2003); Ruth Wodak and Michael Meyer, eds., *Methods of Critical Discourse Analysis* (London: Sage, 2001); Ruth Wodak and Michal Krzyzanowski, eds., *Qualitative Discourse Analysis in the Social Sciences* (Basingstoke and New York: Palgrave Macmillan, 2008).

¹¹ Hans Jonas, *The Phenomenon of Life: Toward a Philosophical Biology* (Evanston: Northwestern U.P. 1966); Richard M. Zaner, *A Critical Examination of Ethics in Health Care and Biomedical Research: Voices and Visions* (Heidelberg, New York, Dordrecht and London: Springer, 2015).

¹² George Lakoff and Mark Johnson, *Metaphors We Live By* (Chicago: Chicago U.P., 1980).

¹³ Salvatore Attardo, *Linguistic Theories of Humor* (Berlin and New York: De Gruyter, 1994); Delphine Manceau and Elisabeth Tissier-Desbordes, “Are Sex and Death Taboos in Advertising?”, *International Journal of Advertising*, 25.1 (2006), 9-33; Marta Dynel, “Blending the Incongruity-Resolution Model and the Conceptual Integration Theory: The Case of Blends in Pictorial Advertising”, *International Review of Pragmatics*, 3.2011 (2011), 59-83; Benjamin Bergen and Kim Binsted, “Embodied Grammar and Humor”, in Geert Brône et al., eds., *Cognitive Linguistics and Humor Research* (Berlin and Boston: De Gruyter, 2015), 49-67; Łukasz P. Wojciechowski and Viktória Babjaková, “Necromarketing in the Media and Marketing Communications”, *Social Communication*, 1.2 (2015), 15-29; Ceylan Yeginsu, “Funeral Ads Got Britain Talking, but Not About Death”, *New York Times*, (2 Aug. 2018), A12.

shape the surrounding reality”, and of “how it is passed on” to the general public.¹⁴ In particular, the documents will be checked for their degree of ‘informativity’ as “the quantity of new or expected information in a text”,¹⁵ in relation to their ‘intentionality’ (“the attitude and purpose of text-producers”)¹⁶ and ‘acceptability’, or “the degree to which hearers and readers are prepared to expect and understand a text that is useful or relevant”.¹⁷ The relevance of a CDS interpretation for this study, on the other hand, will become clear as the analysis shall reveal a construction of discourse that indeed requires a critical approach, since the subject discussed regards a situation that is, according to Ruth Wodak,¹⁸ “threatening or involve[s] a power play between individuals”, a social phenomenon that is “too complex to be dealt with adequately in only one field” (and thus needs an interdisciplinary stance) and in which “values and aims are to be discussed explicitly” and, finally, in which researchers might be “forced to take sides”. For this reason, the phenomenon of cryonics services and their marketing may be inscribed within what Norman Fairclough identifies as bringing about a “discursive change affecting the societal order of discourse”¹⁹ or, rather, as creating an altogether new one – cryonics did not exist and was not known to the general public until recently. As will be shown, Fairclough’s “three major tendencies: ‘democratization’, ‘commodification’, and ‘technologization’ of discourse”²⁰ may all be found in the discourse of cryonics.

3. Findings

The themes and semantic fields emerging from a lexical analysis of the texts may be divided (according to their level and domain of specialisation) into:

General

- Life, death, undesirable conditions
- Hopes, beliefs, intentions

Specialised

- Science, technology, scientific dissemination
- The business of cryonics

3.1 *Life, death, conditions*

As regards the general themes, those of life, death and the various conditions and diseases mining good health and eventually leading to the passing of a person emerge as both frequent and relevant in the texts considered. Tables 3 and 4 show condensed lexical sketches of ‘life’ and ‘death’ as drawn by

¹⁴ Siegfried Jäger, “Discourse and Knowledge: Theoretical and Methodological Aspects of a Critical Discourse and Dispositive Analysis”, in Ruth Wodak and Michael Meyer, eds., *Methods of Critical Discourse Analysis*, 33.

¹⁵ Ruth Wodak and Michal Krzyzanowski, eds., *Qualitative Discourse Analysis in the Social Sciences*, 9.

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ Ruth Wodak, ed., *Language, Power and Ideology: Studies in Political Discourse*, xv-xvi.

¹⁹ Norman Fairclough, *Discourse and Social Change*, 200.

²⁰ Ibid.

SketchEngine, looking in particular at modifiers, modified nouns, words introduced by ‘and/or’ and verbs with these words as objects. Absolute frequencies are indicated although, as specified above, the corpus is small and the focus is on the qualitative aspect.

<i>life</i> , n.	Alcor (65)	CI (61)	TT (5)	KR (27)
Modifiers of “life”	productive life 1	renewed life 2	healthy life 1	human life 1
Nouns modified by “life”	life insurance 1	life insurance 5	life span 1	life extension 3
“life” and/or ...	life and death 3	life and health 3	life and health 1	life + health 2
Verbs with “life” as object	save lives 6	restore life 3	-	sustain life 1

Table 3. Word sketch of *life*.

<i>death</i> , n.	Alcor (95)	CI (46)	TT (2)	KR (45)
Modifiers of “death”	legal death 23	legal death 8	clinical death 1	biological death 5
Nouns modified by “death”	death benefit 2	-	-	death watch 1
“death” and/or ...	death or injuries 1	death and aging 1	-	-
Verbs with “death” as object	pronounce * death 4	consider death 2	-	regard * death 1

Table 4: Word sketch of ‘death’

In the cases of CI and TT, it is interesting how life is more frequently mentioned than death, thus creating a discourse that is pre-eminently concerned with living, and not with techniques for preserving corpses, like cryonics. Even in Alcor’s and KR’s websites, although the situation is apparently inverted, when checking occurrences manually what emerges is that death is associated with concepts of ‘preventing’ or ‘reversing’ it. What is more, most collocations used by Alcor (‘legal death’: 23 and ‘clinical death’: 22) and KrioRus (‘biological death’: 5) are specialised terms from medicine and the law that are nonetheless given a novel acceptance in the texts, i.e. the premodifying adjective is taken to indicate the medical or the legal viewpoint on a person’s vital state, which is however not shared by cryonics providers, for whom this may only be a temporary condition. In their discursive narration, legal or clinical or biological death can be just the initial condition for cryopreservation, which may in turn lead to resuscitation. Death only occurs if a corpse is not duly preserved by means of cryonics, and gets decomposed or destroyed, e.g. through interment or cremation.

