

# JURAJ ODORČÁK

## LOVE, BIOTECHNOLOGY, AND ETHICS

**Juraj Odorčák**

University of Ss. Cyril and Methodius in Trnava, Slovakia.

**Email:** juraj.odorcak@ucm.sk

**Abstract:** The article is dedicated to the analysis of the possibility of modification of love by technology. Some philosophers argue, that various complications of modern love and certain aspects of the current crisis of romantic relationships could be modified by the proper understanding of the results of neuroscientific research and the precise use of advances in biotechnology. According to this position, science and technology are equivalent solutions to some problems of love and love related phenomena. The first part of the article is concentrated on the explication of assumptions of the argument for biotechnological love modification. The second part of the article is focused on the evaluation of the antireductionist critic of the argument for biotechnological love modification. The last part of the article is devoted to the examination of the possibility of commodification of love by biotechnological manipulation of love. It is argued that these challenges to the argument for biotechnological love modification aren't as fatal as it is sometimes assumed. This, however, doesn't mean that love modification is ethically permissible. It could just mean, that biotechnological love modification is susceptible to the ethically problematic conclusion of love devaluation.

**Keywords:** love, biotechnology, ethics, reductionism, commodification, transhumanism.

## IUBIRE, BIOTEHNOLOGIE ȘI ETICĂ

**Rezumat:** Articolul este dedicat analizei posibilităților în care iubirea poate fi modificată prin tehnologie. Unii filosofi susțin că diverse complicații ale iubirii moderne și anumite aspecte ale crizei actuale a relațiilor romantice ar putea fi modificate prin înțelegerea corectă a rezultatelor cercetărilor neuroștiințifice și

utilizarea precisă a progreselor din biotehnologie. Conform acestei poziții, știința și tehnologia sunt soluții echivalente pentru unele probleme ale iubirii și fenomenelor legate de dragoste. Prima parte a articolului este concentrată pe explicarea ipotezelor argumentului legat de schimbarea survenită la nivelul iubirii biotehnologice. A doua parte a articolului este axată pe evaluarea criticii antireducționiste la adresa aceluiași argumentului. Ultima parte a articolului este dedicată examinării posibilității de comercializare a iubirii prin manipularea biotehnologică a iubirii. Se susține că aceste provocări ale argumentului legat de schimbarea survenită la nivelul iubirii biotehnologice nu sunt atât de fatale cum se presupune uneori. Totuși, acest lucru nu înseamnă că modificarea iubirii este admisă din punct de vedere etic. Ar putea însemna doar că modificarea biotehnologică a iubirii este susceptibilă să conducă la concluzia, problematică din punct de vedere etic, a devalorizării iubirii.

**Cuvinte-cheie:** dragoste, biotehnologie, etică, reducționism, comodificare, transumanism.

## 1. Introduction

*Sweet, lovely lady  
for God's sake do not think  
that any has sovereignty  
over my heart, but you alone.*

*For always, without treachery  
Cherished  
Have I you, and humbly  
All the days of my life  
Served  
Without base thoughts.*

*Alas, I am left begging  
For hope and relief;  
For my joy is at its end  
Without your compassion.*

Machaut, "Douce Dame Jolie"

The author of these verses is the French medieval poet and composer Guillaume de Machaut. The 14th-century song „Douce Dame Jolie” (My sweet lady) is one of the most famous musical pieces of the Middle Ages and represents a typical example of medieval court lyric. Machaut's virelai reflects the standard conventions of the narrative of courtly love. The simple theme of a description of love is replaced by the aestheticization of the positive evaluation of noble love. Although Machaut also describes certain peripeties of courtship, situational doubts are given away for a decisive confession of eternal love. Love is in medieval court lyric usually considered to be the essential value of a meaningful life, one of the highest human values.

