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### Algorithmic colonization

*Automating love and trust in the age of Big Data*

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## Summary

### ALGORITHMIC COLONIZATION:

#### Automating Love and Trust in the Age of Big Data

Algorithms are playing increasingly crucial roles in mediating our daily lives. We often defer our choices to algorithms to decide what news to read, movies to watch, and food to eat; and we sometimes also ask algorithms to determine whom to trust, befriend and date. These algorithms make our choices in an increasingly efficient and automatic manner: based on Big Data analytics and AI, they can learn our habits and automatically recommend services that are seen as suitable for us. On the one hand, these automatic algorithms can liberate us from some once ‘difficult’ parts of our lives and make them become something that needs less time and thought. On the other hand, such a tendency of ‘automating’ our everyday life and our social interactions may pose the risk of losing our active agency and our meaningful interactions with others, reducing ourselves to technical ‘cogs’ of the algorithmic systems. This dilemma is the central topic of my thesis.

To make an in-depth analysis of that dilemma, this thesis develops a critical theory approach based on Habermas’s concept of the system and the lifeworld, and the colonization thesis, to critically understand how algorithms constantly intrude into our lifeworld, and how the intrusion brings out some big ethical challenges to our social relations and the development of subjectivity, a ‘self’. The main point is that love and trust, involving a participatory stance toward the person, are basically interactions shared with reasons, as well as with passion and emotion. However, I argue that algorithmic systems have the potential to crowd out our free interactions and exploration with others in love and trust relations, which may lead to a culture of objectification in the algorithmic society. As a result, people are prompted to treat each other as objects, numbers, and products that are manipulated for profit or control, rather than as equal individuals who need to be openly and respectfully interacted with. Such objectification may potentially contribute to an insidious effect of ignoring the suffering experience of real human beings and justify some excessive punishments (e.g., the public shaming and humiliation in China’s SCS project) in the algorithmic society.

The thesis is structured into two parts and has four chapters in total. Part I – the first two chapters – establishes a theoretical framework of algorithmic colonization by incorporating a

reformulated version of Habermas's colonization thesis with a critical theory of technology and surveillance studies in digital societies. Part II is formed from the third and fourth chapters, which apply the framework of algorithmic colonization to critically evaluate two real-world cases of algorithmic systems: AI-powered matchmaking systems and China's Social Credit System. In so doing, I will explore how algorithms are shaping our most intimate experiences of love as well as the crucial idea of trust in democratic societies.

Chapter 1 starts with an introduction of Habermas's colonization thesis, describing how the system mediated by money and power is different from the lifeworld – the regime that is driven by mutual interactions. The important thing is that the system can develop its momentum to intrude on the lifeworld, which is similar to a domino effect: if the media of money and power can effectively drive the development of system, then such systematic mediation processes will create a significant tendency to steer all activities, including the communicative actions in the lifeworld. This constant intrusion of systematic logic into the lifeworld can lead to what Habermas calls the system's colonization of the lifeworld. Notedly, I do not follow Habermas's historical notion of the lifeworld, which has been widely criticized for assuming a romanticization of the historical past. Instead, I take the lifeworld in a normative sense, as a potential for communicative actions and open exploration of social values. In this light, the colonization of the lifeworld is wrong not because a historical prior is infringed upon, but because such an open-minded and respectful exploration in the lifeworld is threatened by the systematic logic of unnegotiated standardization and objectification.

Based on this reformulation of Habermas's colonization thesis, I rediscover a Habermasian critique of technology. Unlike a common criticism that Habermas's notion of technology is non-social and essentialist, I argue that the colonization thesis can be seen as a critique of technological rationality undermining the potential for open-minded interactions and explorations of social values. I also point out that such a colonization thesis as a critique of technology has a limitation. What the colonization thesis describes is how technological rationality erodes mutual communications, which leads to a series of social pathologies. Yet it seems that Habermas does not say much about how *specific technologies* shape humans' communicative processes. To fully develop the critical potential of the colonization thesis, I propose to incorporate surveillance studies to see how particular technologies mediate the communicative actions of people's open interactions and exploration. To illustrate this point, I examine a classic example of surveillance –

Foucault's disciplinary surveillance – to show how it is possible to incorporate surveillance studies into the colonization thesis.