Table 5 contains selected mentions of phrases regarding death, diseases and other ‘undesirable’ conditions.

Alcor	CI	KR	TT
Section: “What cryonics is not” interment method mortuary practice dying process legal death life and death Section: “FAQ” Q: What about aging and disease ? A: There is no point in prolonging life if the result will be illness and debilitation Eventually, aging itself will be a treatable, reversible condition ..., biological aging as we know it today will not exist.	Section: “Homepage” disease, death and aging legal death the most critical moment the aging process debilitating and fatal diseases	Section: “About cryonics” biological death nanomedicine will make it possible to cure all diseases including complications of aging	Section: “Homepage” illnesses , such as cancer or heart disease clinical death Section: “About” the aging process itself ... might also be cured

Table 5: Mentions of death, diseases, ‘undesirable’ conditions

A noticeable occurrence, in all of the four websites, is the reference to ageing as a condition on a par with ‘illness’, ‘cancer’ and ‘heart disease’. Alcor, in particular, employs the phrase ‘biological aging’, which echoes the ‘biological death’ mentioned by KrioRus (Table 4), although the limit set by the premodifier is to be seen differently: aging without the biological limits of the body is considered positive, it amounts to wisdom; death without the adjective is understood – even by cryonicists – as the irreversible condition from which there is no return.

3.2 Hopes, beliefs, intentions

The corpus testifies to an extensive use of words, phrases and modal verbs expressing beliefs, hopes and intentions, namely those shared by cryonics supporters about the possibilities of this technology. Table 6 collects a number of such examples.

Alcor	CI	KR	TT
Section: “Homepage” preserve human	Section: “Homepage”	Section: “Homepage”	Section: “Homepage” while the medical

<p>life with the intent of restoring good health when technology becomes available We believe medical technology will advance Alcor seeks to prevent</p> <p>Section: “About cryonics”</p> <p>The emerging science of nanotechnology will eventually lead to devices capable of extensive tissue repair and regeneration This future nanomedicine could theoretically recover</p> <p>Section: “FAQ”</p> <p>in the expectation they can be healed and resuscitated in the future using advanced future technologies</p>	<p>we believe that day is inevitably coming cryonics is presently our best chance with the goal of revival in hopes that future medical technology may be able to someday revive the chance to live a renewed life in the future.</p> <p>The potential to stop or even reverse the aging process</p> <p>The possibility of an unlimited lifespan to live all your dreams seeks to achieve preservation and transplant of vital organs</p> <p>Cryonic science has the potential to preserve or revive</p> <p>Section: “About CI”</p> <p>to eventually revive our patients when and if that becomes scientifically possible.</p>	<p>We keep informing people about the possibilities of cryonics</p> <p>Section: “History”</p> <p>Revival of cryopatients in the long range future</p> <p>Goals of the KrioRus project</p> <p>Section: “Services”</p> <p>KrioRus will help you</p> <p>Section: “Human cryopreservation”</p> <p>ongoing medical and technological advance, affords hope in the future to repair or replace the cells of brain and body.</p> <p>it is always best to be prepared</p> <p>We aspire to restore our patients to new life, health and vigor.</p> <p>Section: “About cryonics”</p> <p>when advanced technologies, in particular, nanotechnology, will be able to repair cells*</p>	<p>treatment for their illness can be developed. with the expectation that medical technology will eventually enable</p> <p>Section: “About”</p> <p>In the field of medicine in particular, there is cause for great optimism.</p> <p>Many scientists now believe that ... most or all of today’s major illnesses and causes of death might one day be cured it even seems possible that the aging process itself ... might also be cured</p> <p>In time, human beings might live such long, healthy lives the medical technology that will exist in the future.</p> <p>Trans Time was founded to help people</p>
--	--	---	--

Table 6: Beliefs, hopes, intentions

The examples in Table 6 may be categorised into:

- Words/phrases referring to the future
 - advanced **future** technologies (Alcor)
 - **future** medical technology (CI)

- in the long range **future** (KR)
- **eventually** / **one day** / **in time** / in the **future** (TT)
- Words/phrases expressing possibility
 - **expectation** (that) (Alcor)
 - **potential** to (CI)
 - **possibilities** of (KR)
 - **enable** / seems **possible** (TT)
- Words/phrases expressing desires/intentions (to help)
 - with the **intent of** restoring good health (Alcor)
 - Alcor **seeks to** (Alcor)
 - with the **goal of** revival (CI)
 - **seeks to** achieve preservation (CI)
 - We **aspire to** restore (KR)
 - **Goals of** the KrioRus project (KR)
 - KrioRus **will help** you (KR)
 - Trans Time was founded **to help** people (TT)
- Verbs of opinion/hope + future/epistemic form
 - We **believe** medical technology will advance (Alcor)
 - we **believe** that day is inevitably coming (CI)
 - **hope** in the future to repair or replace the cells (KR)
 - Many scientists now **believe** that ... most or all of today's major illnesses and causes of death **might** one day be cured (TT)
- Modal verbs
 - **could** theoretically recover (Alcor)
 - **can** be healed and resuscitated (Alcor)
 - **may** be able to someday revive (CI)
 - **can** be developed (TT)
 - **will** eventually enable (TT)
 - **might** one day be cured (TT)
 - **might** live (TT)
 - **will** exist in the future (TT)
- Prepositional phrases + non-finite embedded/-that clauses
 - with the **intent of** (Alcor)
 - in the **expectation** (that) (Alcor)
 - with the **goal of** (CI)
 - in **hopes** that (CI)
 - with the **expectation** that (TT)
- Adverbial clauses of time
 - **when** technology becomes available (Alcor)
 - **when** and if that becomes scientifically possible (CI)
 - **when** advanced technologies, in particular, nanotechnology, will be able to repair cells* (KR)

