

RESEARCH ARTICLE

Le Grand Jeu and the potential of money games for exploring economic possibilities

Marcus Petz ^a, Federico Bonelli ^b, Teppo Eskelinen ^c

^a Department of Philosophy and Social Sciences, University of Jyväskylä, Finland

^b Stichting Trasformatorio, Amsterdam, Netherlands

^c Department of Social Sciences, University of Eastern Finland, Joensuu, Finland

Email addresses: marcus.kit.petz@student.jyu.fi, teppo.eskelinen@uef.fi, fredd@trasformatorio.net

Information

Received 16 March 2022

Accepted 6 June 2023

Online 12 February 2024

Keywords

games

simulacrum

economic alternatives

economic modelling

Open Learning Environment

Abstract

This article provides a case study of the game *Le Grand Jeu* (LGJ), which extends into a general analysis of the potential of games in the diversification of the economy, in particular with regard to money. Further, we explore LGJ's capacity to expand the horizon of the possible, as is often called for in theories of degrowth and related literature. *Le Grand Jeu* is a game, developed via community arts, used for the introduction of cryptocurrencies. We explore the development of that game and how it can be used as a tool that allows the utopian propensity to be explored and purposed to our own reality. We discuss the role of money, or more appropriately, monies, in generating social change, and locate this discussion in the context of degrowth literature. Practical degrowth alternatives to current mainstream economic approaches are needed. We argue that money games are a practical approach to fostering political imagination and are real-life versions of economic modelling. Furthermore, the 'open world assumption' within some games adds personal presence and mutual reflexivity to the general understanding of an economic model. We show that the use of games in workshops and real-time play allows a more realistic, integral economics to be explored.

1. Introduction

In our current context of environmental destruction and recurring crises (Norberg-Hodge & Mayo 1996; Petz 2022), new directions for societal transformation need to be found. This is not only a matter of opting for better policies, but also of envisioning alternatives.

Degrowth literature calls for reimagining the economy. This can mean redesigning economic indicators, as done with *The Index of Sustainable Welfare* (J. Cobb & Daly 1994), currently better known as *The Genuine Progress Indicator* (C. Cobb, Halstead & Rowe 1995), or it could

mean developing a “politics of visibility”: highlighting important yet currently overlooked forms of economic activity, such as household and voluntary work, often conceptualised as “the core economy” (Coote & Goodwin 2010). Reimagining the economy can also mean actively creating alternative economic systems. In the words of degrowth champion Serge Latouche (2017/2018, 277), a “matrix of alternatives” is needed to remodel economic institutions as we know them (Latouche 2007/2009). A politics of degrowth, seen this way, means employing a myriad of small-scale alternatives, such as self-organised exchange systems (Chiengkul 2018), community currencies (Greco 2001), and Community Supported Agriculture (Edwards & Espelt 2020). These ideas are typically based on the idea of the community as the basis and source of economic value (Eskelinen 2020), and are therefore often called “community economies”.

Degrowth literature does not present a straightforward approach to money. Many theories of degrowth discuss production without touching upon the issue of the design of monetary systems at all (e.g., Nørgård 2013). Some, perhaps most notably Hornborg (2017), have instead argued that degrowth that maintains the current monetary system is a contradiction in terms: a politics of degrowth requires a currency system with a different logic and design.

There are different emphases within the literature when it comes to the type of monetary reform required to achieve degrowth. Often, local and complementary currencies are seen as a way to promote a degrowthist strategy (Hornborg 2017, Douthwaite 2012, Kallis 2011, Martinez-Alier et al. 2010). Others emphasize the need for total demonetisation (Exner 2014). Others give priority to macroeconomic reform, arguing that strongly increased public control over money-creation is a prerequisite for policies that give priority to ecological sustainability (Farley et al. 2013, Robertson 2012). Perhaps the most concrete proposal taking this approach is to be found in the macroeconomic initiative ‘Positive Money’ (Jackson, Dyson & Hodgson 2013). This approach is based on the perception that the money supply should be stabilised by preventing banks from creating new money (see Huber & Robertson 2000). Positive Money, the main advocating organisation for the initiative, typically argues that stabilising the money supply does away with the growth imperative, making a steady state economy possible (Positive Money 2013). They take a postgrowth rather than explicitly a degrowth perspective (Barnes & Boait 2020).

Additionally, as Dittmer (2013), for example, argues, there are no clear success stories of local currencies as drivers of degrowth. This paucity, under our current ecological challenges, indicates that new ideas on alternative monetary systems are really needed. However, we humans face obstacles related to the limits of imagination. Existing political arrangements limit alternatives practically and psychologically.

In the search for alternatives, it is important both to see the sustainable practices that already exist, and to conceive of future societies. But imagined future society, as noted in many utopian theories (Firth 2019; Bloch 1954/1986; Marcuse 1972; Mannheim 1929), should not only be conceived of as a blueprint or design (as Popper (1945) regarded them), but as a path or process (Wright 2010). Fostering political imagination is furthermore a process of trying to conceive what functioning in the context of an alternative society would be like (Eskelinen et al. 2020), including what it would be like to live and interact within that society. Fundamentally, economic innovation means imagining together.

Yet while the need for versatile economic systems and to foster political imagination skills is repeatedly voiced, the issue has less often been approached methodologically. We thinkers want to transcend the prison of our own imagination, to explore a new reality, but *how* exactly? This paper explores one method for doing so, which is largely neglected in both degrowth and utopian studies: games. We analyse the use of games in the collective and reflexive exploration of alternative economic realities, particularly alternative monies. For this purpose, we consider an exemplary case: the game called *Le Grand Jeu* (Bonelli & Rovida 2021).

2. Background

2.1. Money

Money is often seen by users as a mere technicality, an apolitical tool which facilitates trade as a means of exchange or a specific kind of commodity (see Gómez and Dini (2016) for more on this “institutional theory [that] ... sees money as a social relation of credit and debt”). Related to this apolitical bounding of money relations, is the idea that money is unchangeable. Yet money is fundamentally political: the design of monetary institutions always has social

and environmental implications. Money is a social institution in the sense that it is fundamentally an agreement (Eich 2018; Finley 1970).

Seeing money as political implies we can redesign money to be used as a tool for change. There are very few limits to what money can be and how it can function; what kinds of value it can account for, reward, or allocate; and what it can include or exclude. Current general-purpose fiat money, with near-universal clearing systems and government backing, is far from the only system in the history of monies, despite its current hegemonic standing. There has indeed been a vivid discussion over local currencies as “micropolitics of money” (North 2007, 100), and various kinds of community currencies have emerged (Blanc 2011; Hileman 2013; Larue et al. 2022). When aiming to redesign the economy in favour of a more sustainable and versatile one, monetary innovation is a key element.

Various kinds of utopian ideas could be coded into the use of a currency, so that users manifest a different society by their socio-economic participation in that currency’s ecology. Attempts were made to do this, with, for example, electronic cryptocurrencies and community currencies aiming at a no-money society as an endpoint (Goette 2020; Szakály et al. 2015). Furthermore, the community of use can extend beyond the physical (cash money) to the digital (blockchain, Holochain, or similar systems).

However, the potential for new monetary systems says nothing about how monies come into being. Since anyone can create tokens or other forms of money, the question remains: Who will use a particular form? If money is an agreement, the challenge is “to get it accepted” (Minsky 1986, 228) and thereby make it functional. Just who agrees/accepts a particular money? Fundamentally, for agreement, economies (including monetary economies) require generalised trust to operate (cf. Dodd (2014); Varese et al. (2019) for discussions around trust and proxies for trust in economies where it is lacking).

Contracts and agreements hinge on trust dynamics: both negative trust (following strictly laid-out conditions); and positive trust (following a spirit of compliance) (Faems et al. 2008). Attempts to evaluate and build standards of trust may rely on existing methods, such as credit scoring, which is used in many Western countries, or, where there is a “lack of credit

infrastructure” (Erisman 2015, 194) to build trust from, new methods. Tokens, as a form of money, are a way to do that (Camera, Casari & Bigoni 2013).

By identifying communities of use, we can see how the individuals in these communities collectively use a form of money. Usage varies not only between individuals, which can be aggregated as mainstream economists do with M1, M2, and M3 (Mishkin 2004) in terms of liquidity, but also within cohorts of income, as the Vimes Boots Index references (Srinivas 2020), or subcultures, e.g., ethical degrowthers (Nørgård 2011), compared with adolescents’ discretionary spending (Gentina, Tang & Gu 2018). These aggregation levels have an analogue, in looking at biodiversity with alpha, beta, and gamma diversity (Babu 2016). Ecological niches (Gavish, Giladi & Ziv 2019) are analogous to cultural niches as found in a subculture (alpha), between 2 subcultures (beta), and within the whole economy/culture (gamma), respectively. Just as we can think of the different ecological communities acting synergistically to create higher levels of biodiversity and complexity that are more resilient, we can take the same approach to monies, which we can test with gaming.

The game *Chess* does not easily combine with *Mikado/Pick-up sticks* because they are incommensurate. However, *Chess* can combine with *Checkers/Draughts*, or, if considering variants commonly called *Fairy chess*,¹ bring in new possibilities, even from other variants of other games (Pritchard 2007). Other games, with more open mechanics than *Chess*, have a greater potential to bring in varied conceptions to create fusion or culturally mixed results. It is possible to apply that process of conceptual broadening to different monies. By application to variant monies, at different scales, alternative economies can be modelled.

An example of scale differences and alternative economics can be seen with *Robux*, an in-game currency (the *Roblox* platform currency) that can be converted between fiat and other in-game currencies. One such in-game currency is the restricted money *Adopt Me Currency* used when playing the *Adopt Me!* game. *Adopt Me!* has developed its own culture and

¹ Fairy Chess is an umbrella term for variants of chess that use different rules, boards, pieces or moves from standard chess. However standard chess has different versions, e.g. following different standard rules from today compared with rule changes such as time limits, e.g. Blitz Chess. However, the gaming literature is not consistent in use.

economy, which are different from other games running on the *Roblox* platform (Stevens, 2020), yet interactions between them are possible via *Robux* to some extent.

The Roblox Corporation has restricted such “Cross Trading” which “is the act of trading Adopt Me items for any of the following: Goods and/or services, Items in other *Roblox* experiences, Items in other games, Robux/Real Money” (*sic* Uplift Game Support, 2023). The ban shows crossover occurs in a black economy and could be further enabled with different crossover mechanics. Crossover mechanisms exist between some tabletop role-playing games too, e.g., in the *Rifts* Megaverse (Siembieda, 2002). Though conversion is needed between systems to account for variations in game mechanics, it is increasingly common that actual play videos have led to “transmedia storytelling” and crossovers (Jones 2021).

To return to money, as the meaning of a unit of currency varies (depending on aggregation category) we have “socially variable currencies” (Zelizer 2000). Nevertheless, usage indicates an implicit agreement over money (Bonder 1996; Lietaer & Dunne 2013), and in some communities is an explicit formal agreement, e.g., nondominium, as described by Leister and Frazier (2012) creates a legal system where private, nation-state, and neither in terms of ownership, and thus management of resources can be achieved.

As prototypical working examples of variety, we can consider community currencies (CCs), and the groups which are using them. ‘CCs’, for experimental purposes are particularly useful for contemporary exploration as their agreements are; *more recent* (bounded in time), and *less tied* into long histories of jurisprudence combined with international legal standards (which vary). Recency and freedom are both conditions that simplify analysis.

‘CCs’ are a special-purpose money, often designed to localize the economy and promote a more versatile conception of economic value. ‘CCs’ are regarded by the banking authorities in the UK as vouchers (Naqvi & Southgate 2013). Two contemporary examples in England are *Citizen Coin* (T&A Reporters 2021) and *CounterCoin* (Ntounis & Bailey 2018), where volunteers are rewarded by these municipality-supported schemes with vouchers. The vouchers are restricted to being spent with local community businesses and services.

This localisation of spending leads to a mutual reinforcement of desirable effects called a “virtuous economic circle” (Kennedy, Lietaer & Rogers 2012, 134). See Latouche (2007/2009) for a fuller description of the virtuous circle elements. The opposite of a virtuous circle is a vicious circle where negativity feeds upon negativity, e.g., the people are poor, so they buy worse food as a population, so they are less healthy, so they cannot work so well to earn more money to buy healthy food. Socio-economically, both circles are described by the theory of Circular Cumulative Causation (Berger, 2008; Myrdal, 1957).