Chapter 2 shows that Foucault's disciplinary theory itself has been challenged in digital society. So, to apply the colonization thesis to the digital society, especially in a Big Data society, we need to reformulate Foucault's disciplinary theory to accommodate new pivotal situations. I look at three typical arguments against such a Foucauldian disciplinary mode of surveillance: the argument of fluid institutions, the argument of the data double, and the argument of risk-based control. However, I provide three responses to show that those three arguments are not wholly convincing. I insist that Foucault's disciplinary theory is still significant in understanding digital surveillance, even if it needs to change its form of 'panopticism' into a more flexible notion of what I call 'algorithmic discipline' in the algorithmic society. This chapter hints that algorithmic discipline can be used to hinder and distort open-minded and respectful human interactions, which can result in the significant problem of 'algorithmic colonization'.

In Chapter 3, I present a case of 'smart' matchmakers to show how algorithmic discipline can colonize humans' most intimate relations. I argue that the algorithmic colonization of love can restrain people's capacity for free and open exploration of intimate relations in cultural, social and personal domains. In the cultural realm, AI dating algorithms closely surveil users' everyday life to learn and automatically decide so-called perfect match, which do not need any mutual interactions, dialogue or negotiation. This automated love has the potential to promote a culture of objectification, in which humans' mutually interactive quality of love is relegated to an automated sorting, selection and 'unilateral execution'. The possible exploitation and manipulation of users' intimate data can distort the interactive infrastructure utilized in building intimate relations with others, which erodes people's intimate interactions. As for personal identity, I depict how dating algorithms tend to match people based on similarities, which may trap self-expression and interactions with others in a filter bubble. Unconsciously, users are gradually confined to a conditioned space where they passively follow their pre-existing preferences and are prevented from actively and fully expressing their identities.

In Chapter 4, I examine another case of China's Social Credit System (hereafter SCS) in a broader context to show how algorithms colonize humans' trust relations – a crucial element in the lifeworld. I argue that China's SCS project should be better seen as a way of engineering trust through data and algorithms across the entire society, rather than as a mere instrument for

totalitarian surveillance as is commonly criticized by media coverage. Moreover, I show that such an engineering of trust represents a new phenomenon of ‘automated trust’ in the Big Data era, where trust relations are maintained not from mutual human interactions, but from automatic tracking, prediction and penalties ensured by algorithmic control. This algorithmic trust is a kind of algorithmic colonization of trust, where algorithms undermine the interactive infrastructure of trust relations and restrain the ability to mutually interact with others while developing trust relations.

Using the case of China’s SCS as an example, I examine how its credit scoring algorithm tends to detach trust from real individuals, which can contribute to a culture of objectification and excessive punishment. I also explain why the SCS does not establish a moral sense of ‘trust’ as it claims, but only a sort of social compliance ensured by the algorithmic control. However, Chinese authorities use nationwide trust propaganda to deliberately re-moralize such algorithmic trust, which can hide the actual power operation of algorithms. Algorithmic trust is thereby bearing an ideological effect in negatively shaping people’s algorithmic imaginary, and how people identify themselves in the SCS. To reinvent more interactive and open-minded trust relations, I propose an alternative narrative of distrust to challenge the official, dogmatic propaganda of trust as an absolute moral good.

In the Conclusion, I suggest that my theoretical framework of algorithmic colonization can be understood as a general design principle in engineering practices. The lifeworld is necessary and pivotal, because it provides a flexible space where humans are capable of keeping open and respectful interactions with others and can explore the possibilities of social justice and social values together. So, algorithmic systems should be designed in a way that such a flexible space is properly preserved to encourage more mutual understanding, diversity, and meaningful interaction in our algorithmic society. The force driven by the technical imperatives of automation, efficiency and profitability may “disregard social norms and nullify the elemental rights” required for people to live a good life (Zuboff 2019, 18). An open-minded and respectful mutual interaction, however, can help us rediscover the value of humanity, where people get in touch with real individuals, and share sympathy and mutual understanding for the acts and sufferings of others.