- **while** the medical treatment for their illness can be developed (TT)

The categories highlighted above clearly overlap at times (some are based on semantics, others on syntax) and are by no means to be considered rigid; they can nonetheless provide general indications as to a widespread use of epistemic modality to express beliefs, hopes and intentions (based on such beliefs and hopes) meant to convince cryonics customers that they can survive. This is differently realized linguistically but common to all the providers, since it appears across all the websites considered, with the exception of modal verbs in the KrioRus website (though allowances should be made for texts that are clearly not written in a native variety of English and that, as such, also include stylistically unusual or ungrammatical use of language, e.g. in the example marked * above).

3.3 Science, technology, scientific dissemination

Among the specialised features of the language used by cryonics providers, perhaps the most relevant for purposes of investigation regards the science and technology behind the procedure itself (see Table 7 for a selection of examples).

Alcor	CI	KR	TT
<p>Section: “Homepage” Cryonics is an experimental procedure using <i>the best available technology</i> We believe medical technology will advance enabling it to heal damage at the cellular and molecular levels <i>Banking of transplantable organs at low temperature</i> is a recognized specialty Alcor applies breakthroughs in organ banking research to reduce <i>cryopreservation injury</i> Alcor encourages and supports evidence-</p>	<p>Section: “Homepage” Providing Hope while advancing Science and Medicine using <i>existing cryogenic technologies</i></p> <ul style="list-style-type: none"> • provides suspension at cryogenic temperatures also known as cryonics • cryonics <u>outreach and public education</u> • in hopes that future medical technology may be able to someday revive and restore them to full health • provides an ambulance ride to the high-tech hospital of the future • present medical science has given up 	<p>Section: “Homepage” <u>We keep informing</u> people about the possibilities of cryonics Improve perfusion and storing technologies for our patients; Work hard to increase our storage safety; Support and carry on scientific research in the domain of cryobiology.</p> <p>Section: “Mission” <u>Popularization</u> of cryonics <u>Ongoing education, explanation and popularization</u></p> <p>Section: “Human cryopreservation” after special procedures (perfusion)</p>	<p>Section: “Homepage” Trans Time cares for people while the medical treatment for their illness can be discovered. <u>Cryonics is the science of placing humans</u> into a low-temperature, biologically unchanging state, immediately after clinical death, with the expectation that advances in medical technology will eventually enable full restoration to life and health</p> <p>Section: “About”</p> <ul style="list-style-type: none"> • In the field of medicine in particular, there is cause for great

<p>based research such as these new <i>memory preservation study results</i>. cryonics is, in fact, simply an extension of critical care medicine</p> <p>Section: “Mission” <u>Provide public education</u> as a means of <u>fostering growth to support the goals</u> of 1, 2, 3, 4 above</p> <p>Section: “Cryonics procedures” As a dying patient's condition becomes critical, transport personnel wait nearby on a 24-hour basis. <u>This is called</u> “standby.”</p>	<ul style="list-style-type: none"> • Cryonic science has the potential to preserve or revive endangered or extinct species <p>Section: “Common myths about cryonics”</p> <ul style="list-style-type: none"> • The primary difference is a process <u>called</u> vitrification 	<p>and vitrification), the clinically and legally dead patient is immersed into a <i>low-temperature medium</i> where almost all chemical reactions are stopped.</p> <ul style="list-style-type: none"> • You can arrange for cryopreservation of the brain only. <u>The procedure is called</u> neuropreservation 	<p>optimism.</p> <ul style="list-style-type: none"> • Each year that passes marks a new record for medical research funding • increasingly precise, molecular-based technology. • the aging process might also be cured
--	--	--	---

Table 7: Science, technology, scientific dissemination

What stands out is the frequency of phrases so commonly found in scientific and technological discourse as collocations:

- Alcor
 - experimental procedure
 - medical technology
 - damage at the cellular and molecular levels
 - critical care medicine
- Cryonics Institute
 - Science and Medicine
 - medical technology
 - medical science
 - endangered or extinct species
- KrioRus
 - scientific research
 - special procedures
 - chemical reactions
- TransTime
 - medical treatment
 - advances in medical technology

- medical research funding
- the aging process

In addition to these, other phrases and expressions are also found throughout the websites which, however, do not appear as actual specialised collocations, but are built so as to resemble them:

- Alcor
 - Banking of transplantable organs at low temperature
 - organ banking research
 - cryopreservation injury
 - memory preservation study results
- Cryonics Institute
 - existing cryogenic technologies
 - suspension at cryogenic temperatures
 - high-tech hospital
- KrioRus
 - perfusion and storing technologies
 - storage safety
 - the domain of cryobiology
 - low-temperature medium
- TransTime
 - Cryonics is the science of placing humans into a (continuing)
 - (continued) low-temperature, biologically unchanging state
 - full restoration to life and health

The above expressions thus emerge as new creations and the specialised vocabulary of the novel field of cryonics. They are used alongside established specialised collocations, giving rise to a hybrid lexicon of existing and innovative terms. This linguistic strategy is hardly surprising for an industry that is entirely based not only on viable medical technology but also on the expected developments thereof, and which often includes references to it in the very names or claims of the providing companies, e.g. Alcor Life Extension Foundation, Cryonics Institute ('Technology for Life'), KrioRus ('The first cryocompany in Eurasia'), TransTime ('People that *care*').