Vouchers may give a discount on purchases (as with *Citizen Coin*). Such discounting reduces the money supply and leads to degrowth if measured under that metric of expansion or contraction of the money supply, e.g., the price changes in the Westport system in Ireland described by Douthwaite (1996, 72). The use of CCs also causes degrowth by activating an endogenous (originating from the inside) rather than an exogenous (originating from the outside) supply of goods and services. Local velocity is increased in microeconomic terms, but velocity is decreased in macroeconomic terms (see De La Rosa and Stodder (2015) for details). In aggregate, fewer resources are used. Such reductions depend on which goods and services can be provisioned by providers (businesses and agencies) in a scheme. Nevertheless, the potential for substitution (Case, Fair & Oster 2020) or other market shifts with complementary goods is present.

2.2. Money games

As money requires collective trust and acceptance, new monies (cf. Bindewald and Steed (2015) over the new monies concept, i.e., non-fiat currencies) cannot be merely introduced as bright ideas, they need to be accepted by their communities of use. Ideally, their functioning is envisioned by that community of users (see Gerometta, Häussermann and Longo (2005); Diniz et al. (2014) for a deeper exploration of why it is better to work directly with and in communities via bottom-up rather than top-down strategies; cf. Botsman and Rogers (2011) for collaborative consumption in general; and Scott Cato and Suárez (2012), Petz and Eskelinen (2019) for case studies where the inclusion – or in these cases the absence of inclusion – of a potential community of users during introduction was a crucial factor in money scheme (non)functioning). We are pressured to innovate (Schumpeter 1942/1994), and innovation for introduction under that pressure can be best done with the community of

users in a co-creative design process (Ramaswamy & Gouillart 2010). As part of a design thinking process, we can look toward intelligent gaming.

Intelligent gaming is defined as gaming using algorithms that interact with human responses to change their output (cf. Hughes 2018 for evolution over time with examples in the computer games industry). Design thinking is a process that involves a certain mindset for solving problems (Cooke, Dusenberry & Robinson 2020). Together, intelligent gaming and design thinking can “enact the situated practices of co-creation among designers, human agents, and nonhuman agents” (Cooke, Dusenberry & Robinson 2020).

As humans have a need to play, games can be enjoyable, yet we can look beyond hedonism. More to the point, games can be very educational, and purposed for learning. Gamification (Kim et al. 2018) is a way to alter our relationship with reality to explore another that is limited or, in turn, expanded by the rules we set in a given situation. So, although games are played largely for fun, there has more recently arisen serious gaming, which is gaming for pedagogical purposes (De Gloria 2020), including for understanding the possibilities of economic systems.

There are several games to help investigate how a currency can work. These include *Money Maker* (Brinkkemper 2020), a board game developed from a digital game (Leijnen, Brinkkemper & Bouwer 2015) for exploring the banking system; *The Community Currency Game* (Abe, Utsunomiya & Hirano 2020; Yoshida & Kobayashi 2018); and *Generator sdelok* [Generator of Deals], which was used in a business community to educate participants about an alternative money system, prior to introducing a local currency (Berg & Zvereva 2020).

For educating people about the money system in general, the most famous game is the 1935 version of *Monopoly* (Kennedy & Waltzer 2004), and while very capitalist in spirit, a variation was originally patented in 1904 as *The Landlord's Game* with a Georgist philosophy (Pilarski 2019) as “a board game intended to warn people about the dangerous effects of monopolism” (Commonspoly 2020). Later, the game *Commonspoly Green Edition* was developed (2015–2020) in an attempt to reclaim the original spirit of the game, using a similar game system and board layout (ZEMOS98 2019a; 2019b). Another traditional game (from 1860, with a major version change in 1960) with a money system is *The Game of Life* (Donovan

2017). It has had an elaborate mix of moral credits called “LIFE Tiles” for doing good things, promissory notes, bank-notes, and stocks over various versions (Swansen 2016). While the game has a winner, in a way everyone wins, even if they do not become the richest player, as all players improve their lot through the game.

Below we look at the scenario game, *Le Grand Jeu* (Bonelli & Rovida, 2016a; 2021), which was developed in Europe as an expression of open-source philosophy (Duval 2010; Hegarty 2015; Himanen 2010). Playing *Le Grand Jeu* (LGJ) helps us to explore different conceptual currencies and social systems. Post exploration these currencies and systems can be applied on a local to regional scale, often for a purpose. Hence our playing of LGJ is Gaming With A Purpose (GWAP). The concept of GWAP, “does not rely on altruism or financial incentives to entice people to perform certain actions; rather, [the games] rely on the human desire to be entertained. A GWAP, then, is a game in which the players perform a useful computation as a side effect of enjoyable game play” (von Ahn & Dabbish 2008). Thus GWAP, when concerned with currency exploration, can create money for a purpose, e.g., of a social, economic, or environmental nature (Bindewald & Steed 2015).

Le Grand Jeu was used in workshop settings in European projects: i.e., an economic inclusion project called PIE News (EU 2022/2023a), and the data sovereignty project LEDGER (EU 2022/2023b). It was adopted and further expanded by many communities for simulation, co-design of commons economies, and environmental lecturing by play-testing and design sprints. LGJ has elements of hybridity in its game-design. It is hybrid in blurring spaces (de Souza e Silva & Glover-Rijkse 2020), for instance, as it was originally designed to operate as a stand-alone workshop with an animateur in real life (IRL and not cyberspace), yet has been used as a remote (in virtual life) online game too.

The game can be used by communities to explore their economic systems and different community currency types. Such localisation for different scenarios encourages the creation of house rules. LGJ, in contrast to rule-bound board-games, is more influenced by the gaming tradition of tabletop role-playing as found with *Dungeons & Dragons* (Peterson 2012). In this tradition a fictional world is created. Players then decide together which parts of the mythos are appropriate in terms of technology and knowledge for a particular gaming session. That

setting then determines what happens in gameworld as to how the game proceeds to enact a scenario. In *Dungeons & Dragons* the main scenario is called an adventure, though there may be side scenarios called side-quests alongside the main adventure. The adventure commonly is a quest to solve a puzzle, free a non-player character, or gain a particular artifact. World- and character-building are also important aspects of tabletop role-playing.

2.3. Degrowth, alternatives and models

The politics of degrowth (which can encompass post- and alter-growth) means not only quantitatively less economic activity, but qualitatively different kinds of economic activity: more versatile, more locally oriented, more relevant to human well-being, and so forth. Some degrowth scholars have called for a “practice approach” (Joutsenvirta 2016), for overcoming divides such as actor/structure and micro/macro, additionally highlighting the importance of practices of generating new social relations. At best, legitimate rules both constitute alternative practices, and are created and constantly negotiated within these practices. A practice approach means actually doing, or making concrete plans to do, rather than just theorising as to what might work.

Another important, yet seldom addressed point in degrowth, is the need for alternative economic modelling. As the economy is not only about institutions, but interaction with and between these institutions too, we need to somehow understand how the economy functions and could function as a complex system. Typically, economic modelling is used for the purposes of foresight or assessing alternative policy options, but it can be done for purely epistemological or even pedagogical purposes, in trying to build understanding on how the world functions. Unfortunately, economic modelling today almost invariably means neoclassical modelling. This means modelling premised on standard preferences and technologies, competitive markets, rational expectations, the existence of a unique equilibrium that is Pareto-optimal (Hansen & Ohanian 2016), and more generally a conception of economic agents as self-maximisers, methodological individualism, and methodological instrumentalism (Arnsperger & Varoufakis 2006).

Some attempts at versatility include post-Keynesian constant stock-flow modelling (Lavoie & Zezza 2012). Despite this effort the degrowth literature has been quite devoid of economic

models, with the exception of some scenario modelling (e.g., Victor 2012). Nevertheless, modelling in general, even its alternative materialisations, is typically based on the assumption that market agents are representative, form their preferences autonomously, and are then assumed to behave in the same way whatever the social context. We argue that games, as a peculiar form of modelling, add a reflexive element to this: we don't just explore how idealised market agents would function in a fictional world, but this fictional world is created and explored together.

Economic simulations, used for observing decision-making and measuring how people act within given parameters in experimental spaces, can be seen as a process for positioning oneself reflexively within an economic system, rather than creating a model that merely assumes people will act in a given way. Even though economic simulations were carried out with scientific rigour, for example in the Vienna Centre for Experimental Economics (Sorgner 2017), these kinds of simulations have severe limitations, e.g., failing to show “cross-situational consistency of behaviour” between real-world situations and the lab (Levitt & List 2007).

Commonly, such simulations, which may be called experiments, games, or simulations, e.g., *Ultimatum game*; *Dictator game*; *Trust game*; *Gift exchange game*; *Public goods game* (Levitt & List 2007), follow the same architecture framed by their use of software and design of set-up, for example, using *ORSEE – Online Recruitment System for Economic Experiments* (Greiner 2015). When the participants interact, they do it very much like economic theory predicts *homo economicus* (Yamagishi et al. 2014) will act, as the rules of the simulation rationalize this kind of logic (Böhme 2016). In this directed learning environment (Hannafin et al. 1999), there is no place for love, kindness or equitable sharing, and the prisoner's dilemma is inbuilt into the relations that participants have with those running the experiment as well as each other. Such “mathematical” approaches can lead us astray (Thompson 2022).

Games can deviate from this approach as a tool of imagination, a practice approach to degrowth, a tool for fostering political imagination; and as a form of “real-life” economic modelling. Furthermore, games add a particular kind of participatory element to economic modelling (note that modelling can and often does incorporate participatory engagement, see e.g., Videira, Antunes & Santos 2017). Within games, economic agents are not only

assumed to act in given ways, but they can make active decisions, engage reflexively, as other players make decisions, and make assumptions about each other's behaviour. We can say that they build worlds together. Of course, in games, modelling needs to be understood in a more concrete, real-life sense. Modelling not only means making assumptions about the conduct of given economic agents, but making decisions oneself, being the economic agent, and seeing the outcomes of your choices and interactions with others within a given framework of game rules.

3. Research aims, data and methods

Our aims were to explore how games function as an element of economic research, and real-life degrowth. By extension, this allows us to explore different realities from the ones we are familiar with, thereby expanding our political imagination. Currently, mainstream economic approaches restrict explorations to small worlds and have focused on economic rationality (Lawson 2015) and not the imaginary. By creating a simulacrum (Baudrillard 1981), we can live in a different reality for a while and project or carry over what we learn into other applications (cf. Vickery 2019 for how cultural crossover occurs as such spillover effects). We can crack reality (Holloway 2010) and allow new possibilities to flourish, once we have an idea about the utopian propensity (Levitas 2013) inherent in our current situations and projects.

Le Grand Jeu was chosen via case screening (Yin 2018), after considering positive blockchain cryptocurrencies and online electronic games in a search for economic currency alternatives that displayed the utopian propensity. LGJ was discovered by networking in our milieu of gamers, academics, and activists. As the game designers were part of the same alternative activist (art-activist) subculture as Petz, the leading author of this report, there was a ready rapport and rapid trust-building between the game designers and researchers. The possibilities to explore different realities, documentation of game sessions (as written reports by gamesmasters, and some video recordings of play sessions), and to collaborate with the game designers made it a good choice as a case study.

These facets were not so strong with some of the other case alternatives. Their strength, in LGJ's case, gave the option to develop game exploration in enough depth for academic

research. Case screening was an effective method as the positive blockchain case of the *Neco* (Goette 2020; Petz & Eskelinen 2022) was selected from screening too.

Our data was then gathered by looking at the records of LGJ kept by the organizers of various game playing sessions. These consist of photos, written reports, and social media communications, which are freely available online (Bonelli & Rovida, 2020; 2021). Additionally, reflexive interviews and questioning via internet telephony (Janghorban, Roudsari & Taghipour 2014) were carried out with LGJ game designers Bonelli and Rovida by Petz and Eskelinen. Academics Petz and Eskelinen had a participant-observer stance when exploring the motivations, backgrounds, and cultural ideas around the game. Such reflexive interviewing is a recommended way of analysing a game (Aarseth 2003).