## Samenvatting

### ALGORITMISCHE KOLONISATIE:

#### De Automatisering van Liefde en Vertrouwen in het Tijdperk van Big Data

Algoritmen spelen een steeds crucialere rol in het vormgeven en sturen van ons dagelijks leven. Steeds vaker laten we een algoritme voor ons beslissen welk nieuws we lezen, welke films we kijken en wat we eten; soms vragen we zelfs aan algoritmen om voor ons te bepalen wie we kunnen vertrouwen, met wie we vriendschap moeten sluiten en wie we moeten daten. Door de tussenkomst van zulke algoritmen maken we onze keuzes steeds efficiënter en steeds meer op welhaast geautomatiseerde wijze: op basis van Big Data-analyse en AI kunnen onze gewoontes doorgrond worden en kunnen diensten die als geschikt voor ons worden beschouwd automatisch worden aanbevolen. Aan de ene kant kunnen deze automatisch werkende algoritmen ons taken uit handen nemen die we als vervelend ervaren en waardoor we tijd en energie overhouden voor andere dingen. Aan de andere kant kan een dergelijke neiging om ons dagelijks leven en onze sociale interacties te ‘automatiseren’ het risico met zich meebrengen dat we onze actieve *agency* en onze betekenisvolle interacties met anderen verliezen, waardoor we onszelf reduceren tot technische ‘radertjes’ in algoritmische systemen. Dit dilemma staat centraal in mijn proefschrift.

Om tot een diepgaande analyse van dit dilemma te komen, ontwikkelt dit proefschrift een kritische theorie-benadering op basis van Habermas’ concepten van de systeem- en de leefwereld en de kolonisiethese, om kritisch te beschouwen hoe algoritmen onze leefwereld binnendringen en hoe deze indringing grote ethische uitdagingen oplevert voor onze sociale relaties en de ontwikkeling van subjectiviteit, een ‘zelf’. Het belangrijkste om hier op te merken, is dat liefdes- en vertrouwensrelaties, waarbij sprake is van een participatieve houding ten opzichte van een ander persoon, in feite interacties zijn waarbij zowel rationaliteit als passies en emoties een rol spelen. Ik beargumenteer echter dat algoritmische systemen de neiging hebben om onze vrije interacties en verkenningen met anderen in liefdes- en vertrouwensrelaties te verdringen, wat in de algoritmische samenleving kan leiden tot een cultuur van objectivering. Als gevolg hiervan worden mensen ertoe aangezet elkaar te behandelen als objecten, getallen en producten die gemanipuleerd kunnen worden voor winst of controle, in plaats van als gelijkwaardige individuen met wie op een open en respectvolle wijze omgegaan moet worden. Zulke objectivering kan mogelijk bijdragen



aan een verraderlijk effect van het negeren van het lijden van echte mensen van vlees en bloed en kan bovendien buitensporige straffen rechtvaardigen (bijvoorbeeld het publiekelijk te schande maken en vernederen van mensen in het Chinese sociale-krediet-project) in de algoritmische samenleving.

Het proefschrift is opgedeeld in twee delen en heeft in totaal vier hoofdstukken. Deel I – bestaande uit de eerste twee hoofdstukken – beschrijft een theoretisch kader van algoritmische kolonisatie dat bouwt op: een voor de digitale samenleving geherformuleerde versie van Habermas' koloniseringsthese; op een kritische-theorie-perspectief op technologie; en op surveillancestudiesperspectieven. Deel II – bestaande uit het derde en vierde hoofdstuk – past het theoretische kader van algoritmische kolonisatie toe om twee echt bestaande toepassingen van algoritmische systemen kritisch te evalueren: AI-aangedreven matchmaking-systemen en China's *Social Credit System*. Daarbij zal ik onderzoeken hoe algoritmen onze meest intieme ervaringen van liefde vormgeven, evenals de cruciale rol die vertrouwen speelt democratische samenlevingen.