Another discursive feature of cryonics providers is their disseminating aim; at least three of them state it openly (while TransTime, in its very small website, does not mention it clearly):

- Provide public education as a means of fostering growth to support the goals (Alcor)
- cryonics outreach and public education (CI)
- Popularization of cryonics (KR)
- Ongoing education, explanation and popularization (KR).

Proof of this proclaimed popularising effort is indeed found in some linguistic strategies employed by all the providers, such as denomination:

- As a dying patient's condition becomes critical, transport personnel wait nearby on a 24-hour basis. This is called “standby” (Alcor)
- The primary difference is a process called vitrification (CI)
- You can arrange for cryopreservation of the brain only. The procedure is called neuropreservation (KR)

or definition:

- Cryonics is the science of placing humans into a low-temperature, biologically unchanging state (TT)

As a result of this mix of language uses and strategies, the scientific presence behind the discourse of cryonics as constructed by providers emerges, rather, as pseudo-scientific knowledge dissemination, i.e. knowledge that is popularised according to well-known communicative strategies but which is flawed. This is mainly because part of its content (the possibility of resuscitation) is not yet verified in a falsifiable manner, but is based on hopes and intents, as testified by the largely epistemic modality in which it is expressed (see section 3.2).

3.4 Business aspects

The four providers analysed offer paid services of various types and with different conditions so, clearly, the other domain of specialisation present in cryonics discourse is that of business (Table 8).

Alcor	CI	KR	TT
Section: “Homepage” <ul style="list-style-type: none"> • Preservation services • Alcor Members / membership • technological advances can only lead the mind's imagination to what is in store for our customers. • non-profit organization • Becoming an Alcor member is easy and <u>surprisingly affordable</u>, if you are in good health and <i>eligible for life</i> 	Section: “Homepage” <p>World's largest provider leading the way</p> CI has performed more ... than any other cryonics organization <p><u>Exclusive Membership</u></p> Life extension within reach <p>World's most affordable</p> \$ 28,000 perpetual storage for Whole Body Suspension normally funded w/	Section: “Homepage” <p>KrioRus is the first and only cryonics company in Eurasia at the moment</p> KrioRus exist since 2003 <p>more than 200 people have signed with us their contract</p> the list of the patients can be seen here KrioRus is open for collaboration aimed to ensure the <u>best possible quality</u> of our services	Section: “About” <p>Trans Time was founded to help people bridge the technological gap</p> Section: “Contact Us” <p><u>Join</u> our next scheduled event at</p>

<p><i>insurance</i>, which will pay for your cryopreservation</p> <p>Section: “Costs”</p> <ul style="list-style-type: none"> • \$200,000.00 Whole Body Cryopreservation (\$115,000 to the <i>Patient Care Trust</i>, \$60,000 for cryopreservation, \$25,000.00 to the <i>CMS Fund</i>) • \$ 80,000.00 Neurocryopreservation (\$25,000 to the <i>Patient Care Trust</i>, \$30,000 for cryopreservation, \$25,000.00 to the <i>CMS Fund</i>) <p>Section: “Membership”</p> <p><u>Submit</u> an application</p> <p><u>Submit</u> an application fee</p> <p><u>Complete</u> your Alcor Membership Documents</p> <p><u>Obtain</u> Funding</p>	<p><i>Life Insurance</i></p> <p>Our mission is Members are afforded the opportunity to <u>Reunite</u> with Loved Ones</p> <p><u>Witness</u> the Future personally <u>experience</u> space travel</p> <p><u>Live</u> Longer</p> <p>Section: “About CI”</p> <p>The Cryonics Institute is a non-profit membership organization</p>	<p>Section: “Human cryopreservation”</p> <p>So the fees for cryopreservation of cryopatient’s entire body are currently 36000 USD or equivalent in roubles. Cost of neuropreservation is 18000 USD for remote cryopreservation (abroad) (or equivalent in roubles or other currency). You <u>have made the right decision [sic]</u> to reach outl [sic] to us</p> <p><u>Be aware</u></p>	
---	---	--	--

Table 8: The business lexis used in cryonics

This is a multi-layered discourse that is expressed both through obviously business-related words and phrases and through more subtle linguistic strategies used, for instance, in marketing. The examples reported in Table 8 are taken especially from the homepages, which act as ‘shopping windows’ for potential customers – except in the case of TransTime, whose limited amount of text is mostly offered in the “About” section – and from the specific sections mentioning conditions and costs, if present. Overall, the relevant words and phrases examples may be organised according to the following labels:

- Corporate vocabulary
 - Alcor Members / membership (Alcor)
 - non-profit organization (Alcor)
 - services (Alcor)
 - customers (Alcor)
 - Life extension within reach (CI)
 - World’s largest provider (CI)

- performed (CI)
- organization (CI)
- mission (CI)
- Membership (CI)
- Members (CI)
- non-profit membership organization (CI)
- company (KR)
- exist since (KR)
- Trans Time was founded (TT)
- Promotional vocabulary
 - what is in store for our customers (Alcor)
 - leading the way (CI)
 - has performed more ... than any other (CI)
 - Members are afforded the opportunity to (CI)
 - first and only cryonics company (KR)
 - more than 200 people have signed with us their contract (KR)
 - the list of the patients can be seen here (KR)
 - KrioRus is open for collaboration (KR)
 - aimed to ensure the best possible quality of our services (KR)
 - founded to help people (TT)
- Economic conditions
 - Alcor Members / membership (Alcor)
 - surprisingly affordable (Alcor)
 - eligible for life insurance (Alcor)
 - pay for your cryopreservation (Alcor)
 - \$200,000.00 Whole Body Cryopreservation (\$115,000 to the Patient Care Trust, \$60,000 for cryopreservation, \$25,000.00 to the CMS Fund) (Alcor)
 - Submit an application fee (Alcor)
 - Obtain funding (Alcor)
 - \$ 80,000.00 Neurocryopreservation (\$25,000 to the Patient Care Trust, \$30,000 for cryopreservation, \$25,000.00 to the CMS Fund) (Alcor)
 - Exclusive Membership (CI)
 - World's most affordable (CI)
 - \$ 28,000 for whole body (CI)
 - funded w/ Life Insurance (CI)
 - signed with us their contract (KR)
 - So the fees for cryopreservation of cryopatient's entire body are currently 36000 USD or equivalent in roubles (KR)
 - Cost of neuropreservation is 18000 USD for remote cryopreservation (abroad) (or equivalent in roubles or other currency) (KR)