The researchers then co-wrote this paper with the game designers' input. Additionally, Petz took part in a game session held at the Oma Maa (a Community Supported Agriculture project) coffee shop in Helsinki between November 30 and December 1, 2018 as a participant-observer and wrote a report of that session, which the game designers looked over. There were 5 players and a gamesmaster (see Image 1). All players were Finnish men interested in an alternative trading system that could be implemented in a start-up.



Image 1: Helsinki Oma Maa Community Building Workshop 1 December 2018

PIE / Commonfare Project CAPSI

Further, action research elements (Carson & Sumara 1997) and auto-archaeology (Harrison & Schofield 2009) were practiced as Petz is part of a regular role-playing group (and thus has

experience of designing games, bounded realities within play, and how games and reality interact). All authors have engaged with the wider activist and artist community in Helsinki. Notably, this includes the transdisciplinary platform *Pixelache* (Paterson 2016).

The open culture of the game designers meant much material was freely available. Nevertheless, ethical practices in research as practiced by the University of Jyväskylä (UoJ 2022), in light of the European Union General Data Protection Regulation (DSGVO 2018) were followed. As the study did not touch upon sensitive data, further oversight by an ethics committee was not required.

4. Presentation of the case

Le Grand Jeu is a French translation of the English phrase The Great Game, which was popularized in 20th century diplomatic circles in reference to the 19th century clash of European empires in Central Asia (S. Becker 2012). In French, the term *Le Grand Jeu* first referred to *tarot card* fortune-telling (Yapp 2001). The *Le Grande Jeu* this paper investigates is a futurist game, though ironically, it can be usefully analysed via cultural memory (Begy 2015) as a phenomenon of intangible cultural heritage (Smith & Akagawa 2008) as well as material culture (Hicks 2010).

The game co-designers, philosopher Federico Bonelli and civil engineer/sustainable regional planner Raffaella Roviada, are Italian and come from activist and hacker subcultures. They have collaborated through a community arts lab called *Stichting Trasformatorio*, “for sustainable off the grid performance research” (Bonelli & Roviada, 2016b). This lab has taken part in socially engaged art, and art interventions in rural and urban areas in Italy, as well as internationally (Bonelli research interview 2020). The cultural milieu that *Trasformatorio* is part of includes transdisciplinary platforms such as *Pixelache* (Paterson 2016), EU-level projects, municipalities, and third sector (non-profit) or first sector (government) organizations.

Hypothetical worlds are created in *Le Grand Jeu* gaming sessions. As the players have a cultural memory, this tends to influence what and how they develop these worlds. There is a

framing that encourages realism² rather than zany fantasies like time travel, or magical realms, although there is nothing stopping these elements from being part of the game if so agreed upon by players. Similarly, advanced social technologies or engineered environments can be game played. So for example, LGJ could be gamed on a space colony on Mars (Zubrin 2018) or in an ocean-steading undersea colony (Simpson 2016).

The LGJ game is somewhat of a hybrid game.³ Hybridity is the space between alternatives, it allows a liminal space to be occupied. This facilitates explorations of possibilities, transitions, and the creation of new combinations. The unfamiliar can be connected to the familiar in a hybrid space. Such liminality facilitates crossing a threshold and thereby developing potentials into practice.

Hybridity in LGJ is facilitated by the animateur-inspired element of a gamesmaster directing play (see Besnard (1986); Meister (1973); Fontan and Quintas (2007) for more on animateurs and their role in activation of culture.) As an animateur, the gamesmaster attempts to not only run the game in a limited, rule-bound way, but carries out the pedagogical function of socialization into an approach to creative play. That approach is part of the culture or spirit of *Le Grand Jeu* play, which facilitates the adoption of different contexts and modalities during gameplay, i.e., hybridity. The gamesmaster plays for the world and is the master of chaos.

The role of the gamesmaster should be understood as a fluid one, as the game designers emphasise an “open world assumption”, meaning that roles (for players and gamesmaster) emerge when the game is played, rather than being determined by a fixed rule set, e.g., “decide who is the master (can be done with a dice throw, the highest score becomes “the Master)” in the *Simple Game* (the learning version of *Le Grand Jeu*) (Bonelli & Rovida 2021,13). Therefore, a gamesmaster is not necessarily needed for playing the game, their power can be

² So physics and natural laws follow those on contemporary Earth, e.g., “Basic Rules for all scenarios” states “The master does not allow to defy the laws of thermodynamics :)” (sic Bonelli & Rovida 2021, 14).

³ Cf. de Souza e Silva and Ragan Glover-Rijkse (2020); Zitter and Hoeve (2012); Arnab (2020) for deeper discussions on different dimensions of hybridity, e.g., digital/physical; school/work learning environments; where fundamentally “hybrid play [and thus a hybrid game], then, as a deliberately open-ended term, ... that connotes the potential for experimental, spontaneous, whimsical, and even critical interventions that result in, or result from, the enfolding of multiple contexts” (de Souza e Silva & Ragan Glover-Rijkse 2020, 1).

removed for anarchical versions, and the role even swapped with other players (e.g., a player council could be formed, or a different player could reprise the role for 2 rounds etc.).

The components for the game (see Image 2) include a series of triangles on a hard plastic transparent (so the board can be placed over your own maps) rhomboid board (actually 3 rhomboids (see Image 10) that can be separated or joined depending on game dynamics over time). These triangles, representing land, are assigned by dice roll at the game start. They then tessellate with others on the rhomboids to make larger land-holdings or off-grid structures. Additionally, the game includes: a wheel of fortune; various dice; a series of plastic shapes, that are used to create or build services or properties in the game via marker pen-writing or plasticine model-making; and coloured tokens representing currencies.

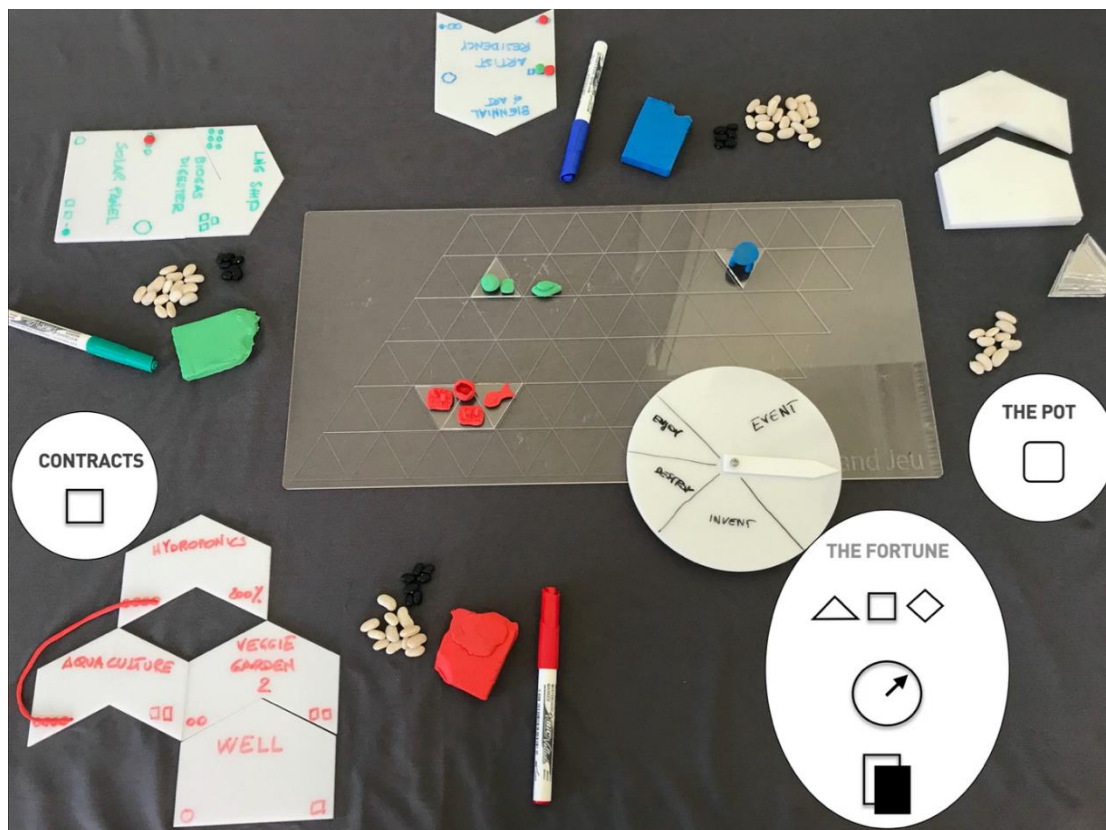


Image 2: Still from the *Do It Yourself* instructional video showing the game board, wheel of fortune, and pieces in play

In the *Simple Game*, there are 2 currencies, represented by white and black (see Image 3) ‘Go stones’ (on the game *Go*, see Anderson 2004). The stones’ colours were conceived to represent energy (white) and entropy (black) (Bonelli research interview 2020). Bonelli hoped this would lead to an environmental awareness in players. Sadly, people took a dualistic

(white – good; and black – bad) and not a dyadic (both depend on each other) view, and so in later games, black was changed to grey, with the idea of a circular economy (Korhonen, Honkasalo & Seppälä 2018) resulting, where grey and white are required for some processes in the game. The game has been played with additional currencies, such as a red currency for knowledge or a green currency for ecological value.



Image 3: Go stones representing currencies of entropy (black) and energy (white)

Gameplay consists of rounds; each player must pay “taxes” with stones and get stones on account of previous choices. There is no typical number of rounds, as games may vary in what scenario they cover, decisions made, and results, as the gamesmaster determines. For the Helsinki game there were 15–20 rounds. Some rounds were Assembly Rounds (whether to Invest, Invent, or Call the Assembly, is chosen by each player in their turn in a round). Though action did not take place every round, taxes were always levied (Image 4). There is no hard-and-fast rule as to who goes first or for the order of play. It is possible to pick the most senior, richest player, youngest, most powerful, or whatever cultural world is modelled (variation on starting a round is seen in climbing games, e.g., *Dai Fugō* / *Dai Hinmin* – Tycoon / Pauper (McLeod 2011). Several players can act as a cartel, and thus advantage is not necessarily found by going first or last.



Image 4: Le Grand Jeu - Macao 2016 video-still showing go stones being collected as a 'tax' at the beginning of a round

In a round a player can say, "I want to build a factory" (procurement), and the gamesmaster might reply "this requires 2 green stones" (representing an Environmental Impact Assessment and a Community Consultation) "and 1 red stone" (showing knowledge of construction engineering) "in addition to a white stone" (of financial capital). Potentially, several players could build a factory together as a cooperative. The nature of what is built (see Image 5) is written with a marker pen on the procurement pieces (which are foundational plastic house-shaped pentagonal game pieces).

In subsequent rounds, the factory could produce a good (production), which would earn players stones (yield), though they may need to acquire raw materials (with other stones—running cost) and will get in return stones that might represent different capitals (this includes pollution, which is thus treated as a capital and not an externality). Production is represented with chevrons placed above the house-shaped pieces. A further development (a service called 2.0) can see a second chevron placed above the first. This added value, for example, could see the initial pentagon representing a nightclub, and then brand value added on top with a chevron and perhaps another one for an expert resident DJ. Thus, the 2.0 level can be realised between different actors, e.g., a food coop makes a deal with a Community Supported Agriculture project to make a food bank. Dice add a stochastic element to the game.

The focus is not on being a stat-rich game, as are, for example, *Dungeons & Dragons* (Peterson 2012); *Pandemic Legacy: Season 1* (BoardGameGeek 2021); nor on having lots of nice different game play-pieces as found in other tabletop scenario board-games, e.g., *Die Siedler von Catan* and its expansion sets (BoardGameGeek 2022). Where needed, modelling clay is used to make physical representations, such as a pyramid for a windmill, and put on the land triangles.