Hoofdstuk 1 begint met een introductie van Habermas' koloniseringsthese, waarin wordt beschreven hoe de systeemwereld die wordt gestructureerd door geld en macht verschilt van de leefwereld – het regime dat wordt aangedreven door wederzijdse interacties. Een belangrijke observatie is dat de systeemwereld genoeg momentum kan ontwikkelen – via een soort domino-effect – om de leefwereld binnen te dringen: als de media van geld en macht de ontwikkeling van de systeemwereld op effectieve wijze kunnen aansturen, dan zullen dergelijke systematische bemiddelingsprocessen de sterke neiging hebben om álle activiteiten te sturen, inclusief het communicatieve handelen in de leefwereld. Dit constante binnendringen van systematische logica in de leefwereld kan leiden tot wat Habermas de kolonisatie van de leefwereld door het systeem noemt. Hierbij moet wel worden opgemerkt dat ik niet Habermas' historische opvatting van de leefwereld overneem, omdat die alom bekritiseerd wordt als een overdreven romantisering van het verleden. In plaats daarvan beschouw ik de leefwereld in normatieve zin, als een potentieel voor communicatief handelen en een open verkenning van sociale waarden. In dit licht bezien is de kolonisatie van de leefwereld niet verkeerd omdat een historisch ideaal wordt ondermijnd, maar omdat onbevangen en respectvolle verkenningen in de leefwereld worden bedreigd door de systematische logica van niet-onderhandelbare standaardisatie en objectivering.

Deze herformulering van Habermas' koloniseringsthese stelt mij in staat om een Habermasiaanse kritiek op technologie te herontdekken. In tegenstelling tot een veelgehoorde

kritiek dat Habermas' notie van technologie niet-sociaal en essentialistisch is, betoog ik dat de koloniseringsthese kan worden gezien als een kritiek op technologische rationaliteit die het potentieel voor onbevangen interacties en verkenningen van sociale waarden ondermijnt. Ik wijs er ook op dat de koloniseringsthese als basis voor technologiekritiek een belangrijke beperking heeft. De koloniseringsthese beschrijft hoe technologische rationaliteit onderlinge communicatie uitholt, wat leidt tot een reeks sociale pathologieën. Habermas lijkt niet veel te zeggen over de manier waarop *specifieke technologieën* interpersoonlijke communicatieve processen beïnvloeden. Om het kritische potentieel van de koloniseringsthese volledig te benutten, stel ik voor om surveillancestudies bij de analyse te betrekken om zo te kunnen zien hoe bepaalde technologieën de mogelijkheden tot communicatief handelen van mensen kunnen vormgeven. Om dit punt te illustreren, onderzoek ik een klassiek voorbeeld van surveillance – Foucaults disciplinaire surveillance – om te laten zien hoe het mogelijk is surveillancestudies op te nemen in de koloniseringsthese.

Hoofdstuk 2 laat zien dat Foucaults theorie van disciplineren zélf op de proef is gesteld in de digitale samenleving. Dus om de koloniseringsthese toe te kunnen passen op de digitale samenleving – vooral in een Big Data-samenleving – moeten we Foucaults theorie van disciplineren herformuleren om rekening te houden met nieuwe cruciale situaties die eigen zijn aan de digitale samenleving. Ik kijk naar drie typische argumenten tegen een Foucauldiaans perspectief op disciplinerende surveillance: het argument van vloeibare instituties, het argument van de *data double* en het argument van controle op basis van risico-denken. Daarna bespreek ik drie antwoorden op deze veel voorkomende argumenten tegen Foucaults, om te laten zien dat deze tegenargumenten niet onoverkomelijk zijn. Ik benadruk dat Foucaults disciplineringstheorie nog steeds van belang is voor het begrijpen van digitale surveillance, als we bereid zijn om Foucaults 'panopticisme' te vervangen voor een meer flexibele notie van wat ik 'algoritmische discipline' noem in de algoritmische samenleving. Dit hoofdstuk suggereert dat algoritmische discipline kan worden gebruikt om onbevangen en respectvolle menselijke interacties te belemmeren en te vervormen, wat kan leiden tot het grote probleem van 'algoritmische kolonisatie'.