But love isn't only about romance, songs and butterflies (Grad, 2019). For example, Plato presents in Symposium many different views on love. One of the views is based on the assumption that love is a desire to possess beauty (Symp. 210 a-c). Beauty of every man is,

however, particular. Ordinary love is therefore only a weak imitation of the true knowledge of beauty. According to Immanuel Kant, love is the pursuit of the good of humankind (Kant, 1997, 155-156). Love that is focused on a particular person may contradict this universal formulation. Romantic love could in some instances reduce the pursuit for the overall good of humanity, and therefore love is at least sometimes immoral. For Jean-Paul Sartre, love tends to represent the perfect being (Sartre, 2006, p. 426). The mutual demonstration of a perfect being, however, is based on an ontological illusion about the reality of being. Simon de Beauvoir, in turn, objects that love is an effort at self-realization (Beauvoir, 1956, p. 284). Romantic ideology, though, forces women to think that love is the only possibility of self-realization. Theoretical evaluations of love are thus much more ambivalent, then just romantically optimistic.

What is the reality? Citizens of Western societies consider love to be the essential prerequisite for emotional satisfaction, personal happiness, good life and also successful marriage. (Levine, Sato, Hashimoto & Verma, 1995, p. 556). Yet, the social and institutional reality of love and bonds is changing (Šprocha & Tišliar, 2019). The number of adults without any relationship, as well as the number of people who report loneliness is constantly increasing (Klinenberg, 2012, p. 10). At the same time marriage nuptiality is decreasing and divorce rates are increasing. For example, in 2017 the total divorce rate in Romania was 21,8%, in Slovakia it was 30,7%, and the highest total divorce rate in EU that year was reported in Portugal with 64,2% (Pordata, 2019). The most common reasons for divorce were in some countries the difference between personalities and the lack of love (Strizzi, Sander, Ciprić & Hald, 2019, p. 66).

So, it may seem, that according to these statistics skeptical philosophers are more accurate, at least in some cases of official relationships, than romantic troubadours. But the case is not so clear. Contrary to the well-known demographic and skeptic trend the positive valuation of love by the general public not only holds but also globally rises. The last decades are the age of the continuous increase in the positive evaluation of passionate love (Hatfield, Feybesse, Narine & Rapson, 2016, p. 67). About the causes of this worldwide

growth of love enchantment can be speculated, but it is undoubtful that love or absence of love plays a crucial role in the life of many people.

Thus, what should we do? What should we do to rescue modern love? When a philosopher meets a scientist and they hop on an engineer then the results may vary. One of the strangest, bizarre, yet perfectly *zeitgeist* simplistic proposals for a solution to this problem is the use of technology. The problems of love could be resolved by advanced research in neurobiology and the application of biotechnologies. Or so, some of them supporters of the biotechnological modification of love believe (Savulescu & Sandberg, 2008; Earp, Sandberg & Savulescu, 2012; Earp & Savulescu, 2018). Proponents of the argument for biotechnological love modification typically assume that the use of neuroscience, biotechnology, neurotechnology, and biomedicine could in the future lead to an increase in the success of the romantic relationships of humans. This article is dedicated to the analysis of the argument for biotechnological love modification. The first part of the article is focused on the examination of the assumptions about the possibility of biotechnological love modification. The rest of the article is dedicated to criticism of some of the conditions and implications of the argument for biotechnological love modification.

## 2. Argument for the biotechnological love modification

Proponents of the argument for biotechnological love modification base their understanding of love on a specific interpretation of evolutionary biology and evolutionary psychology. According to them, love is a phenomenon that is grounded by our biological natures (Earp, Sandberg & Savulescu, 2012, p. 561). This biological basis is directed by neurobiological systems that have been developed during the period of reproductive adaptations of our species. (Earp, Sandberg & Savulescu, 2012, p. 565).

The story goes as follows. The ancestors of today's humans created specific time-limited cooperation alliances. Some of these

alliances served primarily as tools for care for human offspring, as human offspring is temporarily poorly adapted to the independent life in wild nature. A higher degree of co-operation in these alliances resulted in an increased probability of survival of the offspring to the reproductive age. Humans originated and raised (resources) from these close alliances had in turn also a higher chance of having their own healthy offspring. Voila: the sublime foundation of close and romantic bonds was born. Or to put it in other words, the necessary reproductive alliances created the preconditions for forming strong pair bonding and love (Earp, Sandberg & Savulescu, 2012, p. 565). But there is also a catch. The axiomatic of the human evolution is imposed through several unconscious drives (Cucu & Lenta, 2018, p. 41). Efforts to maximize the production of viable offspring also sometimes allow for other open or rather undisclosed temporary reproductive alliances. Thus, for humans, it is an evolutionary characteristic to create romantic relationships that are variously exclusive (Savulescu & Sandberg, 2008, p. 33).