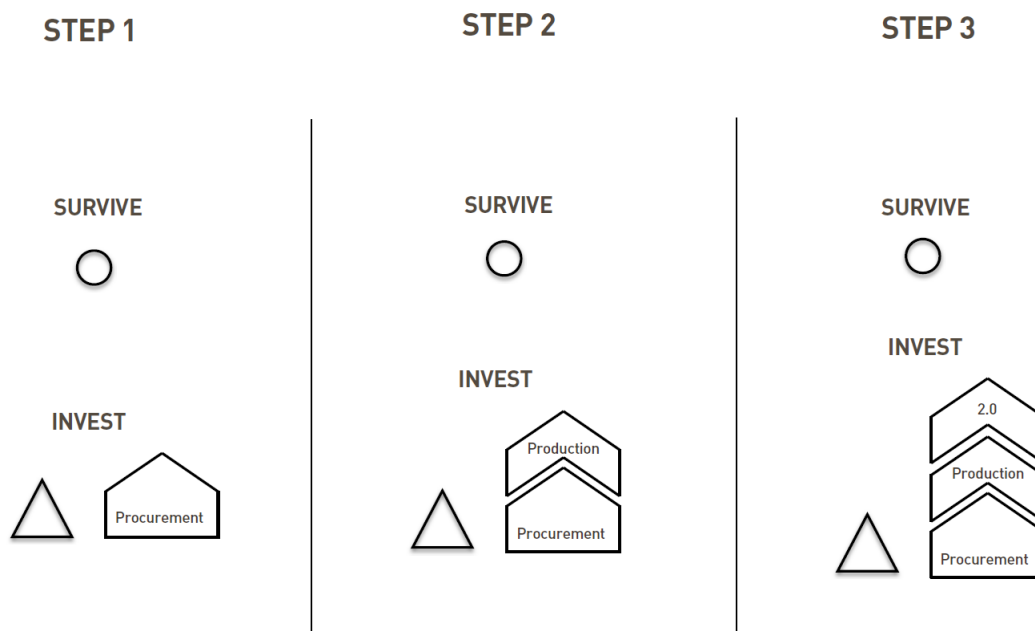


Image 5: Procurement, Production, and 2.0 from 3 rounds

20-faced dice (d20) are mostly used for inventions. A player says, "I want to invent a technology to have bike batteries recharge 3 times faster". The master then opens a short discussion with open questions like, "What do you think the advantage would be economically or environmentally?" The master decides if the invention is allowed, e.g., 3/20 meaning only 18/19/20 dice rolls are a success. To research something the player has to spend money, and this generates grey, so the d20 rolls decide how much, and if the grey affects the player's own account or the world too, e.g., the carbon footprint.

A d10 is used to decide the success of an action, e.g., opening a credit union. d4, d6, d8, d12 usually map the variability of yields, so they need to be used wisely in measuring the yield of an activity, and to map risk and losses (Bonelli & Rovida 2021, 16–17). So, rhetoric, to justify

choices to the gamesmaster and other players, as well as good rolls of the dice, are required to perform certain actions.

A crucial aspect, related to the natural endowment the game assumes, is that most activities will generate negative externalities (capitals in the game, to make them explicit), which leads to the accrual of undesirable stones (grey/black). So, if you decide to grow corn, then there will be pollution run-off; if you decide to sell things at a high cost, then there will be anger and jealousy (note the players do not become physically violent; reactions are envisioned in gameworld only) from fellow players from whom you are taking money and getting rich from with your rent-seeking behaviour. These factors can be mitigated, say, by developing a machine to turn pollution into something useful – representing a circular economy – or by doing public works for the players that paid to use your private rather than public library (so grey is better, if instead of black “anger” stones, they can be seen as grey “motivation for community activism and engagement” stones, in this case as political/social capital purposed to make the library better serve the needs of the community).

Similarly, artifacts (e.g., weapons, books, items) and social technologies (e.g., council, guild, admin procedure, law) can be brought into the game by random LGJ cards (see Image 6) and events happening in the game.

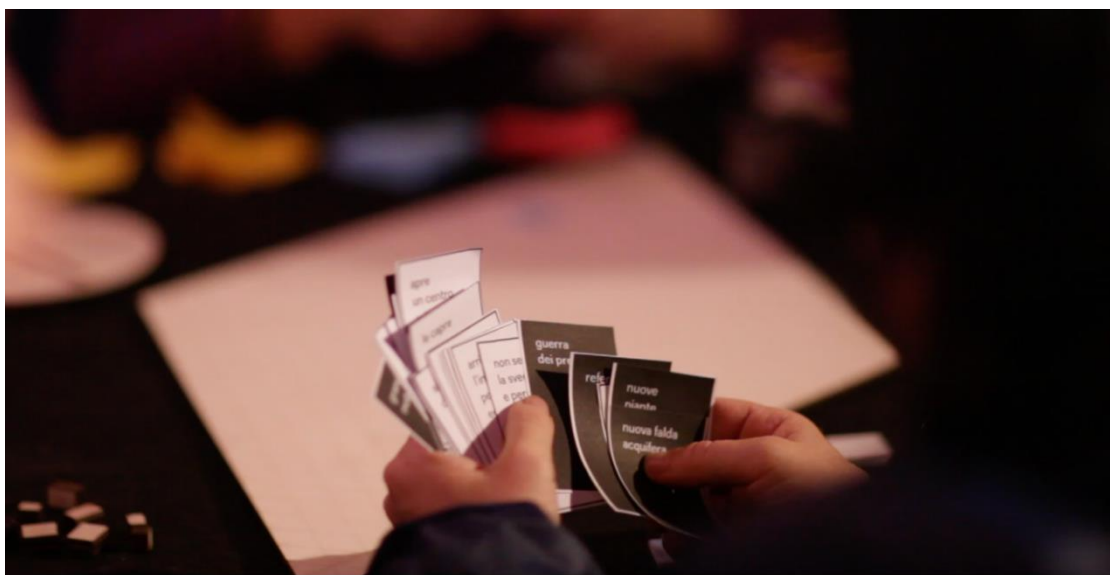


Image 6: LGJ cards

A roll of a d20 is used to select an event from the event tables (see Image 7).


Le Grand Jeu

GENERAL EVENTS (GM throws 1d20)		
LGJ EVENTS	LOCAL EVENTS	
1	Internet Blackout	Tax Rise
2	Pandemic	A gipsy camp settle in your land
3	Banks close down	a cultural center on your land
4	General Strike	you get depression
5	Referendum	governments doubles your basic income
6	Xenofoby	a new mall opens in your area
7	Basic Income	cold winter halves your energy intake
8	Terrorist Attak	you don't ear the alarm, miss one round
9	Global Warming	you fall in love
10	Nuclear Disaster	goats destroy everything
11	Key Infrastructure gets hacked	flash flod
12	Data Leack	new subsidies for wind plants
13	Meteor Hits the planet	Amy Winehouse lives again
14	Fusion is perfected faster than forecasted	a radioactive spillage on your land
15	Jump 10 years ahead	a landfill sets close to your land
16	Green New Deal	aquaphonics gets subsidized
17	Spinoff of Fusion option: Lifesaving Medical applications	you get tweens
18	Spinoff of Fusion option: Cleaning tech to treat waste water	you get seriously ill
19	Spinoff of Fusion option: Cancer detection and removal tech	you file a patent for Co2 storage tech
20		

Image 7: Fusion Playbook General Events Table

The Wheel of Fortune (see Image 8) allows stochastic effects—called chaos in game—to occur by selecting events. The caprice of the gamesmaster allows these to happen in a way that frames and controls the play or explores a phenomenon of interest to players.

For example, players going off-grid is possible (which has happened), where self-sustainable agriculture is explored. However, the gamesmaster may introduce a nation-state's army with a counter-narcotics operation that sprays Agent Orange, which kills all the off-grid plants. When players want to consider options, they can call an Assembly Round. It is up to the gamesmaster to act as the facilitator of the assembly. They should “formulate the proposals of the assembly in the language of the game and let people discuss and vote” (Bonelli & Rovida 2021, 15).

Pregame preparation helps generate some of the LGJ cards, so for example, for the *LGJ Pandemic* game, “Daniel and Beth spent the prior week tracking unfolding narratives from Covid-19 outbreaks around the globe, including public reactions, resource distribution, ratcheting state control + surveillance, and supply chain disruptions, to inform a series of LGJ cards tailored for this game edition” (Bonelli 2020a).



Image 8: The Wheel of Fortune, as under development in Milan.

Note: Later wheel designs (e.g., Image 2) allow handwritten options, which vary by scenario.

While there is no fixed endpoint in the game, (the idea is to stimulate thinking and explore concepts collectively) the game can end, e.g., in the *Simple Game*, “If the table has more than 50 greys we all die” (Bonelli & Roviola 2021, 13). The gamesmaster may impose sanctions or stop the game. If negative externalities, (represented by grey stones, or rather stones of any kind), become too great you lose the game and die as a player. As, “If a player die the global grey pot gets 20 greys and every player gets 5” (sic Bonelli & Roviola 2021, 13), in this instance everyone suffers. So, as a group, you must maintain the velocity of stones and a functioning economy of some kind. Thus, questions are raised about capitalism, growth, and how alternative economies must deal with the existential aspects of communitarianism, cooperation, and resilience.

This ‘toxic overload ending’ can be declared collectively too, representing the surpassing of the ecological threshold. Cooperation as game engine-building is encouraged, rather than competition, in the inbuilt design of the game mechanics. This is a feature found in other games, so for example, the game *Carcassonne* (a non-money, no dice game) (Heyden 2009),

where tiles construct a mediaeval walled citadel, is often played in the spirit of helping other players complete their settlements rather than trying to prevent them.

LGI has been played in “Finland, Italy, The Netherlands, Taiwan, China, Scotland, Ireland, Germany and other less bombastic but dear to us provinces of Europe” (*sic* Bonelli & Rovida 2016b) and with different groups (see Image 9; see Image 10).



Image 9: I bari - a homage



Image 10: Still from Le Grand Jeu “Power to the People” in Taipei, Republic of China

Anarchists have played the game, for example, at the *LGI-Venice Biennial* game (see Image 11). One played a drug dealer (note that anarchists and drug dealers are not the same) and

represented the interactions of the market around dealing (Bonelli research interview 2020). In another case, corporate types created a derivatives market.

Le Grand Jeu has usually been played at a specific game session with 4–8 players in a suitable location in a festival space or social centre, (around a table in a relaxed café setting), though an online remote session (where a *Miro* online whiteboard was used in combination with a *Telegram* messaging app group for coordination, and dice throwing bot *@rollembot Roll 'em Bot'*), and larger integrated sessions have been played with several smaller game groups interacting (Bonelli research interview 2020). Gameplay time is several hours and manifests typically in a community arts format, sometimes in connection with a community-led workshop. This meant a presentation preceded the gameplay, with a particular framing and desired participant mix. This has varied from an arts intervention as part of a planned project to more open, player-directed exploratory narratives. Typically, the “basic scenario” played with the *Simple Game* version is used as a basis to form a session or “to learn to play the game” (Bonelli & Rovida 2021, 17).



Image 11: LGJ-Venice Biennial game

Gameplay has been a one-evening game at times, and at other times the game was reprised in a follow-up, or rather, continuation-of-play-session, the following day. The game, by its nature, would allow motifs and created artifacts to be brought from prior play to new games,

though this has rarely happened. Where it happened, it was usually the gamesmaster who has adopted and adapted prior examples for a certain group of players. For example, the latter phase of gameplay allows stochastic events to occur (see Images 12a, 12b, and 12c) and then players must collectively respond to such events, for example, Brexit (the withdrawal process of the United Kingdom from the European Union) occurring and then regarding trading relationships or a pandemic or tsunami affecting the players.