The picture returned by Table 8 points to the two major, US-based providers having not-for-profit status, while KrioRus seems to be a for-profit company, and TransTime does not provide other information apart from its official status as an incorporated company (TransTime Inc.). The discursive representation of the cryonics business, therefore, does not emerge as inconsistent but as in line with the nature of their organisations which, even if not aiming mainly at generating income (Alcor and CI), still offer services for which fees are payable. The relevant marketing aspects are thus justified, and so is the use of promotional strategies that includes, among other features, evaluative language:

- easy and surprisingly affordable (Alcor)
- World's largest provider (CI)
- Exclusive Membership (CI)
- World's most affordable (CI)
- the best possible quality (KR)

Similarly, advertising strategies are applied throughout the websites, like the use of exhortative imperatives to invite potential customers to act:

- Submit an application (Alcor)
- Submit an application fee (Alcor)
- Complete your Alcor Membership Documents (Alcor)
- Obtain Funding (Alcor)
- Reunite with Loved Ones (CI)
- Witness the Future (CI)
- personally experience space travel (CI)
- Live Longer (CI)
- Be aware (KR)
- Join our next scheduled event at (TT)

The present perfect is employed to inform readers that they have indeed made the right (with a positive evaluation included) decision in contacting the company, thus also creating a narrative of inclusiveness:

- You have made the right decision to reach out! [sic] to us (KR)

A more complex aspect involved in the cryonics business regards the legal implications inherent in taking out a membership (where this is required, i.e. by the two non-profit providers Alcor and CI), and in the contracts regulating the provision of cryonics services in exchange for the specified fees. References to legal aspects do not appear anywhere on TransTime, or on KrioRus's homepage (although here they do in other sections: "Human cryopreservation" and "FAQ. Legal and political aspects", the latter in Russian only). In both Alcor's and CI's websites, however, some law-related terminology may be easily found, namely referring to methods of payment of cryonics fees, with life insurance being a preferred option:

- *eligible for life insurance*, which will pay for your cryopreservation (Alcor)
- \$115,000 to the *Patient Care Trust*, \$60,000 for cryopreservation, \$25,000.00 to the *CMS Fund* (Alcor)
- normally funded w/ *Life Insurance* (CI)

The legal aspects regulating membership subscriptions and cryonics provisions are indeed discussed in depth in both Alcor’s and CI’s websites, with interesting implications especially as regards the notions of ‘legal’ and ‘clinical’ death, which have been investigated in a previous study²¹ and, for this reason, will be omitted here. Suffice it to report that legal language is widely employed in all the websites considered (except for TransTime’s very small one), it is strictly connected with the cryonics business, and possibly represents the most debatable aspect of the entire industry.²²

4. Discussion

Previous research by the author on this topic has highlighted how cryonics raises bioethical concerns,²³ which may, comprehensibly, beg the question of why there is a bioethical issue at all, since the practice involves corpses, i.e. dead people. The main explanation lies in the obvious fact that, in order to access the practice when one is dead, one has to sign up (and pay) for it when one is alive. What is debatable, therefore, lies firstly in the way the discourse of cryonics is presented, marketed and advertised to the living. This is done, as emerges from the present analysis, similarly to how entertainment and tourist services are sold to the public. The lower section of Cryonics Institute’s homepage, for example, is called “Envision a brighter future” and it features eight different reasons why one should choose cryonics. One of these reads:

Witness the Future

Don’t just imagine the world of the future – personally experience space travel, virtual reality and the other incredible things to come.²⁴

As underlined in section 3.4, this short text contains features typical of advertising language, e.g. the use of imperatives for exhortation in both the affirmative (“Witness the Future”, “personally experience”) and the negative (“Don’t just imagine”) forms. The contraposition between what should not be done, sandwiched in between what should be done, is an especially captivating strategy, similar to what happens in comparative advertising, with evaluation also expressed by the adjective ‘incredible’. Also, the quality of what readers are encouraged to obtain for themselves by choosing cryonics is worth exploring: by witnessing the future, they could access a number of experiences

²¹ Grego, “Legally Dead”.

²² Ibid.

²³ Ibid.; See also Kim Grego, “The Pseudo-scientific Discourse of Cryopreservation”, in *Proceedings of the XVIII AIA Conference Worlds of Words: Complexity, Creativity, and Conventionality in English Language, Literature and Culture* (forthcoming).

²⁴ CI, “Homepage”.

semantically related to it, i.e. ‘space travel’, ‘virtual reality’ and ‘other incredible things to come’. Yet, the choice of elements for this tricolon is bizarre to say the least, since the first two already exist in the present day, while the third echoes sensational yet vague village fair promises and fairy-tale formulas. A possible interpretation is that the space travel referred to may be – in the imagination of people aged over seventy, who make up a large segment of these websites’ commercial target – less like the kind involving Space Shuttles and the International Space Station and more like that in the *Star Trek* saga, while virtual reality may be understood as that in Philip K. Dick’s and William Gibson’s science fiction, rather than, for instance, as in current haptic technology. On the whole, an appeal like the one above is hardly dissimilar from Disney World’s current 2019 campaign inviting visitors to “Travel Around the Globe, Under the Sea, into Outer Space... and Beyond!”²⁵ In this, Fairclough’s notion of ‘democratization of discourse’, or “the removal of inequalities and asymmetries in the discursive and linguistic rights, obligations and prestige of groups of people”,²⁶ may be seen, in that the (pseudo)argument is constructed so that the audience might perceive that cryonics providers are offering them what is within everyone’s reach, not just of the wealthy, if only they would take a leap of faith and trust them.