Supporters of the argument for biotechnological love modification also believe that this evolutionary grounding of love is somehow conditioned by our evolved neurobiological systems (Savulescu & Sandberg, 2008, p. 35-36). Love typically consists of three simple and basic phases. The search for relationships and partners is secured by desire. The neurobiological profile of desire is associated with changes in the anterior cingulate cortex and changes in hormone levels of testosterone and estrogen. The choice of the relationship and the particular partner is ensured by the attraction. The neurobiological profile of attraction is associated with changes within the nucleus accumbens and with changes in the levels of hormones noradrenaline, dopamine and serotonin. Preservation and maintenance of the relationship is ensured by affection. The neurobiological profile of affection is associated with changes in the central cerebral cortex and with changes in hormone levels of oxytocin and vasopressin (Gregor & Špajdel, 2013).

Thus, advocates of argument for biotechnological love modification believe that love is (also) a neurobiological feedback system that was “designed” for the benefit of temporary reproductive

alliances. It is surely a strange definition of love. Nevertheless, as we have seen some (or maybe all) people have problems with (and the lack of) love. Advocates of the argument for biotechnological love modification suggest that they have the answer to the problem. So, what is the problem of this love? According to proponents of this argument, the answer is simple. The system of this love is horribly outdated, susceptible to harmful attacks and prone to random crashes. The problem of love is caused by the deficiencies of the biological basis of love. The biological basis of love doesn't (no longer) correspond with our values about love and modern society (Earp, Sandberg & Savulescu, 2012, p. 571). For example, typical romantic values of love are based on the assumption about the positivity of exclusive long-term relationships, but the biological basis of love, which is (according to proponents of the argument) based upon the maximization of reproductive success, implicates only temporary romantic alliances. On the other hand, modern society is rich with all the opportunities, that can increase the space for promising potential partners. But the same opportunities of modern society, therefore also increase the probability for the overdrive of our outdated neurobiological systems of love, and thus can lead to a higher probability of subsequent loss of a partner and love. For short, the problem of love is a mismatch between values, society and the biological basis of love.

The argument for biotechnological love modification is built upon a simple trilemma between modern positive evaluation of love, modern situational disposition of love and old neurobiological underpinnings of love. According to the proponents of this argument, the modern positive evaluation of love is linked with our current values of love (Earp, Sandberg & Savulescu, 2012, p. 571). The most common expression of this modern value is the high priority of fruitful, healthy and passionate relationships, that is commonly strived by many people. Surely, the concrete realization and idealization of this value may vary, but it is doubtful that we should abandon all love values altogether. Positive evaluation of love can, however, sometimes clash with the requirements and openings of social and economic flexibility of situations of the modern-day to day life. Forceful changes

in the opportunities and possibilities of the modern way of life are all but appealing. So, if we don't want to change the values and modern society, then the ball is on the court of biology. After all, if our evolved biology is in some sense outdated or inapt, then why not to choose an upgrade. Argument for biotechnological love modification is thus built upon the idea of modernization of our biology by means of biotechnology according to the needs of our modern values of love and our modern society.

The solution is simple as every catchphrase: „Let us change the biology of love! And all the love will prevail.”

Is this argument any good? Not surprising, I don't think so, albeit for other reasons than that are commonly assumed by some critics of this argument. The rest of the article is dedicated to the evaluation of some contra-arguments against the argument for biotechnological love modification.

### **3. Reductionism about love**

So, let us suppose that you have certain love problems with your significant other and you have read through some obscure academic articles about biotechnological love modification. You approach your partner and say:

Look, honey, I know we had a bad time, but I figured it out. It is because I am by evolution naturally inclined to many reproductive alliances, my dopamine levels are off the charts, and also part of your anterior cingulate cortex doesn't function properly.

Certainly, this isn't the most romantic concept of love or the notion of lack of love. It is also doubtful that this is the meaning when, apart from some neuroscientists, evolutionary biologist and maybe philosophers, people think and feel about love. And when this isn't that what we mean by love, then the technological salvation of this is perhaps problematic, misleading, or maybe unhelpful at best. The first problem of the argument for biotechnological love modification is that it is based on the wrong concept of love. Love is not just an aggregate of biochemical processes, but true love is something different and



much more. Love is the complex state of high and authentic emotions that cannot be reduced to biochemical processes. And since love is not a simple derivative formula of biochemical processes, then we cannot even try to save it by technological interventions.