In hoofdstuk 3 bespreek ik de case van 'slimme' matchmakers om te laten zien hoe algoritmische disciplineren de meest intieme relaties van mensen kan koloniseren. Ik beargumenteer dat de algoritmische kolonisatie van de liefde het vermogen van mensen tot een vrije en open verkenning van intieme relaties op cultureel, sociaal en persoonlijk gebied kan

ondermijnen. Op cultureel gebied houden AI-datingalgoritmen het dagelijkse leven van gebruikers nauwlettend in de gaten om te leren en automatisch te beslissen over de zogenaamde perfecte match, waarvoor geen wederzijdse interactie, dialoog of onderhandeling tussen mensen nodig is. Zulke geautomatiseerde liefde heeft de potentie om een cultuur van objectivering te bevorderen, waarin de interactieve kwaliteit van liefde tussen mensen wordt gedegradeerd tot geautomatiseerde sortering, selectie en ‘unilaterale uitvoering’. De mogelijke uitbuiting en manipulatie van intieme gegevens van gebruikers kan de interactieve infrastructuur die wordt gebruikt bij het opbouwen van intieme relaties met anderen verstoren, waardoor de intieme interacties van mensen worden uitgehouden. Wat persoonlijke identiteit betreft, laat ik zien hoe datingalgoritmen de neiging hebben om mensen te matchen op basis van overeenkomsten, waardoor zelfexpressie en interacties met anderen in een filterbubbel kunnen worden gevangen. Gebruikers worden zo onbewust en geleidelijk beperkt tot een geconditioneerde ruimte waarin ze passief hun reeds bestaande voorkeuren volgen en verhinderd worden om hun eigen identiteit actief en volledig gestalte te geven.

In hoofdstuk 4 onderzoek ik een andere case, namelijk China’s *Social Credit System* (hierna SCS), om in een bredere context te laten zien hoe algoritmen de vertrouwensrelaties tussen mensen – een cruciaal onderdeel van de leefwereld – koloniseren. Ik beargumenteer dat het Chinese SCS-project beter gezien kan worden als een manier om door middel van algoritmen kunstmatig vertrouwen te creëren in de gehele samenleving, dan als louter een instrument van totalitaire surveillance zoals het SCS-project vaak wordt bekritiseerd in de media. Bovendien laat ik zien dat een dergelijke kunstmatige creatie van vertrouwen een nieuw fenomeen is dat we ‘geautomatiseerd vertrouwen’ in het Big Data-tijdperk kunnen noemen, een tijdperk waarin vertrouwensrelaties niet worden onderhouden door wederzijdse menselijke interacties, maar door algoritmische controle die bestaat uit het automatisch volgen, voorspellen en straffen van mensen. Dit algoritmische vertrouwen is een soort algoritmische kolonisatie van vertrouwen, waarbij algoritmen de interactieve infrastructuur van vertrouwensrelaties ondermijnen en de mogelijkheid tot het ontwikkelen van vertrouwensrelaties via gezamenlijk handelen aan banden leggen.

Voortbouwend op de case van het Chinese SCS, onderzoek ik hoe algoritmen voor kredietscores vertrouwen kunnen losweken van echte mensen van vlees en bloed en als gevolg waarvan een cultuur van objectivering en buitensporige straffen gestalte kan krijgen. Ook leg ik uit waarom SCS geen ‘vertrouwen’ in de morele zin van het woord creëert zoals het wel beweert

te doen, maar alleen een soort sociale naleving die wordt gegarandeerd door de algoritmische controle. De Chinese autoriteiten gebruiken echter landelijke vertrouwenspropagandacampagnes in een poging om algoritmisch vertrouwen te ‘hermoraliseren’. Het gevolg hiervan is dat de feitelijke machtswerking van algoritmen verder aan het zicht kan worden onttrokken. Hierdoor draagt algoritmisch vertrouwen een ideologisch effect in zich omdat het de verbeeldingskracht van mensen tegenover algoritmen – alsook de mate waarin zij zich identificeren met het SCS – negatief kan beïnvloeden. Om de mogelijkheid tot meer interactieve en ruimdenkende vertrouwensrelaties opnieuw uit te vinden, stel ik een alternatief narratief over wantrouwen voor om de officiële, dogmatische vertrouwenspropaganda van vertrouwen als een absoluut moreel goed te bevragen.