The appeal to pathos, however, is not the only argumentative strategy present in the promotion of cryonics, as the practice is also advertised by applying the same logics as used in lotteries, though not on the same conditions. The reasoning is straightforward, based on the simple questions: ‘What if (cryonics works)?’ and ‘Why not (give it a try)?’ It stems from the idea that even the slightest chance of success is a possibility and that not giving oneself such a chance means cutting oneself off from the possible reward it may entail, much like entering a lottery or competition having the usual statistically remotest probabilities. However, on the one condition of entering the game, even the lottery that offers the slightest winning opportunities does guarantee a winner – hence the claims used, for example, by the UK National lottery (‘Maybe, just maybe’) and the Wyoming Lottery (‘Just maybe’). This resembles what Karl Sornig calls ‘seduction rather than conviction’, with seduction being “an attempt to make people do things as if of their own impulse but really upon instigation from outside”.²⁷ Cryonics providers, thus, invite potential players to enter the game, but do not guarantee any wins, just belief in, hope for and work toward the possibility of having some in an unspecified future. Thus, the reasoning put forward by cryonicists remains a groundless argument since, unlike the premise in lotteries (‘among all who enter the lottery, one will win’), in cryonics the premise is flawed (‘among all who enter the lottery, some *may* win’) and, as such, there is no sound logical argument or, rather, there is what is called an ‘argument from ignorance’, i.e. one where something cannot be proved true but cannot be proved false either.²⁸ This type of reasoning, even when starting from a flawed premise, points toward the implication that it is one’s own responsibility to join in the competition, i.e. to give oneself the chance of ‘maybe’ winning, by getting oneself cryopreserved. It is an appeal to values well-rooted in Western cultures such as an individual’s freedom of choice, self-determination, and the happiness that supposedly comes from having more than one option at one’s disposal, where “[t]he

²⁵ Disneyworld, “Epcot”, 2019, disneyworld.disney.go.com.

²⁶ Norman Fairclough, *Discourse and Social Change*, 201.

²⁷ Karl Sornig, “Some Remarks on Linguistic Strategies of Persuasion”, in Ruth Wodak, ed., *Language, Power, and Ideology: Studies in Political Discourse*, 97.

²⁸ See Grego, “Legally dead” for a more detailed discussion.

recognition of these rights – which concern the final phase of human life as well as its initial development – is the juridical counterpart of modern individualism, which has its greatest manifestation in the American right of privacy”.²⁹

Although the mention of it is scarce in the texts examined, and possibly intentionally so, the second issue that emerged as debatable from the analysis seems to be the notion of death itself, and what is understood thereby. That death may be a social construction, seen from different religious, cultural, social and ultimately ideological viewpoints, should not be surprising for anyone. On the contrary, for most laypeople, the fact that the medical understanding of death should be debatable may appear strange, but in specialised settings there is agreement about the existence of disagreeing views. For instance, all the four cryonics websites refer to ‘clinical death’, which would thus seem to be a shared concept:

- What is the impact of **clinical death** on cryonics?³⁰
- The patient should be pronounced dead as soon as possible after **clinical death** (which usually means after cessation of heartbeat and breathing).³¹
- Heart and respiratory failures are classified as **clinical death**.³²
- Cryonics is the science of placing humans into a low-temperature, biologically unchanging state, immediately after **clinical death**.³³

However, “the phrasing of clinical death is misleading because it may be followed by a confirmatory test for brain death that, for example, shows some cerebral electric activity in the brain”,³⁴ but then again brain death, too, is an elusive notion even by specialists’ standards:

Although brain death is nowadays widely accepted as a criterion for death, **there is no global consensus on the definition and diagnostic criteria of brain death**. In addition, representatives of various disciplines continue to pose serious conceptual and ethical challenges to the concept. Since the determination of brain death is mainly relevant in relation to organ transplantation, controversies about the brain death criterion have significant ethical implications for the policy and practice of organ donation.³⁵

Although Western medical science agrees that death coincides with brain death, however it may be defined, the discourse of cryonics brings the debate one step further, by questioning even the very concept of brain death as a final state, and by introducing yet another understanding of death, i.e. ‘information-theoretic death’, or the irrecoverable loss of the information stored in the brain:

²⁹ Donella Antelmi, “Manifest Ideology and Hidden Ideology in Legal Language: Definitions and Terms”, in Giuliana Garzone and Srikant Sarangi, eds., *Discourse, Ideology and Specialized Communication* (Bern: Peter Lang, 2007), 111.

³⁰ Alcor, “FAQ”.

³¹ CI, “Guide to Cryonics Procedures”.

³² KR, “About cryonics”.

³³ TT, “Homepage”.

³⁴ Erik J. Ettema, “Brain Death”, in Henk Ten Have, ed., *Encyclopedia of Global Bioethics* (Dordrecht: Springer, 2016), 400.

³⁵ *Ibid.*, 399, emphasis added.