The problem of the argument for biotechnological love modification is, thus for short, the assumption of reductionism about love. Reductionist about love see nothing in the experience of human love but the operation of hormones and pleasure of neurotransmitters (Smith, 2015, p. 41). According to this kind of criticism the typical reductionism of proponents for the argument of biotechnological love modification, then leads to the trivialization or straightforward degradation of the reality of true and passionate love. Reductionists typically reduce complex phenomenon to simple, albeit usually technically complex, things. Sometimes, this reduction may fail to describe many nontrivial properties of some emergent systems. This loss of certain descriptive and prescriptive levels of reality can in many instances also result in the damage to the understanding of the reality as a whole. This could be also the case in the conception that understands love just as a biochemical process. The conception of love assumed by the proponents of biotechnological love modification is, therefore, near to the danger of misrepresenting the phenomenon on which the whole argument is based upon. Reductionism about love is ridiculousness of love.

I am very sympathetic with this line of reasoning against the argument for biotechnological love modification. But we shouldn't overblow it. Love definitely isn't just a biochemical reaction. And to my understanding none sound biologist and none rational neuroscientist would claim, that love is just a sum of hormones and neurotransmitters (or they wouldn't say it yet). This is precisely the case also for the proponents of the argument for biotechnological love modification. They don't argue that love is *just* a biochemical reaction, they only state that love is *also* a biochemical reaction (Savulescu & Earp, 2014, p. 7). Putting the stronger claim in the mouths of academic supporters of love modification would be a misinterpretation. Maybe a so gross misinterpretation than some of the usual misinterpretations of the radical reductionist.

And the problem goes deeper. The weaker claim isn't inconsistent with the argumentation of the proponents for love modification. For the validity of the argument, it isn't perhaps that important if love is reducible only to biochemical processes (strong claim), but whether love is also conditioned by some biochemical processes (weak claim). If love is conditioned, caused or correlated also by some of our biochemical processes, then the study, analyzation, and regard of this process isn't surely *prima facie* wrong, destructive or plain derogative. It is, of course, questionable by what actual biochemical process love is conditioned. From the scientific perspective, this is (or will be) the so-called hard problem of love. And it is certainly not too farfetched to say, that there is going to be a large space for surprises in the theses, dogmas, and assumptions of the future of scientific research in human neurobiology and neuroscience. Nevertheless, according to the actual understanding of the current scientific narrative, it is rather unlikely to assume that love is completely unconditioned and void of any biochemical processes. Humans aren't just nonmaterial souls. Consequently, if certain biochemical processes are present in humans that are in the state of love, then these processes can have some sort of influence on the neurobiology and biological basis of love. The target of the proponents of the argument for biotechnological modification is on specifically this biological basis of love. And if this biological basis (in some sense) exists, then the argument for love modification is built upon some strange notions and assumptions about love, but it doesn't automatically mean that the argument is a *priory* false.

But let us suppose that the demands of this criticism of reductionism of proponents of love modification are all quite correct and totally precise. Let us take the antireductionist about love at his face value. Full antireductionist about love could, for instance, adopt a position that maintains that there isn't any primitive, crude and vulgar tangible basis of love. Love is something completely different than some sum of hormones and neurotransmitters. And love is certainly sometimes something more than this. But if we assume that love is not a sum of biochemical processes, then it also consequently means that love cannot be changed by biotechnology. The second problem of this criticism is that if love isn't also a biochemical process, then none of

the biotechnological procedures could ever be used to threaten and dangerously harm any forms of love. I don't think that this is the rationale of antireductive critics of the argument for biotechnological love modification. And I don't think that this should be the position of anybody who hopes that love shouldn't be humiliated and deconstructed by reductionism and/or science. The problem of this full antireductionism about love is that this well-intentioned stance would paradoxically allow for the use of certain biotechnological interventions, as based on some of the assumptions of this criticism, these interventions could not even be considered dangerous to love. If love is something completely different than hormones, then tinkering with these hormones couldn't be harmful to love at all. Thus, love isn't just biochemistry, but if love is also biochemistry, then interfering with this biochemistry could be hazardous. This criticism cannot adequately reflect such a risk.