In de conclusie stel ik voor dat mijn theoretisch kader over algoritmische kolonisatie ook kan worden begrepen als een meer algemeen ontwerpprincipe voor technologie-ontwikkelingspraktijken. De leefwereld is noodzakelijk en cruciaal, omdat het een flexibele publieke ruimte biedt waar mensen in staat worden gesteld om op een open en respectvol wijze met anderen om te gaan om zo samen de mogelijkheden tot sociale rechtvaardigheid en sociale waarden te kunnen verkennen. Algoritmische systemen moeten dus zo worden ontworpen dat een dergelijke flexibele publieke ruimte behouden blijft om zo meer wederzijds begrip, diversiteit en betekenisvolle interactie te bevorderen in onze algoritmische samenleving. De door technologie opgelegde vereisten van automatisering, efficiëntie, en winstgevendheid genereren een kracht die “[may] disregard social norms and nullify the elemental rights” die mensen nodig hebben om een goed leven te leiden (Zuboff 2019, 18). Open en respectvolle interacties kunnen ons echter helpen de waarde van medemenselijkheid te herontdekken; zodat mensen in contact komen met echte individuen en sympathie en wederzijds begrip delen voor de daden en het lijden van anderen.



## **Author Contributions**

### **Introduction**

This chapter is based on three articles of mine:

Wang, H. Algorithmic Colonization: A New Critical Approach in Understanding the Algorithmic Society (*To be submitted*)

Wang, H. (2022). Transparency as Manipulation? Uncovering the Disciplinary Power of Algorithmic Transparency. *Philosophy & Technology*. 35(69): 1-25. <https://doi.org/10.1007/s13347-022-00564-w>

Wang, H. (2022). Algorithmic Colonization of Love: The Ethical Challenges of Dating App Algorithms in the Age of AI. *Techné: Research in Philosophy and Technology*. [Accepted]

### **Chapter 1 Colonization of the Lifeworld: A Critical Theory Approach**

This chapter is adapted from two articles of mine:

Wang, H. Technological Colonization: Rediscovering Habermas's Critical Theory of Technology (*In preparation*)

Wang, H. (2022). Transparency as Manipulation? Uncovering the Disciplinary Power of Algorithmic Transparency. *Philosophy & Technology*. 35(69): 1-25. <https://doi.org/10.1007/s13347-022-00564-w>

### **Chapter 2 Disciplinary Power in the Algorithmic Society**

This chapter is based on two articles of mine:

Wang, H. (2022). Transparency as Manipulation? Uncovering the Disciplinary Power of Algorithmic Transparency. *Philosophy & Technology*. 35(69): 1-25. <https://doi.org/10.1007/s13347-022-00564-w>

Wang, H. Algorithmic Discipline: How Disciplinary Power Works in the Age of Big Data (*To be submitted*)

### **Chapter 3 The Algorithmic Colonization of Love Life**

This chapter is based on three articles of mine:

Wang, H. (2022). Algorithmic Colonization of Love: The Ethical Challenges of Dating App Algorithms. *Techné: Research in Philosophy and Technology*. (Accepted subject to minor revisions)

Wang, H. AI Manipulation of Love? Governing AI-driven Coaches in Surveillance Capitalism (*In preparation*)

Wang, H. (2022). Transparency as Manipulation? Uncovering the Disciplinary Power of Algorithmic Transparency. *Philosophy & Technology*. 35(69): 1-25. <https://doi.org/10.1007/s13347-022-00564-w>

#### **Chapter 4 The Algorithmic Colonization of Trust**

This chapter is based on three articles of mine:

Wang, H. Trust as an Ideology? Algorithmic Society and the Manipulative Nature of China's Social Credit System (*To be submitted*)

Wang, H. Automating Trust: How Algorithms Shape Trust Relations in the Big Data Society (*To be submitted*)

Wang, H. (2022). Transparency as Manipulation? Uncovering the Disciplinary Power of Algorithmic Transparency. *Philosophy & Technology*. 35(69): 1-25. <https://doi.org/10.1007/s13347-022-00564-w>

#### **5 Conclusion: Towards an Open and Flexible Algorithmic Society**

This chapter is partly based on my article:

Wang, H. (2022). Transparency as Manipulation? Uncovering the Disciplinary Power of Algorithmic Transparency. *Philosophy & Technology*. 35(69): 1-25. <https://doi.org/10.1007/s13347-022-00564-w>

## List of Publications and Grant(s)

### Peer-reviewed journal articles

- Wang, H. (2022). Transparency as Manipulation? Uncovering the Disciplinary Power of Algorithmic Transparency. *Philosophy & Technology*, 35(69): 1-25. <https://doi.org/10.1007/s13347-022-00564-w>
- Wang, H. (2022). Algorithmic Colonization of Love: The Ethical Challenges of Dating App Algorithms in the Age of AI. *Techné: Research in Philosophy and Technology*. [Accepted]
- Liu, Yongmou & Wang, H. (2018). Zhuangzi's Ecological Politics: An Integration of Humanity, Nature, and Power. *Environmental Ethics*, 40(1), 21-39.
- Lim, D., & Wang, H. (2014). Can Mary's Qualia Be Epiphenomenal? *Res Philosophica*, 91(3), 503-512.

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Six years ago, I thought doing a PhD would be a journey, an adventure, but when I lived and breathed it, I found it is also a war, a battle. This is a fight against the time, the system, the knowledge... and above all else, against myself. But thankfully, I survived and stayed sane:

I came... to write my acknowledgment now, the last words to my PhD life. After this, a new chapter of my life is about to begin. I will soon call myself a Doctor (not that kind of...), with a big smile and shiny teeth. Yes, I will have a (hopefully) fancier name: Dr Wang.

I saw... in the mirror that some streaks of my hair have survived, like some exhausted soldiers who never surrender. When I was battling against my thesis, my hair was fighting against the flying time. Luckily, my thesis ran a little bit faster than my falling hair.

I conquered... my thesis, a two-hundred-page book. I sometimes feel sorry about the woods and grass that sacrifice themselves to become my book, because I am not sure whether my work has contributed anything to society, or it simply throws one more rubbish into the ocean of academia. If you have one of my books, my dear friend, it is not meant to spread knowledge. Winter is coming; if the energy price is high, you could burn that book to keep yourself a little bit warm...

PhD may be the hardest battle I have ever engaged in. However, I was so fortunate because I had never been fighting the war by myself. I THANK you all, my supervisors, colleagues, friends, and family! Without you, I may have become bullet bait and fallen in the ash, alone.

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爸坐在那里，笑得合不拢嘴，戴的生日帽子有点歪、有点小可爱。这几年求学海外，错过了太多，看着爸妈头发又白了不少，顿然觉得时间如雪。好久没回家看你们了，一场疫情，一错就错过了三年。老爸已经六十，老妈明年也是，不知道还有多少三年可以错过？今年我已三十有二，古人早已建功立业，而我仍在异乡漂泊。我经常扯大旗，跟你们讲什么国运、形势，你们听得稀里糊涂，被我一顿忽悠，也认同我还是先留在国外看看再说。我知道，你们心里是想让我回国工作的，但你们不想给我压力。从小到大，我做了很多正确的决定，你们觉得儿子读了那么多书，看东西肯定比较全、肯定没问题。我感谢你们总能选择相信我、理解我，但这一次我是真的有点看不清了。我如今决定了继续在国外待着，但爸妈，你们在国内，我真不忍心就看着你们，这样渐渐地老去，而你们的儿子却不在身边……我有时候这样想着，就怀疑自己做的决定，心中总是摇摆。我希望你们保重身体，等我在国外混出点名堂来，再好好地陪伴你们。但能等到那一天吗？