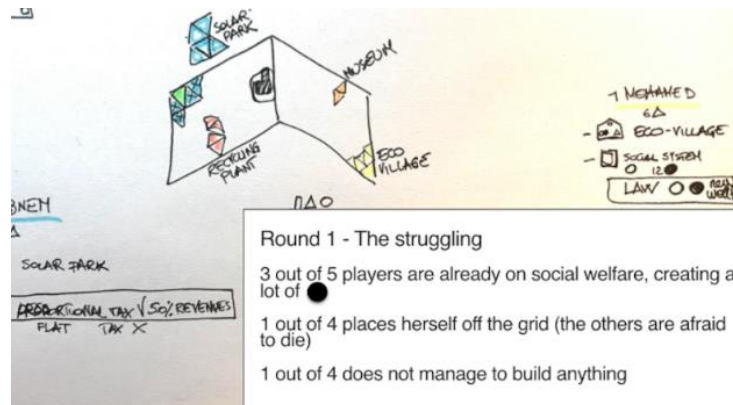


Image 12a: Social welfare and living in fear

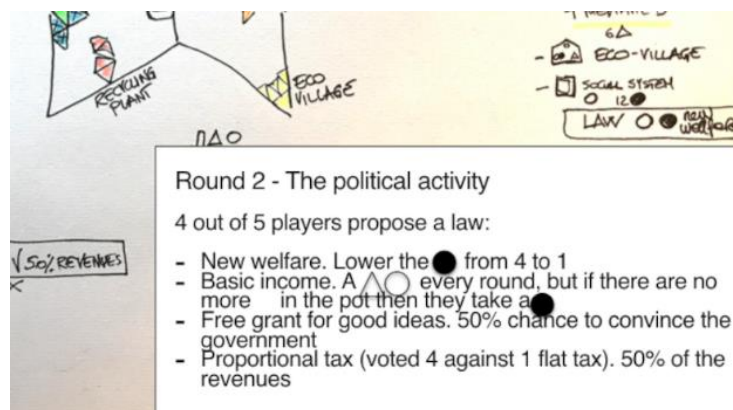


Image 12b: Basic income, free grant for good ideas, and proportional tax introduced

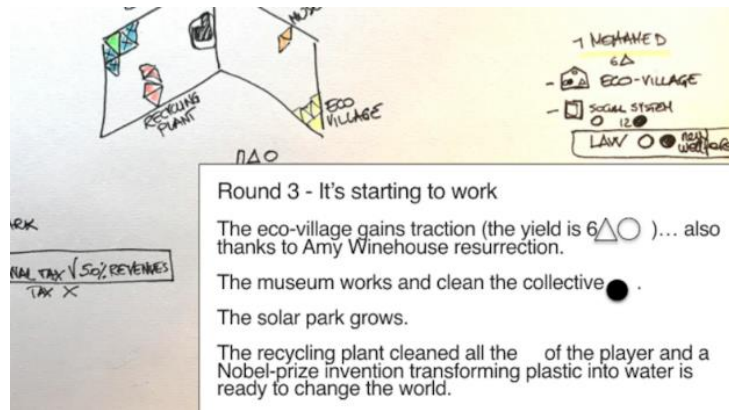


Image 12c: Record of state of play at round 3 at Game Scenario Digital Ministry in Munich

5. Analysis

Next, we analyse *Le Grand Jeu*, and games more generally, as tools for imagining and eventually creating alternative economies. We divided the analysis into two parts. First, we look at the general potential of games. Second, we analyse in more detail the exploration of new realities by means of games. As we are presenting an exploratory case study, the analysis continues the themes discussed in the presentation of the case, but looks at these themes more explicitly, and includes our reflections.

5.1. Le Grand Jeu and the potential of games

The potential of games for degrowth transitions can be expressed in two points. First, play is the most natural way to learn and communicate.⁴ Thus, learning is at the foundation of the creation and maintenance of community. Second, games that escape capitalist fallacies (Heath 2009/2010; Palley 2023) and imagine new possible dynamics of order in society are vital in transitioning to desirable futures. While games, experiments, and scenarios are different, what they have in common is that they are all human constructs that enable us to model and abstract from reality. But how do games work?

Games act by codifying, via game rules and game systems, how to operate. By playing games, we become conscious of the game-dynamics and rules within the game. The complying with or breaking of the rules reveal to us the obvious awryness, and this is where utopias are

⁴ For an exploration of the importance of play, see Winnicott (1971/1989); Eckert (2001); and over questions of naturalness, Grieshaber and McArdle (2010).

proofed. Games can make that testing explicit, though part of this comes from the experiences we are socialized in. The context-specific aspects are harder to capture initially, but within the game-world our perceptions are altered, and they are easier to observe or become aware of in juxtaposition with lived reality (for example, time is compressed, so building a factory can happen in a round or two).

This increased awareness of perspectives enables an expansion of the conception of economics. For neoclassical economists, the economy is a system based on ontological rules ("economic laws"), and economic agents are abstract actors that respond to a peculiar level of rationality with very precise ideas about chance, advantage, and choice. Game as an artifact is to be used to talk about philosophical ideas behind and above economics, and to allow this dialogue to have some practical formats and calculations, but moreover to sharply focus on the idea that the economy is an ever-changing cultural artifact itself. Being grounded on the open world assumption, *Le Grand Jeu* creates space for good questions, allowing mindsets that are inclusive and that treat phenomena from a perspective of integration and not only of problem-solving. The developers see it very much as a tool to communicate philosophically.

When we play LGJ we are constructing a reality. That is done collectively, and the players are engaged in learning experientially in an open learning environment (Hannafin, Land & Oliver 1999). Prior knowledge and behaviours are brought to the table by the players. Games do offer a way to look at some of the elements we have in our societies. However, many are tacit. Despite the potential of games to foster imagination, all participants are, to some extent, attached to their cultural milieu and existing ways of thinking. Some are acculturated to mainstream economic ways of thinking. Their gaming then assumes structures that are mainstream concordant. For example, all players are treated as if there are no prejudices between players, whereas in life there may be racist treatments, such as higher rents charged for foreigners; this could be gamed with a handicap for certain players. It would be interesting to see how house rules might develop if they were played in radically different communities, such as feudal societies or those with their own economic conceptions.

However, we can see that in Europe, we do not have to wonder so much about such house rules. Here, there are subcultures that are hacking and creating their own versions of games

to play and experience very different societies from the mainstream economic rationality. For example, in Pispala, in Finland, where there is a strong activist and agonist history, several games have been developed. *Pispalan Tähren*, from 2020, has “event cards ... to embody Pispala law cultural heritage and mental landscape” (Heija in Mäkynen 2020, 8). Toivonen (*sic* in Mäkynen 2020, 8) further expands that to “In the spirit of Pispalainen solidarity you don't compete for money in the game, only in one event card is mentioned [an insignificant] debt of 5 bucks...”. *Puutarha* (see Image 13), released in 2022, is a gardening game for learning about a cottage level of local production (Nopparalli 2022).



Image 13: Puutarha [Garden] game designed by Mira Heija

Such games emerge from communities, with their own social dynamics, and thus bring community cultures with them to give an integral economics approach (Gerber & Steppacher 2014; Lessem & Schieffer 2010/2016). In this case, the dynamics are not based on the reductionist economics, which would lead to gameplay only to win. Rather, gameplay has other purposes. While these games were created as a reflection of the subculture they come from, there are others with a more missionary aim. *Commonsplay* is explorative, with a retropian spirit, i.e. backward-looking utopia rather than futurist, built into the game mechanics. *Le Grand Jeu* took part in the *Commonfare Project* (Bassetti, Botto & Teli 2019; Teli, Lyle & Sciannamblo 2018), and LEDGER (EU 2022/2023b; <https://ledgerproject.eu>; Bonelli research interview 2020), which aimed to bring about a more distributed economics

praxis built on solidarity, rather than one focused on grants or the profit-motive as found in mainstream financing.

Le Grand Jeu allows a rapid evaluation of different economic behaviours. It allows alternative scenarios to be played with. For example, in Helsinki, Brexit was spontaneously gamed (What does Brexit do to trade and communal taxes?); off-grid production (so no tax paid, leading to less money for the UBI given out at each round) was explored; and how different economies might change given shocks to the system was considered. Thus, to some extent, LGJ acts as a platform for different game scenarios. A pandemic, asteroids, or any other proofing of resilience can be played depending on the level of sophistication desired to explore.

Petz designed the game *The Perfect Village* for the Sustainability and Solidarity Study Session at the Council of Europe in Budapest in 2004. The game starts with the survivors of an event such as an avalanche, flood, or conflagration needing to rebuild the post-apocalyptic village they will inhabit. During the study session, the players commonly focused on the recent apocalyptic event and spent resources related to dealing with the potential for recurrence. This recency bias focus made them vulnerable to other events or even to neglect other economic aspects. A similar availability-heuristic results from framing in LGJ. This event framing is facilitated by LGJ game cards that explain for the gamesmaster how to game these factors.

The LGJ game has the potential to develop more. Its open structurelessness provides flexibility and adaptability. However, there are some severe limitations within the game and related gaming community. These are partly related to the idea that LGJ should be non-commercial. Game development is expected to come from the community of players, many of whom lack the wide skills set to develop the game, which support from funding via game sales, playathons and platform development might provide. Ideally enough of the players would be experienced players rather than mostly “newbies”, as has so far been the case. While enthusiastic about the game, they have not played it enough to be competent at gamesmastering or developing beyond the introductory *Simple Game* they begin with to achieve any long-term aim or purpose from the game. A longer engagement would thus enable even more interesting outcomes.

For some games, time is allowed during gameplay for players to develop game consciousness and dexterity; for example, *Chess* commonly has instructors and books to improve play, which new players may benefit from in Chess clubs via practice (drills) and problems (puzzles); *Dungeons & Dragons* has several pre-game sessions and in-built levels for developing the gaming competence of players. On the other hand, for example, the game *Newtonian Shift 2.0* deliberately starts with players as individuals who gain a sense of community by dealing with unpredictable stress scenarios that mimic those of real-life, such as information asymmetry or false information. Over the several years of gameplay, a communitarian approach is fostered along with a switch from a fossil-fuelled Edison Island (where the game is set) to a more sustainable energy-based society. Individuals become members of a community (Geisendorf 2022).

Different levels of wealth can alter how money is used. The motivation is enjoyment, so cheaters or fools (who reverse meaning deliberately for comic effect) can be played. As of yet, these types of role development have not been assumed by *Le Grand Jeu* players; rather, people have just been themselves, perhaps with some awareness of their sub-culture and subcultural identity. *Le Grand Jeu* players, in contrast with other role-playing games, e.g., *RuneQuest* which fathered many games with its “Basic Roleplaying system” (Durall & Johnson 2011), are not given character sheets nor are they developed into archetypes with skill or knowledge levels.

Perhaps the game could be played at a grander scale between different groups and thus replicate different classes or cohorts in a society, though this takes more organizing. Attempts have been made to play *Le Grand Jeu* online, though as it was not designed for this, they were not so successful.

5.2. Exploring new realities

How effective is *Le Grand Jeu* at exploring new realities? LGJ offers a way to think about the possibility of living in another reality, yet it has not so far led to manifestations of the systems explored in gameplay.

The *Commonfare Project*, aiming to use the concept of cryptocurrencies to empower individuals (Bassetti, Botto & Teli 2019; Teli, Lyle & Sciannamblo 2018), used LGJ for a co-creative exploration of possibilities in workshops. Commonfare Project leaders developed a platform and open-source software so that anyone could implement the protocols for a “CommonCoin” (Bassetti, Botto & Teli 2019). The gameplay within the workshops seemed to show well enough how limited economic relations can operate. Bonelli (research interview 2020) certainly believes the players of LGJ get a good understanding of whatever economic environment is being gamed, so derivatives or black markets are examples of these. However, when *Commonfare* was attempted in Greece and Italy as a working demonstration at a level beyond the local community, it met with mixed success. Problems arose due to the game’s governance mechanisms rather than technological capabilities: a top-down, in contrast to a bottom-up, approach did not build an active enough community of use to develop a true economy.

As noted, LGJ has been played by groups as diverse as anarchists and corporate types. In these games, the players got an understanding of how to interact in a monetary system with newly given features (Bonelli research interview 2020). The agreements between players shape what collaborative decisions around democracy and money can be taken. When the game was played in Helsinki, a surprising thing happened: when one player introduced a tax office, the other players happily paid their taxes! None of them came up with a revolution to make the tax income for the collective good nor refused to pay taxes, though these possibilities were within the game rules.

The *LGJ-Down Under* game introduced a community currency called *Rainbow*. These vouchers were available “to buy local, preferencing to buy local” and were used for “mapping values”. However, the initial idea of a 5% discount was hard to play within the game dynamics, and in this case, gameplay got caught up in the minutiae of how things function in gameworld. It was proposed that a follow-up game could be played, “Town COUNCIL: do you want to use a credit union?” (Bonelli 2020b).