To sum it up. The proponents of the argument for biotechnological love modification could slip out of this line of criticism of reductionism by pointing out to some differences and precision in meanings of some parts of the basis of neurobiology of love, and so by changing the topic to the discussion about metatheories of the current scientific discourse. This kind of contra-argument to the reductionism accusation of some critics of love modification isn't going to be convincing for everybody, but it is uncontroversial to say that love has some sort of physical manifestations and that the modification of these manifestation can be therefore potentially beneficial, or rather harmful.

#### 4. Love as a commodity

Ok, maybe love has some sort of biological grounding. But the supporters of the argument for love modification don't just talk about neurobiology and neuroscience, they constantly talk and propose a biotechnological adjustment of the so-called love. They don't only say that according to science love (or the biological basis of love) is *this* and *that*. They maintain that biotechnology could in some near future

resolve some problems of love. As this article is mainly about philosophy and ethics of love modification, let us for the sake of the argument suppose that some kind of this technology could or will exist. What does it really mean to have a biotechnology that can in some cases modify love? The stage is set up like this:

Babe, I know that we had a hard time, but I promise that this time I am going to solve it. Please take these drugs.

Certainly, it is problematic to see love in biological terms, but it is even more problematic to see love in product terms. Love isn't and shouldn't be a commodity. If nothing at all than love shouldn't be the thing that we carelessly throw under the steamroller of non-refundable commercialization, capitalization, and commodification of common human goods. After all, love isn't and shouldn't be something that we buy, sell, or swallow like a prescribed pill. Love isn't a drug and it would be bizarre to think, that love should be left only in the hands of trained doctors, pharmacist, engineers, scientist, entrepreneurs, snake oil salesmen, pushers or even philosophers. They all, surely or probably, can love, but the problem with the argument for biotechnological love modification lies in the possibility of sinister monopolization of love under a branded marketing product.

However, supporters of the biotechnological love modification corollary state, that their proposals are aimed at the rescue of modern love and love values (Earp, Sandberg & Savulescu, 2012, p. 583). Biotechnology is by them seen as the salvation for modern lovesick people. Biotechnological modification is presented as a tool, that could one day result in an unprecedented extension of realization of harmonic romantic bonds. But this, on the other hand, means, that if there is (or will be) such technology, then according to the argument for biotechnological love modification the decision to not to use this technology is irresponsible. For, if it so simple to cure your love problems with your significant other as it is simple to download a new love app, then isn't it selfish from you, that you don't want to participate in it? After all, it is about your own health and the cost of a monthly subscription to this medical plan could be deducted from your taxes.

To stop the metaphors, it seems that proponents for the argument of biotechnological love modification transform normal manifestations of love (and the lack of) into a technical and commercial problem. They promote unnecessary expansion of economy, industry and public intrusion into our private lives, and by doing so they support the problematic aspect that is usually conceptualized under the term of commodification (Constable, 2009). If visions of proponents of biotechnological love modification are right, then love could become a commodity. But love isn't and shouldn't be a commodity, and thus proponents of the argument of biotechnological love modification are falsely selling a cure for a non-existing disease.

This line of reasoning has it right. I don't think that any empathetic person thinks that love is a product. Contrary to the stories of some fairy tales and practices of some naïvely occult rituals I also don't believe that there is a simple love potion, and if there is, then definitely it is not a drug or technology. It is also my firm belief that love cannot and should not be prescribed. Commodification of love is straightforwardly unethical. This, however, doesn't mean that the anti-commodification line of reasoning against the argument for biotechnological love modification is entirely trouble-free.

First of all, the commodification of common human goods is certainly problematic, but this doesn't change the fact that love is already commercialized. Sadly, it is a reality that love or some aspects of love are nowadays commonly and widely used to, for example, promote a plethora of unrelated products. There are also large, profitable and in some sense socially noncontroversial forms of services and industries that sell products designed to initialize and enhance the value of romantic relationships. Is it bad that there are advertisers that use young happy couples for the promotion of their products and that there are advertisements for dating apps? Maybe. But as it stands, love sells. And this isn't surprising at all. The proponent of the argument for biotechnological love modification could, therefore, point out to the relativization that highlights the notion that technological modification of love would only step up on the ship which is long gone from the harbor.