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**Lexi,** thanks for being my little angel! When you can read and understand the words I am writing, your dad may have become a professor, or he has left academia forever after struggling for years... I hope the first situation will take place. But anyway, for me, you are an angel dropped from the sky. You should have been restless about my thesis anymore: I wrote too slowly, and you could not bear looking at me and waiting for me. So, you just jumped from heaven and came to the earth, crying into my face and spurring me to move faster. Indeed, since you came to this world, my dissertation had moved as fast as a flying rocket. What a miracle! Since you came into my life, everything has changed, *completely and immediately*. I became a so-called dad, and you are a small carbon-copy of me. Every day, I catwalk like a thief in the dark, stealthily and silently, only for fear of waking you up. Your snoring becomes the world's most beautiful music, because I can finally take a break. I am fond of greeting you every day by rubbing our noses together: a big nose is touching a tiny nose, just like the past connecting to the future. I was told that this greeting is called an Eskimo kiss – what a cute name! I was always amazed by your smile, your geek, your laughter, and your eyes looking at some ‘mysterious’ things. I feel sorry that you are living with

us in a small room, but it seems you always feel happy and excited about everything around you. In your tiny little eyes, our small room is your big world, a place for a big adventure.

I thought I could train you well, just like engineers' training their AI algorithms. But I realize that the training process is oppositely: it is you who is training me how to hug a tiny precious, to sing a cradle song, to change diapers, to cherish what I have now, to smile like a dumb guy, to become a real father. Thank you, Lexi!

**Liu**, my girl, my baby's mom, I do not know how to appreciate you. I can express a million thanks to you, but when I start to write and speak some words, they immediately become weak and void, falling into dust. We have engaged in our relationship for eight years, and this is perhaps the only single thing that takes longer than doing my PhD. We met on the train, where you sat just right in front of me. It's still an open and complex debate about who started to speak to another. Since then, the train has become a symbol of our little family; even Lexi's nickname is called "a little train" (poor baby...). We spent our most romantic years in Beijing, and then moved to Holland to grow old together. This summer, our naughty girl, Lexi, ran into our life. Lexi has your family name, because you insisted that your last name is more beautiful in Chinese (it sounds like a river). Yes, that is true, because what you said is always true ☺. So, from then on, Lexi has gotten your family name, and so will our second or third babies... I worried about how to explain to my mom and dad about this, but when I looked at your happy face, I knew that I had made the right decision.

We are so different, however. You are a biologist studying neurons, while I am a philosopher talking about nous (so-called intelligence, if you may not know this word). You are super-efficient in doing almost everything, but in your eyes, it took me so many years to finish a nonsense book. When you start to work on a task, you are so concentrated that even an exploded bomb may not disturb you. If you begin to think something, I know I should keep my mouth tightly shut up, otherwise, there would be a 'war'... When you attend a conference, you will start to work on the presentation a few months ahead and get everything well prepared. For you, if something should be done, it should be done right now, immediately. That is why you could publish many good articles in high-ranked journals. For me, math is horrible, but you always said that data, numbers, and formulas are most beautiful things in the world. Sometimes, I was curious about of which your brain is made up. We are so different, but your cute face and beautiful smile will always make me forget all our difference.

Despite those sharp differences, the most precious thing we share is that we both know how to communicate with and mutually understand each other. That may explain why we have been in a love relationship for so many years. But until now, we have not been engaged or gotten married. Our friends called us avant-garde. Well, the fact is that we are just too lazy... As you often said, why should we spend so much time acquiring a proof paper? But I know that you want a fantastic marriage, as you told me before, you dreamt of a big and romantic wedding. I promise that I will do it for you, and will not make you disappointed. You are a brave girl, because you dare to date a philosopher. We have been together for eight years, and I would like to enjoy eighty years more with you in the future. **So, Liu, would you marry me?**