Le Grand Jeu incorporates the game element of gaining knowledge, but it is underdeveloped. For example, a player is not required to have any knowledge of how to build a genetic

laboratory to do so. Knowledge acquisition could be gamed more, in a more complex manner, with knowledge tokens (red stones) that can be spent with other players or a hypothetical library where white stones must be spent to obtain red ones (and thus the appropriate knowledge) before a lab is allowed by the gamesmaster. The gamesmaster could also be developed role-wise. The gamesmaster acts as an animateur in making the game vibrant, which encompasses other non-player character roles (e.g., a banker), but other characters could be explicitly roleplayed, e.g., an angel investor or beneficent dictator, to make a game more pluralistic. By having character sheets and modules orientated toward certain psychologies, the animateur and thus gameplay can be influenced. Nevertheless, awareness of knowledge asymmetry can emerge during a game. For example, in one game, a player from a rich nation found they had a less efficient solar-based energy supply than a poorer country (Bonelli & Rovida 2019), which was more dependent on energy security. This became apparent when a resilience testing event occurred in the game.

The border between games and reality can be a fuzzy one, with some gamesmasters incorporating aspects of non-gaming into their gameplay. There may be interludes in games or juxtapositions of physical activities, costuming, or singing within game sessions, e.g., Petz had these experiences when playing *The Extraordinary Adventures of Baron Munchausen* (D. Becker 2012/2019). In the case of LGJ, non-gaming aspects have taken the form of an associated lecture or workshop to try to bring about a different reality. In this way, gameplay is supposed to segue into the creation of a community currency project, with a cryptocurrency often being the proposed currency.

A further stage, as seen in some re-enactment communities, occurs when players identify with the imaginative space of the game to such an extent that a cross-over occurs where participants adopt the culture they are portraying. Such cultural spillover can happen to the extent that re-enactors abandon modern ways of living to live as if in the space of the game; or, in the case of historical re-enactment, that time. This tends to be limited, with players adapting the cultural spillover to a functional life within the context of modern times, rather than living in an alternate reality or living in a truly anachronous way. For example, the shop *Pretender to the Throne*, which sells “Limited edition Medieval inspired soft furnishings and

accessories” (Tarratt 2012) was created by a long-term medieval re-enactor due to the demand for themed items from that time-culture.

So, as well as alternatives manifesting in terms of lived cultures, we can see alternatives in terms of economic cultures within gameworlds. Interestingly, in the early days of *Dungeons & Dragons*, another game called *Dungeon* described that “To procure treasure from the chambers, the party must battle its guardians. For killing these guardians, and for performing other valiant deeds, they obtain karma. As treasure and karma accumulate, a party member may exchange them to move up in rank.” (van Grasstek [1974] in Peterson 2012, 484). Here we see more than one currency operating. *Le Grand Jeu* has flirted with multiple currencies, special conditions such as taxes, UBI, common-pool resources, and special-purpose monies.

How well these worked varied. The lack of clear player manuals or the resources to properly game meant they were often unworkable. Confusion arose between externalities and different capitals, e.g., when trying to game black stones as a needed capital, players and the gamesmaster became confused over their desirability. Nevertheless, this confusion does show that these aspects of a functioning currency could be gamed if appropriate colour choices for stones were made. Where these ideas did work in game, players had brought in alternative economic environments and dispensed with some conventional economic realities. Off-grid tax-free use explored energy as a limiting factor, and thus a currency of energy is possible. Knowledge (as red stones) was conceptualised only after the game was played. Similarly, independent players came up with ecological elements (green stones), which could model SEFRAs—self-financing regulatory agencies (Steen 1993) and permits, as seen with carbon trading. Their interplay has yet to be gamed, though there is such a real-world application that needs exploration (Demekas & Grippa 2022).

The wider aspects of money, currency, and capitals could be explored more; with expansion packs, gamesmaster- and player-manuals they could be. Similarly restricted environments, such as those controlled by mega-corporations (e.g., Roblox), could be gamed. Thus, we see games increase affordances of the mind, if not yet those of reality. An assessment of how successful a game has been in opening up thinking or changing actions is hard to carry out. Monitoring cultural references to practices or ideas that appear after gameplay, is one way

to evaluate the impact of a game on a community or individual's life. For currency creation, we might look for features in a new money or new money relations that have been seen first in a game.

6. Conclusions

As noted in the beginning of this text, money comes into existence with a community of use. Therefore, traditional economic questions about the value of money, its exchangeability, circulation velocity, etcetera, need to be complemented with questions related to possible monies and possible communities using these monies. A degrowth community will use a money suited for its values and forms of interaction, but without attempts to experience such communities, we cannot explore such monies.

Degrowth calls for new policies and ideas; it cannot only be an attempt to decrease the GDP. But this requires imaginative exercises in new economic possibilities. We have explored games, as truly instructive economic modelling requires reflexivity largely absent from current economics: the matter is not only what people do, but also, how they react to what others do and how they expect others to behave. Enacting alternatives is much easier, if we have been able to engage in reflexive deliberation on possible worlds through gaming (see Weick 1988 for the logic of enactment).

Scenario planning allows some exploration of this kind, yet its abstraction from reality and partial nature does not allow a contextual understanding. Serious game-playing is a step further along the path, and can reveal an economic nirvana, but is it a mirage? Commonfare reveals that what may work in an evening or long weekend of playing LGJ does not persist beyond a brief bout of mania when introduced in reality.

However, it would be a hasty conclusion to write off the use of games. *The Grassroots Economics Foundation* (Ussher et al. 2021) has used beans in gameplay, extended over a week to introduce community currencies in Africa. They are now extending this beyond Kenya to Cameroon. Bonelli has used a different social technology, more akin to an art intervention

(Jiao, Jihui & Xiuli 2020), rather than *Le Grand Jeu*, in a recent activity, and enough depth for real-world action was reached within a week.

Le Grand Jeu is a highly interesting example of a money game. It could be developed in many ways to allow for different kinds of exploration, especially as it is based on “open world thinking”. Most important is the recognition of the necessity of combining imagination and modelling in the kinds of simulations games allow, and seeing how different kinds of rules, contexts, and scenarios support different kinds of socio-economic exploration. This is already happening, with such games recently presented at the 2022 European Ecological Economics Conference in Pisa (Geisendorf 2022).

Conflict of interest

The authors have no conflicts of interest to disclose.

Funding

Funding was partially provided by the University of Jyväskylä in terms of staff costs. Game development costs were incidentally supported by EU project funding.

References

- Aarseth, E. (2003). Playing Research: Methodological Approaches to Game Analysis. Proceedings of the Digital Arts and Culture Conference (A. Miles Ed.), 216. <https://doi.org/10.7238/a.v0i7.763>
- Abe, M., Utsunomiya, H., & Miyoshi Hirano, M. (2020). The Community Currency Game “Online Shopping.Com”: The Prisoner’s Dilemma and Consumer Behavior in a Local Economy. *Evolutionary and Institutional Economics Review* 17 (2): 345–60. <https://doi.org/10.1007/s40844-020-00179-w>
- Anderson, T. (2004). *The Way of Go: 8 Ancient Strategy Secrets for Success in Business and Life*. Free Press.
- Arnab, S. (2020). *Game Science in Hybrid Learning Spaces*. Routledge. <https://doi.org/10.4324/9781315295053>
- Arnsperger, C., & Varoufakis, Y. (2006). What Is Neoclassical Economics? The Three Axioms Responsible for Its Theoretical Oeuvre, Practical Irrelevance and, Thus, Discursive Power. *Panoeconomicus* 53 (1): 5–18. <https://doi.org/10/c6kbn5>
- Babu, S. (2016, October 14). Alpha, Beta and Gamma Diversity: Biodiversity at different scales. *Eco-Intelligent™*. <https://eco-intelligent.com/2016/10/14/alpha-beta-gamma-diversity/>
- Barnes, D., & Boait, F. (2020) *The Tragedy of Growth: To protect wellbeing and avoid ecological disaster we must abandon GDP growth and transform our economic system*. Positive Money. <https://positivemoney.org/wp-content/uploads/2020/05/Positive-Money-The-Tragedy-of-Growth.pdf>

- Bassetti, C., Botto, F., & Teli, M. (2019). The Commonfare Project. Designing to Support Grassroots Welfare Initiatives. *DigitCult @ Scientific Journal on Digital Cultures* 3 (1): 31–40.
<https://doi.org/10.4399/97888255159095>
- Baudrillard, J. (1981). *Simulacres et Simulation*. [Simulacra and Simulation] Galilée.
<https://doi.org/10.3998/mpub.9904>
- Becker, D. (2012/2019). Game Review - Baron Munchausen by James Wallis. Dan Becker's Home Page.
<http://danbecker.info/games/reviews/BaronMunchausenReview.html>
- Becker, S. (2012). The "Great Game": The History of an Evocative Phrase. *Asian Affairs* 43 (1): 61–80.
<https://doi.org/10.1080/03068374.2012.646404>
- Begy, J. (2015). Board Games and the Construction of Cultural Memory. *Games and Culture* 12 (7–8): 718–38.
<https://doi.org/10.1177/1555412015600066>
- Berg, D., & Zvereva, O. 2020. Complementary Currency Localization in Closed Contours of Economic Exchange: Theoretical Background and Experimental Verification. *International Journal of Community Currency Research* 24 (Summer): 64–76. <http://dx.doi.org/10.15133/j.ijccr.2020.012>
- Berger, S. (2008) Circular Cumulative Causation (CCC) à la Myrdal and Kapp — Political Institutionalism for Minimizing Social Costs. *Papers From The 2008 Association for Evolutionary Economics (AFEE) Meeting, Journal of Economic Issues* 42 (2): 357–365. <http://dx.doi.org/10.1080/00213624.2008.11507144>
- Besnard, P. (1986). *Animateur Socioculturel: fonctions, formation, profession* (2nd ed.). [Sociocultural Animateur: functions, fashioning, profession] Les Éditions ESF.
- Bindewald, L., & Steed, S. (2015). *Money with a purpose: Community currencies achieving social, environmental and economic impact*. New Economics Foundation.
- Blanc, J. (2011). Classifying "CCs": Community, Complementary and Local Currencies' Types and Generations. *International Journal of Community Currency Research* 15 (Special Issue: Complementary Currencies: State of the Art): 4–10. <https://doi.org/10.15133/j.ijccr.2011.013>
- Bloch, E. (1954/1986). *The Principle of Hope*. Wiley-Blackwell.
- BoardGameGeek. (2021, May 11). Pandemic series | Wiki | BoardGameGeek.
https://boardgamegeek.com/wiki/page/Pandemic_series
- BoardGameGeek. (2022, July 7). CATAN | Board Game | BoardGameGeek.
<https://boardgamegeek.com/boardgame/13/catan>
- Böhme, J. (2016). 'Doing' Laboratory Experiments: An Ethnomethodological Study of the Performative Practice in Behavioral Economic Research. In I. Boldyrev & E. Svetlova (Eds.), *Enacting Dismal Science. Perspectives from Social Economics*, (87-108). Palgrave Macmillan. https://doi.org/10.1057/978-1-137-48876-3_4
- Bonder, N. (1996). *The Kabbalah of Money: Insights on Livelihood, Business and All Forms of Economic Behavior*. Shambhala.
- Bonelli, F. (2020). Jitsi research interview: Petz & Eskelinen with Bonelli 29 October 2020; and, Petz with Bonelli 9 November 2020.
- Bonelli, F. (2020a, April 3). LGJ PANDEMIC [Game Session Report]. <http://legrandjeu.net/?p=450>
- Bonelli, F. (2020b, April 21). LGJ-DOWN UNDER [Game Session Report]. <http://legrandjeu.net/?p=472>