Secondly, he could also point out that this is in some cases already happening and for good reasons. If one understands technology broad enough, as many proponents of this argument do, then technology is more than the collaboration of the parts of a clock. Broadly speaking technology is a system that enables some procedures. And we have procedures that are already helping people with problems with love. Love definitely isn't a product, however, this does not prevent us to use certain medical and therapeutic procedures for the purpose of helping with problems of love. Current examples of this approach are psychological counseling and pair therapy. The procedures of this psychological therapy can in many cases help to realize beneficial forms of romantic bonds. It would be very rude to assume and complain that trained professionals who practice couple counseling have some ominous and hidden motives of the commodification of love. Yes, they get paid. But that doesn't mean that they don't help, or that they transform love to some immoral artifact. And if this isn't the case in the example of this procedure, then why should it be the case in the procedure of regulated use of advanced love modification. Or so, I think, would some supporters of the argument for biotechnological love modification argue.

Then again if anything, then this is certainly true. Psychological counseling is positively a very different technique than biotechnological brain modification. And it is at least doubtful that we should undergone drastic procedures just for the sake of good feelings about and of love. The acceptability of the risk of commodification, then necessarily depends on the effectiveness of diverse approaches to love and different predictions about the future of love, technology, society, and ethics. Proponents of the argument for biotechnological love modification, however, don't suggest that we should use love modification and biotechnology in all cases of love and the so-called love problems. They conceptualize love modification as one of the many different parts of the whole game of values, society, and biology of love. It is therefore imaginable that if in the future biotechnological love modification will be effective, safe and properly regulated, then the use of this approach could be, at least in some instances, supportive for motives of love. That doesn't mean that the argument

for biotechnological love modification is sound. Because It all can be stated also in a different manner. Commodification and manipulation of love are certainly unethical. Still, if love really sells and it is false to sell love, then the supporter of the argument for biotechnological love modifications can argue, that we should invest in research, procedures, and technologies that could break this false, commercialized and maybe manipulative spell. That is the true risk of biotechnological love modification.

## **5. Conclusions**

The mystery of love is old as it gets, but it is not a mystery that love has a central role in the life of many people. Preoccupation with appreciation, comprehension, sympathy, sublimity, delusion, and value of love has long and well-established ties in literature, philosophy, psychology, and nowadays also science. It is in this sense, that the argument for biotechnological love modification is just an old tale with a new technocentric twist. But it isn't just about princesses and frogs. This time it's about the transhumanistic dream about the transcendence of current ramification and limitations of our weak human natures. The nature of biology of love should be hammered into the specific matrix of expectations and challenges of hypermodern societies and posthumanist values. Love is seen as precious, albeit primitive reflex that has to be correctly conditioned, scientifically evaluated and successfully marketed. Love is a luxury design object, that awaits mass-production. Then the talks are centered around the discussion about the production line of this new love (biotechnology), conditions of workers of the new love (regulation), and consumer satisfaction with this new love (ethics). Critics point out that this production is impossible (antireductionism), or if possible, then socially and commercially disadvantageous (commodification). After all, we shouldn't play god. And we certainly shouldn't, even if it is a love god. As I have stated in this article there are some dubious assumptions of the argument for biotechnological love modification, but there are also some problematic aspects of the typical

criticism against love modification. But the whole problem with the love modification debate can be also seen from a different and more unsettling viewpoint. Is it possible to fabricate love? I am not a technician nor a naïve transhumanist, but even as a philosopher I would say that the answer is positive. The deception of love, falsehood of emotions, and the fragility of relationships is the reason why some transhumanist vehemently argue in favor of biotechnological love modification. Love has to change. No more misery, just true love. The technology should all make it up, and for good. And it is humanly understandable, that we shouldn't in reaction to this position advocate for unnecessary suffering. But, and this is precisely the main problem that many proponents of the argument ignore, if everything can be love, then nothing is love. The problem of the argument for biotechnological love modification lies not in his failures, but his success of total devaluation of love and deception of love.