- Ultimately, real death occurs when cell structure and chemistry become so disorganized that no technology could restore the original state. This is called the **information-theoretic** criterion for **death**. Any other definition of death is arbitrary and subject to continual revision as technology changes.³⁶
- It is important to understand that we consider legal death distinct from absolute final death, which can be best defined by the principle of **information theoretic death**.³⁷
- Modern science cannot define the exact moment of what is called: **information theoretic death**, as this depends not only on the current knowledge of the human brain mechanisms, but upon the ability of future medical technologies to recover and restore information encoded even in a damaged brain, toward patients revival and recovery of the personality at all intact.³⁸

Thus, the specialised phrases ‘clinical death’ and ‘brain death’ do occur in the texts analysed, but only to be refuted as an imprecision on the part of current medical practitioners, who ignore the possibility offered by cryonics to avoid information theoretic death by cryopreserving clinically- and brain-dead people. The one specialised notion they accept is that of ‘legal death’, and mostly for liability reasons (not breaking existing laws).³⁹ Information-theoretic death, thus, further enriches the multi-layered notion of death with yet another discursive layer, and death moves from debatable (in scientific academic terms) to negotiable (in pseudo-scientific popular terms): “[i]n other words, death – and, hence, brain death – is a social construct rather than a medical fact”.⁴⁰ And in this we could recognise Fairclough’s conception of ‘technologization of discourse’ (and examples of discourse technologization include advertising), whereby “[m]odern societies are characterized by a tendency towards increasing control over more and more parts of people’s lives”⁴¹ and, we could add here, even death.

And, even philosophically, at least according to Hans Jonas and his perspective on the past century’s growing relationship between life and technology, “[a]ll modern theories of life are to be understood against this backdrop of an ontology of death, from which each single life must coax or bully its lease, only to be swallowed up by it in the end”,⁴² since “[o]ur thinking today is under the ontological dominance of death”.⁴³ Present-day bioethics also adds that, in this renewed relationship between life and death, reshaped by technology, “no science of life (bio-logy), much less a medical science focused on human life, can be well-grounded or epistemologically complete if it ignores this signal characteristic of the human body, embodiment”.⁴⁴ Cryonics rides both of this era’s trends – the ontological dominance of death, and embodiment as epistemologically defining life sciences –,

³⁶ Alcor, “About Cryonics”.

³⁷ CI, “Human cryostasis”.

³⁸ KR, “About cryonics”.

³⁹ See Grego, “Legally Dead, Illegally Frozen?”.

⁴⁰ Erik J. Ettema, “Brain Death”, 405.

⁴¹ Norman Fairclough, *Discourse and Social Change*, 215.

⁴² Hans Jonas, *The Phenomenon of Life: Toward a Philosophical Biology*, 15.

⁴³ *Ibid.*, 12.

⁴⁴ Richard M. Zaner, *A Critical Examination of Ethics in Health Care and Biomedical Research*, 52.

functionally adapting them to its discourse of resuscitation: by hypothesising information-theoretic death, the legally dead body is kept embodied, overturning the dualism of life and death in favour of life.

Continuing on the notion of embodiment, another observation regards the use made by cryonicists of language above the literal level. Several metaphors are found in the websites analysed; one seems especially fascinating: “Cryonics Institute provides an ambulance ride to the high-tech hospital of the future”.⁴⁵ The domain- and culture-specificity of the human experiences on which it draws can clearly be seen in the light of Lakoff and Johnson’s conceptual metaphor theory, based on embodied cognition,⁴⁶ actually bending it instrumentally to the cryonicist’s discursive construction to reinforce the supposed link between the (dead) human body and its cognitive abilities as supposedly cryopreserved in the brain.

A final note should regard humour or, rather, the total absence thereof in the corpus. The expectation was that some forms of humorous language might be present, for at least two reasons. Firstly, because the use of embodied metaphors has emerged from the texts, and “there is a natural fit between the phenomena associated with linguistic humor and the theoretical apparatus of embodied linguistics; in particular, ... humor makes use of constructional pragmatics and mental imagery, as well as metaphor and frames”.⁴⁷ Secondly, because in Western cultures making fun of death is not unheard of, even in advertising,⁴⁸ one example being (sometimes very successful) funeral homes ads.⁴⁹ The cryonics providers’ corpus, however, does not seem to feature humour anywhere: no jokes, no puns, no witticisms about their services. This is probably due to the kind of audience that providers address, who often include terminally ill patients, older people in their last years or individuals generally preoccupied with and distressed by the idea of death as the end of everything. The cryonics audience are people who have not accepted the eventuality or the finality of death; therefore, they still hope. And, while in Western cultures it is acceptable to make fun of death just as it is to make fun of life, it is much less acceptable, if not an outright taboo, to make fun of people’s ‘hopes’, fundamentally because humour must be shared by both those initiating and those receiving it. Theories of humour stemming from sociological studies distinguish between ‘including’ and ‘excluding’ laughter, or bonding and distancing humour, with the latter possibly causing annoyance or even open aggression in response.⁵⁰

In this case, the humour would not be shared by the recipients and it would thus configure itself not just as aggression but as outright cruelty toward them. In this specific case, neither the cryonics providers nor their potential clients share a belief in death. Clients do not believe in it because they just do not wish to die; providers do not for the same reason (if they are genuine in their declared mission), or because they want their potential clients not to believe in death (if their business purpose prevails).

⁴⁵ CI, “Homepage”.

⁴⁶ Lakoff and Johnson, *Metaphors We Live By*.

⁴⁷ Bergen and Binsted, “Embodied Grammar and Humor”, 64.

⁴⁸ See, e.g., Manceau and Tissier-Desbordes, “Are Sex and Death Taboos in Advertising?”; Dynel, “Blending the Incongruity-Resolution Model and the Conceptual Integration Theory”; Wojciechowski and Babjaková, “Necromarketing in the Media and Marketing Communications”.

⁴⁹ Yeginsu, “Funeral Ads Got Britain Talking, but Not About Death”.

⁵⁰ Attardo, *Linguistic Theories of Humor*, 324-325.