- Bonelli, F., & Rovida, R. (2016a, August 4). Do It Yourself: A short introduction to the rules of the game by Raffa. Le Grand Jeu. http://legrandjeu.net/?page_id=62
- . (2016b, August 5). About us. Le Grand Jeu. http://legrandjeu.net/?page_id=70
- . (2019). Le Grand Jeu – Berlin 2019. [Video] Le Grand Jeu. <https://vimeo.com/376427682>
- . (2020, December 8). Scenarios. Le Grand Jeu. <http://legrandjeu.net/?cat=46>
- . (2021). EUROfusion Playbook, Le Grand Jeu: Instructions and custom scenarios. Amsterdam, Holland: Stichtung Trasformatorio. <https://github.com/freddbomba/legrandjeu/blob/master/EUROFusion/LGJ-EUROFusion-Playbook.pdf>
- Botsman, R., & Rogers, R. (2011). What's Mine is Yours: How Collaborative Consumption is Changing the Way We Live (Rev. ed.). Harper Collins Business.
- Brinkkemper, P. (2020, October 4). Money Maker About Us. <http://moneymaker.games/about>
- Camera, G., Casari, M., & Bigoni, M. (2013). Money and Trust among Strangers. *Proceedings of the National Academy of Sciences* 110(37), 14889–93. <https://doi.org/10.1073/pnas.1301888110>
- Carson, T. R., & Sumara, D. J. (1997). *Action Research as a Living Practice*. Lang.
- Case, K. E., Fair, R. C., & Oster, S. (2020). Chapter 6 Appendix: Indifference Curves. In *Principles of Economics*, Global 13, 170–77. Pearson Education.
- Chiangkul, P. (2018). The Degrowth Movement: Alternative Economic Practices and Relevance to Developing Countries. *Alternatives: Global, Local, Political* 43(2): 81-95. <https://doi.org/10.1177/0304375418811763>
- Cobb, C., Halstead, T., & Rowe, J. (1995). *The Genuine Progress Indicator, Summary of data and methodology*. San Francisco, CA, USA: Redefining Progress.
- Cobb, J., & Daly, H. (1994). *For The Common Good: Redirecting the Economy toward Community, the Environment, and a Sustainable Future* (2nd ed.). Beacon Press.
- Commonspoly. (2020, December 4). Commonspoly – Let's Cooperate! Commonspoly. <https://commonspoly.cc/history>
- Cooke, L., Dusenberry, L., & Robinson, J. (2020). Gaming Design Thinking: Wicked Problems, Sufficient Solutions, and the Possibility Space of Games. *Technical Communication Quarterly* 29 (4): 327-340. <http://dx.doi.org/10.1080/10572252.2020.1738555>
- Coote, A., & Goodwin, N. (2010). *The Great Transition: Social Justice and the Core Economy*. New Economics Foundation. https://neweconomics.org/uploads/files/82c90c4bb4d6147dc3_1fm6bxppl.pdf
- De Gloria, A. (2020). About the Journal. *International Journal of Serious Games*. <http://journal.seriousgamesociety.org/~serious/index.php/IJSG/about#journalHistor>.
- De la Rosa, J., & Stodder, J., (2015). On Velocity in Several Complementary Currencies. *International Journal of Community Currency Research* 19: 114–127. <http://dx.doi.org/10.15133/j.ijccr.2015.012>
- de Souza e Silva, A., & Glover-Rijkse, R. (2020). Introduction. In A. de Souza e Silva & R. Glover-Rijkse (Eds.), *Hybrid Play: Crossing Boundaries in Game Design, Players Identities and Play Spaces*. (1-13). Routledge. <http://doi.org/10.4324/9780367855055>

- Demekas, D., & Pierpaolo, G. (2022). Walking a Tightrope: Financial Regulation, Climate Change, and the Transition to a Low-Carbon Economy. *Journal of Financial Regulation*, 8 (2) 203–229.
<https://doi.org/10.1093/jfr/fjac010>
- Diniz, E., Alves, M., Cernev, A., & Nascimento, E. (2014). Digital Social Money Implementation by Grassroots Organizations: Combining Bottom-Up and Top-Down Strategies for Social Innovations. *Proceedings of the 30th EGOS Colloquium, Reimagining, Rethinking, Reshaping: Organizational Scholarship in Unsettled Times*.
<http://dx.doi.org/10.2139/ssrn.2924690>
- Dittmer, K. (2013). Local currencies for purposive degrowth? A quality check of some proposals for changing money-as-usual. *Journal of Cleaner Production* 54: 3-13. <http://dx.doi.org/10.1016/j.jclepro.2013.03.044>
- Dodd, N. (2014). *The Social Life of Money*. Princeton University Press.
- Donovan, T. (2017). 4. The Game of Life: A Journey to the Uniquely American Day of Reckoning: What the Game of Life Tells Us about the Development of U.S. Society. In *It's All a Game: The History of Board Games from Monopoly to Settlers of Catan*, 52–70. St. Martin's Press, Macmillan.
- Douthwaite, R. (1996). 3. Cutting the Monetary Tie. In *Short Circuit: Strengthening Local Economies for Security in an Unstable World*. Dublin: The Lilliput Press in association with Green Books. 60-120.
- Douthwaite, R. (2012). Degrowth and the supply of money in an energy-scarce world. *Ecological Economics*. 84 I: 187-193. <https://doi.org/10.1016/j.ecolecon.2011.03.020>
- DSGVO, (2018, May 25). General Data Protection Regulation. <https://gdpr-info.eu/>
- Durall, J., & Johnson, S. (2011). *Basic Roleplaying: The Chaosium Roleplaying System* (2nd ed.). Chaosium Inc.
- Duval, J. (2010). *Next Generation Democracy: What the Open-Source Revolution Means for Power, Politics, and Change*. Bloomsbury Publishing.
- Eckert, G. (2001). Children's play In Chapter 3 Procedures and Methodological Reflections. In *Wasting Time or Having Fun?: Cultural meanings of children and childhood*. Linköping Studies in Arts and Science Linköping Sweden: Faculty of Arts and Sciences Linköping University. 52-56.
- Edwards, F., & Espelt, R. (2020). Technology for degrowth: Implementing digital platforms for community supported agriculture. In A. Nelson & F. Edwards (Eds.), *Food for Degrowth: Perspectives and Practices* (128-140). Routledge. <https://doi.org/10.4324/9781003004820>
- Eich, S. (2018). Between Justice and Accumulation: Aristotle on Currency and Reciprocity. *Political Theory* 47 (3): 363–90. <https://doi.org/10.1177/0090591718802634>
- Erisman, P. (2015). Alibaba's World. In *Alibaba's World: How a Remarkable Chinese Company Is Changing the Face of Global Business*, 189–213. Pan Macmillan.
- Eskelinen, T. (2020). The Conception of Value in Community Economies. In T. Eskelinen, T. Hirvilammi, & J. Venäläinen (Eds.), *Enacting Community Economies Within a Welfare State* (23-45). Mayfly Books.
- Eskelinen, T., Lakkala, K., & Laakso, M. (2020). Introduction: Utopias and the Revival of Imagination. In T. Eskelinen (Ed.), *The Revival of Political Imagination: Utopia as Methodology* (3–19). Zed Books.
- EU, (2022/2023a). HORIZON 2020 funded project of the European Union called Poverty, Income, and Employment News, abbreviated as PIE News, Grant agreement ID: 687922, Fact Sheet last update 16 August 2022. <https://doi.org/10.3030/687922>

- EU, (2022/2023b). HORIZON 2020 funded project of the European Union called decentraLizEd Data Governance for nExt geneRation internet, abbreviated as LEDGER, Grant agreement ID: 825268, Fact Sheet last update 22 September 2022. <https://doi.org/10.3030/825268>
- Exner, A. (2014). Degrowth and Demonetization: On the Limits of a Non-Capitalist Market Economy. *Capitalism Nature Socialism*. 25(3): 9-27. <https://doi.org/10.1080/10455752.2014.882963>
- Faems, D., Janssens, M., Madhok, A., & Van Looy, B. (2008). Toward An Integrative Perspective on Alliance Governance: Connecting Contract Design, Trust Dynamics, and Contract Application. *Academy of Management Journal* 51 (6): 1053–78. <https://doi.org/10.5465/amj.2008.35732527>
- Farley, J., Burke, M., Flomenhoft, G., Kelly, B., Murray, D. F., Posner, S., Putnam, M., Scanlan, A., & Witham, A. (2013). Monetary and fiscal policies for a finite planet. *Sustainability*. 5(6): 2802-2826. <https://doi.org/10.3390/su5062802>
- Finley, M. I. (1970). Aristotle and Economic Analysis. *Past & Present* 47 (1): 3–25. <https://doi.org/10.1093/past/47.1.3>
- Firth, R. (2019). Afterword. In M. L. Berneri, G. Woodcock, K. S. Robinson, M. S. Adams, & R. Firth (Eds.), *Journey Through Utopia: A Critical Examination of Imagined Worlds in Western Literature* (331-392). PM Press.
- Fontan, J.-M., & Quintas, E. (2007). *Cahiers De L'Action Culturelle: Regards croisés sur la médiation culturelle*. [Exercise books of Cultural Action: Crossed views on cultural mediation]. Laboratoire d'animation et recherche culturelles (LARC). Université du Québec à Montréal Volume 6: 2, Décembre 2007.
- Gavish, Y., Giladi, I., & Ziv, Y. (2019). Partitioning species and environmental diversity in fragmented landscapes: do the alpha, beta and gamma components match? *Biodiversity and Conservation*. 28, 769–786. <https://doi.org/10.1007/s10531-018-01691-7>
- Geisendorf, S. (2022, June 15). Making change possible: Serious Gaming for systemic change [Paper presentation]. 14th Conference of the European Society for Ecological Economics: Will Achilles catch up with the Tortoise?: It's high time for transformative action on sustainability. 14-17 June 2022 Pisa, Italy. Presented at Special Track: Green Games (GG) Promoting Environmental Education Through Game-Based Learning.
- Gentina, E., Tang, T. L. P., & Gu, Q. (2018). Do Parents and Peers Influence Adolescents' Monetary Intelligence and Consumer Ethics? French and Chinese Adolescents and Behavioral Economics. *Journal of Business Ethics*, 151 (1), 115–140. <https://doi.org/10.1007/s10551-016-3206-7>
- Gerber, J.-F., Steppacher, R. (2014). Some Fundamentals of Integral Economics. *World Futures*, 70 (7), 442-463. <https://doi.org/10.1080/02604027.2014.982464>
- Goette, F. (2020). Neco White Paper Version 2.5 (2020 Pre-ICO). Pro Team Investment GmbH. <http://drive.google.com/file/d/1NOfpCmMcSueFOhw5PZQsCG4VSAeVDK6S/view>
- Gómez, G., & Dini, P. (2016). Making sense of a crank case: monetary diversity in Argentina (1999–2003). *Cambridge Journal of Economics*, 40, 1421-1437. <https://doi.org/10.1093/cje/bew034>
- Greco, T. (2001). *Money: Understanding and Creating Alternatives to Legal Tender*. Chelsea Green Publishing Company.

- Greiner, B. (2015). Subject Pool Recruitment Procedures: Organizing Experiments with ORSEE. *Journal of the Economic Science Association* 1 (1): 114–25. <https://doi.org/10.1007/s40881-015-0004-4>
- Griesbaber, S., & McArdle, F. (2010). *The Trouble with Play*. McGraw-Hill Education, Open University Press.
- Hannafin, M., Land, S., & Oliver, K. (1999). *Open Learning Environments: Foundations, Methods, and Models*. In C. Reigeluth (Ed.), *Instructional-design theories and models: A new paradigm of instructional theory Volume II* (6:115-140). Lawrence Erlbaum. <https://doi.org/10.4324/9781410603784>
- Hansen, G. D., & Ohanian, L. E. (2016). Chapter 26: Neoclassical Models in Macroeconomics. In J. B. Taylor & H. Uhlig (Eds.), *Handbook of Macroeconomics* (Vol. 2, 2043–2130). Elsevier. <https://doi.org/10.1016/bs.hesmac.2016.04.010>
- Harrison, R., & Schofield, J. (2009). Archaeo-Ethnography, Auto-Archaeology: Introducing Archaeologies of the Contemporary Past. *Archaeologies* 5 (2): 185–209. <https://doi.org/10.1007/s11759-009-9100-5>
- Heath, J. (2009/2010). *Economics Without Illusions: Debunking the Myths of Modern Capitalism*. Broadway Books.
- Hegarty, B. (2015). Attributes of Open Pedagogy: A Model for Using Open Educational Resources. *Educational Technology* 55 (4): 3-13. <https://www.jstor.org/stable/44430383>
- Heyden, C. (2009). *Implementing a Computer Player for Carcassonne* [Master's thesis, Maastricht University]. <https://project.dke.maastrichtuniversity.nl/games/files/msc/MasterThesisCarcassonne.pdf>
- Hicks, D. (2010). The Material-Cultural Turn: Event and Effect. In D. Hicks & M.C. Beaudry, (Eds.), *The Oxford Handbook of Material Culture Studies* (25–98). Oxford University Press, Incorporated. <https://doi.org/10.1093/oxfordhb/9780199218714.013.0002>
- Hileman, G. (2013). *Alternative Currencies: A Historical Survey and Taxonomy*. SSRN, no. Working Paper: 37. <https://doi.org/10.2139/ssrn.2747975>
- Himanen, P. (2010). *The Hacker Ethic: And the Spirit of the Information Age*. Random House.
- Holloway, J. (2010). *Crack Capitalism*. Pluto Press.
- Hornborg, A. (2017). How to turn an ocean liner: a proposal for voluntary degrowth by redesigning money for sustainability, justice, and resilience. *Journal of Political Ecology* 24(1): 623-632. <https://doi.org/10.2458/v24i1.20900>
- Huber, J., & Robertson, J. (2000). *Creating New Money. A Monetary Reform for the Information Age*. New Economics Foundation.
- Hughes, I. (2018). Intelligent gaming: Ian Hughes MBCS, Chair of the BCS Animation and Games Specialist Group, examines how artificial intelligence has been working as an unseen force in the games industry for a number of years. <https://www.bcs.org/articles-opinion-and-research/intelligent-gaming/>
- Jackson, A., Dyson, B., & Hodgson, G. (2013). *The Positive Money Proposal*. <https://nyaekonomiskasystemet.se/wp-content/uploads/2018/02/The-Positive-Money-Proposal-2nd-April-2013.pdf>
- Janghorban, R., Roudsari, R. L., & Taghipour, A. (2014). Skype Interviewing: The New Generation of Online Synchronous Interview in Qualitative Research. *International Journal of Qualitative Studies on Health and Well-Being* 9. <https://doi.org/10.3402/qhw.v9.24152>