### ***Acknowledgments***

The research for this article was supported by APVV-17-0064 Analysis of the multidimensional character of trans- and posthumanism.

### **References**

Constable, Nicole, "The Commodification of Intimacy: Marriage, Sex, and Reproductive Labor", *Annual Review of Anthropology*, Vol. 38, 2009: pp. 49-64.

Cucu, Marius, Constantin, Lența, Oana, Elena, "A Few Jungian Observations on the Psychological Dynamics of the Couple" *Postmodern Openings*, Vol. 9, Iss. 1, 2018: pp. 35-44.

Earp, D., Brian, Sandberg, Anders, Savulescu, Julian, "Natural Selection, Childrearing, and the Ethics of Marriage (and Divorce): Building a Case for the Neuroenhancement of Human Relationships.", *Philosophy & Technology*, Vol. 25, Iss. 4, 2012: pp. 561 – 587.



Earp, D., Brian, Savulescu, Julian, "Love Drugs: Why Scientists Should Study the Effects of Pharmaceuticals on Human Romantic Relationships.", *Technology in Society*, Vol. 52, 2018: pp. 10 – 16.

Grad, Iulia, „Singing Our Way to Death: Some Remarks on the Contemporary Discourse About Death”, *Revista de Filosofie Aplicată*, Vol. 2, Iss. 3 (Winter 2019): pp. 106-117.

Gregor, Alexander, Špajdel, Marián, "Romantická láska z pohľadu sociálnej neurovedy", *Ostium*, Vol. 9, Iss. 4, 2013.

Hatfield, Elaine, Feybesse, Cyrille, Narine, Victoria., Rapson, L., Richard, "Passionate Love: Inspired by Angels or Demons?", *The Psychology of Love and Hate in Intimate Relationships*, edited by Aumer, Katherine, New York: Springer, 2016: pp. 65 – 82.

Kant, Immanuel, *Lectures on Ethics*, Cambridge: Cambridge University Press, 1997.

Klinenberg, Eric, *Going Solo: The Extraordinary Rise and Surprising Appeal of Living Alone*, New York: The Penguin Press, 2012.

Levine, Robert, Sato, Suguru, Hashimoto, Tsukasa, Verma, Jyoti, "Love and Marriage in Eleven Cultures", *Journal of Cross-Cultural Psychology*, Vol. 26, Iss. 5, 1995: pp. 554 – 571.

Machaut de, Guillaume, "Douce Dame Jolie", *Medieval and Renaissance Music for Folk Harp*, arranged by Laura Zaerr, St. Louis: Mel Bay Publications, 2011, p. 8.

Platón, *Dialógy*, translated by J. Špaňár, Bratislava: Tatran, 1990.

Pordata, "Number of divorces per 100 marriages", Base de dados Portugal contemporâneo, Lisbon: Fundação Francisco Manuel dos Santos, 2019. <https://www.pordata.pt/en/Europe/Number+of+divorces+per+100+marriages-1566>

Sartre, Jean-Paul, *Bytí a nicota: Pokus o fenomenologickou ontologii*, translated by O. Kuba, Praha: OIKOYMENH, 2006.

Savulescu, Julian, Earp, Brian, "Neuroreductionism about Sex and Love", *Think*, Vol.13, Iss. 38, 2014: pp. 7-12.

Savulescu, Julian, Sandberg, Anders, "Neuroenhancement of Love and Marriage: The Chemicals Between Us.", *Neuroethics*, Vol. 1, Iss. (1), 2008: pp. 31 – 44.

Smith, Christian, *To flourish or destruct: A personalist theory of human goods, motivations, failure, and evil*, Chicago: University Of Chicago Press, 2015.

Strizzi, Jenna, Marie, Sander, Søren, Ciprić, Ana, Hald, Gert Martin, "'I Had Not Seen Star Wars' and Other Motives for Divorce in Denmark", *Journal of Sex & Marital Therapy*, Vol. 46, No. 1, 2019: pp. 57-66.

Šprocha, Branislav, Tišliar, Pavol, „Fertility and Religious Belief: Old and New Relationships in Slovakia” *Journal for the Study of Religions and Ideologies*, Vol. 18, Iss. 52 (Spring 2019): pp. 63-79.