5. Conclusions

This study has tried to discursively analyse the language used to disseminate the (pseudo)scientific knowledge and technology behind cryonics and to market cryonics services on the web. In general, the discourse of cryonics as presented by its providers emerges as highly complex (though maybe not at first sight), hybridised and revolving around a wide range of themes. These features were highlighted by a lexical analysis of the texts, according to which the identified semantic fields may be divided into general – for instance ‘Life, death, undesirable conditions’ and ‘Hopes, beliefs, intentions’ – and specialised domains, among which those concerning ‘Science, technology, scientific dissemination’ and ‘The business behind cryonics’ were examined in particular. This “embedding of one style within another”⁵¹ contributes to the heterogeneous and hybrid complexity of the discourse of cryonics providers. These “combine discursive conventions, modes and elements in new ways in innovative discursive events”,⁵² and make it appear as if it were an innovative order of discourse. In Wodak’s terms,⁵³ then, concerning intentionality, the text-authors convey a double purpose: an informative and a persuasive one. Concerning acceptability, though, the recipients tend to receive mostly the latter, since what they share with the authors is the hope or belief in the possibility of reviving. The communicative and power relationship is thus unbalanced, and so is the informativity requirement, which cannot be actually met by cryonics providers simply because there is not enough information on the effects and developments of cryopreservation.

Thus, providers construct their mission as an attempt to go beyond “the point at which – under the current state of medical science – the doctor gives up”,⁵⁴ but they do so with a commercial purpose. In this regard, it would not be inaccurate to mention Fairclough’s reference to ‘commodification’,⁵⁵ whereby not only objects but services and, in this case, even (dead) people are made into commodities, which cryonics providers, instead of clients or consumers, call ‘members’ when living and ‘patients’ when dead. Yet, because complexity is an underlying feature of all bioethically-sensitive issues concerned with life, cryonics discourse is linguistically constructed not as a discourse of death but as a discourse of (hope for) life, and this makes it pertinent to research on end-of-life and bioethically-relevant issues.

To answer the research questions in particular, cryonics discourse is disseminated as if it were scientific discourse, and marketed like other non-bioethically relevant services and products (e.g. tourism, entertainment), including ethically debatable ones (e.g. betting, lotteries, high-risk investments). Fairclough’s reference to ‘new capitalism’ as a practice in which ‘desires are represented as facts’⁵⁶ can thus apply to cryonics marketing. This is why it emerges as potentially misleading for the public, and this is where the underlying ethical issues lie: see for example the British Columbia

⁵¹ Fairclough, *Discourse and Social Change*, 22.

⁵² Fairclough, *Discourse and Social Change*, 97.

⁵³ Ruth Wodak and Michal Krzyzanowski, eds., *Qualitative Discourse Analysis in the Social Sciences*, 9.

⁵⁴ CI, “FAQ”.

⁵⁵ Fairclough, *Discourse and Social Change*, 207.

⁵⁶ Norman Fairclough, *Analysing Discourse: Textual Analysis for Social Research*, 204.

anti-cryonics law of 2004⁵⁷ – the only existing piece of legislation directly addressing cryonics worldwide at the time of writing and aimed at ‘protecting’ citizens – which does not prohibit the practice in itself but the ‘advertising’ thereof.⁵⁸

What is more, cryonics, although about (supposedly restoring) life, is disseminated and advertised based on a presupposed notion of death that is ideologically framed, socially constructed and constantly renegotiated.⁵⁹ While this may indeed be posed as an innovative order of discourse, at the same time it employs communicative strategies typical of conspiracy theories (i.e. “‘official’ medicine is keeping a possibility from you, but we can offer it to you for a price”). To do so, this innovative notion of death – ‘information-theoretic death’ – could be pushed by cryonicists to new limits, even hypothesising the procurement of death before it occurs naturally in order to speed up and ease the cryosuspension process.⁶⁰ Again, this entails a potential risk of misleading weaker individuals (e.g. the terminally ill) into making decisions without exploring their every single implication, i.e. without their fully informed consent. Consequently, the matter raises an ethical problem and, where opportunities for stronger actors to mislead weaker actors arise, it means unbalanced power relations are at work. A critical discourse approach is therefore suitable to address it.

It is hoped that this study has contributed to showing how the toolkit of Critical Discourse Studies, applied to ‘mere’ lexical and textual observations, may still be useful today in uncovering social unbalances and unequal relations of power placing weaker social groups (e.g. the elderly, the terminally ill, etc.) at risk, even and especially within new forms of capitalist approaches, such as selling virtual tickets to life-after-death. Both the limits and the possible future developments of this sort of research mainly lie in the changing landscape of cryonics as a (pseudo)scientific practice, as an industry and a discourse, which is developing as we write. The close link between (medical) science and society is, on the one hand, necessary, democratic and desirable; on the other, it may prove risky, especially when society tries to make science negotiable, for instance through social media. Further monitoring and investigation of the discourse of the fascinating yet debatable practice of cryonics is thus deemed both necessary and advisable.

⁵⁷ “Cremation, Interment and Funeral Services Act”, Statute of British Columbia of 13 May 2004, Chapter 35, Part 3, Article 14.

⁵⁸ See Grego, “Legally Dead, Illegally Frozen?”, in Girolamo Tessuto and Vijay K. Bhatia, eds., *Social Media in Legal Practice* (London: Routledge, forthcoming).

⁵⁹ Wodak, *Language, Power and Ideology*; Fairclough, *Discourse and Social Change*; Fairclough, *Analysing Discourse*; Wodak and Michael Meyer, *Methods of Critical Discourse Analysis*; Wodak and Krzyzanowski, *Qualitative Discourse Analysis in the Social Sciences*.

⁶⁰ See Francesca Minerva and Anders Sandberg, “Euthanasia and Cryoethanasia”, *Bioethics*, 31.2017 (2017), 526-533, on cryo-euthanasia.