- Jiao, L., Jihui, Q., & Xiuli, G. (2020). Research on Art Intervention in Rural Cultural Construction. Proceedings of the 8th International Education, Economics, Social Science, Arts, Sports and Management Engineering Conference, Chengdu (K. S. Cheung Ed.). 869-874. <https://doi.org/10.25236/IEESASM.2020.167>
- Jones, S., (Ed.). (2021). Watch Us Roll: Essays on Actual Play and Performance in Tabletop Role-Playing Games. McFarland.
- Joutsenvirta, M. (2016). A Practice Approach to the Institutionalization of Economic Degrowth. *Ecological Economics* 128: 23–32. <https://doi.org/10/f8s8p4>
- Kallis, G. (2011). In defence of degrowth. *Ecological Economics*. 70 (5): 873-880. <https://doi.org/10.1016/j.ecolecon.2010.12.007>
- Kennedy, M., Lietaer, B. A., & Rogers, J. (2012). Chapter 7: The People and Their Money – Portraits of Regional Currencies. In *People Money: The Promise of Regional Currencies*, 93–194. Triarchy Press Limited.
- Kennedy, R., & Waltzer, J. (2004). *Monopoly: The Story Behind the World's Best-Selling Game* (1st ed.). Layton, UT, USA: Gibbs Smith.
- Kim, S., Song, K., Lockee, B., & Burton, J. (2018). What Is Gamification in Learning and Education? In S. Kim, K. Song, B. Lockee & J. Burton (Eds.), *Gamification in Learning and Education: Enjoy Learning Like Gaming. Advances in Game-Based Learning*. (25–38). Springer. https://doi.org/10.1007/978-3-319-47283-6_4
- Korhonen, J., Honkasalo, A., & Seppälä, J. (2018). Circular Economy: The Concept and Its Limitations. *Ecological Economics* 143: 37–46. <https://doi.org/10.1016/j.ecolecon.2017.06.041>
- Larue, L., Meyer, C., Hudon, M., & Sandberg, J. (2022). The Ethics of Alternative Currencies. *Business Ethics Quarterly*, 1–23. <https://doi.org/10.1017/beq.2021.52>
- Latouche, S. (2007/2009). *Farewell to Growth*. Polity Press: Cambridge.
- . (2017/2018). The Path to Degrowth for a Sustainable Society. In H. Lehmann (Ed.), *Factor X. Eco-Efficiency in Industry and Science* (Vol. 32, 277-284). Springer. https://doi.org/10.1007/978-3-319-50079-9_17
- Lavoie, M., & Zezza, G. (Eds.). (2012). *The Stock-Flow Consistent Approach: Selected Writings of Wynne Godley*. Palgrave Macmillan UK.
- Lawson, T. (2015). A Conception of Social Ontology. In S. Pratten (Ed.), *Social Ontology and Modern Economics* (1st ed, 19–52). *Economics as Social Theory*. Routledge.
- Leijnen, S., Brinkkemper, P., & Bouwer, A. (2015). Generating Game Mechanics in a Model Economy: A MoneyMaker Deluxe Case Study. In. Asilomar Conference Grounds, Pacific Grove, CA, United States: Amsterdam University of Applied Sciences.
- Leister, V., & Frazier, M. (2012, April 18-20). From Local to Global Commons: Applying Ostrom's Key Principles for Sustainable Governance [Paper presentation]. Conference on Earth System Governance: Towards Just and Legitimate Earth System Governance – Addressing Inequalities Conference on Earth Systems Governance, Lund, Sweden.
- Lessem, R., & Schieffer, A. (2010/2016). *Integral Economics*. Routledge. <https://doi.org/10.4324/9781315588926>

- Levitt, S., & List, J. (2007). What Do Laboratory Experiments Measuring Social Preferences Reveal about the Real World? *The Journal of Economic Perspectives*, 21 (2), 153-174. <https://doi.org/10.1257/jep.21.2.153>
- Levitas, R. (2013). *Utopia as Method: The Imaginary Reconstitution of Society*. Palgrave Macmillan UK. <https://doi.org/10.1057/9781137314253>
- Lietaer, B. A., & Dunne, J. (2013). Part II Prosperity: Chapter Four, The Flying Fish – A New Perspective on Money. In *Rethinking Money: How New Currencies Turn Scarcity into Prosperity*. Berrett-Koehler Publishers.
- Mannheim, K. (1929). *Ideologie und Utopie*. [Ideology and Utopia]. Bonn: Cohen.
- Marcuse, H. (1972). *Art and Revolution*. In *Counterrevolution and Revolt*. Beacon Press books. 79-128.
- Martínez-Alier, J., Pascual, U., Vivien, F.-D., & Zaccai, E. (2010). Sustainable de-growth: mapping the context, criticisms and future prospects of an emergent paradigm. *Ecological Economics*. 69 (9): 1741-1747. <https://doi.org/10.1016/j.ecolecon.2010.04.017>
- McLeod, J. (2011, October 19). Dai Fugō / Dai Hinmin. Pagat.com - Card Game Rules. <https://www.pagat.com/climbing/daifugo.html>.
- Meister, A. (1973). *Animateurs et militants*. [Animateurs and activists]. *Esprit*. 424 (5): 1093–1115. <http://www.jstor.org/stable/24262723>
- Minsky, H. P. (1986). *Stabilizing an Unstable Economy: A Twentieth Century Fund Report*. Yale University Press.
- Mishkin, F. (2004). Chapter 3: What is Money? In *The Economics of Money, Banking and Financial Markets* (7th ed., 44–58). Pearson Education.
- Mäkynen, E. (2020). Vain muutaman Pispalan tähden. [Only due to a few Pispala stars] *Pispalainen* 2, 2020: 8-9. https://www.pispala.fi/pispalalainen/pdf/Pispalalainen_2_2020_netti.pdf
- Myrdal, G. (1957). *Economic Theory and Under-Developed Regions*. Gerald Duckworth & Co. Ltd.
- Naqvi, M., & Southgate, J. (2013). Banknotes, Local Currencies and Central Bank Objectives. *Bank of England Quarterly Bulletin* Q4: 317–25.
- Nopparalli. (2022, December 8). Puutarha | Taktinen viljely ja kasvatuspeli | Suomi-indiepeli. [Garden | Tactical farming and growing game | Finnish indie game]. [video]. <https://www.youtube.com/watch?v=n9VwdLWxJ2s>
- Norberg-Hodge, H., & Mayo, E. (1996). Foreword. In Richard Douthwaite, *Short Circuit: Strengthening Local Economies for Security in an Unstable World*. Dublin: The Lilliput Press in association with Green Books. vii-x.
- North, P. (2007). *Money and Liberation: The Micropolitics of Alternative Currency Movements*. University of Minnesota Press.
- Nørgård, J. (2013). Happy degrowth through more amateur economy. *Journal of Cleaner Production*, 38, 61-70. <https://doi.org/10.1016/j.jclepro.2011.12.006>
- Ntounis, N., & Bailey, J. (2018, September 26). CounterCoin and Cultural Squatters in Newcastle-Under-Lyme. Institute of Place Management (IPM). <http://blog.placemanagement.org/2018/09/26/countercoin/>

- Palley, T. (2023). Theorizing Varieties of Capitalism: economics and the fallacy that 'there is no alternative (TINA)' In T. Palley, E. P. Caldentey, & M. Vernengo (Eds.), *Varieties of Capitalism: Second generation perspectives* (1-38). Edward Elgar. <https://doi.org/10.4337/9781035312757>
- Paterson, A. G. (2016, September 14). Pixelache | About Pixelache. Helsinki: Pixelache. <https://www.pixelache.ac/pages/about> & <http://www.webcitation.org/6njfUFs7b>
- Peterson, J. (2012). *Playing at the World: A History of Simulating Wars, People and Fantastic Adventures, from Chess to Role-Playing Games* (2nd ed.). Unreason Press.
- Petz, M. (2022). NomadTown, manifesting the global village hypothesis: a case study of a rural resilience hub within an educational milieu in North Karelia, Finland. *European Countryside* 14 (1). <https://doi.org/10.2478/euco-2022-0010>
- Petz, M., & Eskelinen, T. (2019). Sysmä community currency: an analysis of its success from the perspectives of purposes, stakeholders and promotion. *European Countryside* 11 (3): 417-442. <https://doi.org/10.2478/euco-2019-0024>
- Petz, M., & Eskelinen, T. (2022). The politics of money utopias: methodological utopian explorations of the Banjar and the Neocracy. *International Journal of Community Currency Research* 26 (1): 1-21. <http://dx.doi.org/10.15133/j.ijccr.2022.001>
- Pilarski, J. (2019). *The Rise and Fall of Georgist Economic Thinking*, Working Paper No. 40. Portland State University Economics Working Papers, December, i + 16 pages. <https://archives.pdx.edu/ds/psu/32406>
- Popper, K. (1945). *The Open Society and Its Enemies*. Vol. 1. The Age of Plato. Routledge.
- Positive Money. 2013. Impacts on positive money reforms on environment. <https://positivemoney.org/2013/11/impacts-of-positive-money-reforms-on-environment/>
- Pritchard, D. (2007). *The Encyclopedia of Chess Variants* (2nd ed.). John Beasley (Ed.). Biddles Ltd.
- Ramaswamy, V., & Gouillart, F. (2010). Building the Co-Creative Enterprise. *Harvard Business Review* October: 2-9.
- Robertson, J. (2012). *Future Money: Breakdown or Breakthrough?* Green Books.
- Schumpeter, J. A. (1943/1994). *Capitalism, Socialism and Democracy*. Routledge. 82–83.
- Scott Cato, M., & Suárez, M. (2012). Stroud pounds: A local currency to map, measure and strengthen the local economy. *International Journal of Community Currency Research* 16 (D): 106–115. <https://doi.org/10.15133/j.ijccr.2012.017>
- Siembieda, K. (2002). *Rifts: Dark Conversions*. Palladium Books.
- Simpson, I. (2016). "If I'm Not a Ship, I'm a Boat That Could Be": Seasteading and the Post-Social Political Imagination [Master's thesis, Concordia University]. https://spectrum.library.concordia.ca/id/eprint/981163/1/Simpson_MA_S2016.pdf
- Smith, L., & Akagawa, N. (2008). *Intangible Heritage*. Routledge.
- Sorgner, H. (2017). *Economics in the Laboratory: A Case Study on Epistemic Practices and Valuations in Experimental Economics* [Master's thesis, University of Vienna]. <https://doi.org/10.25365/thesis.46581>

- Srinivas, S. S. (2020). A new narrative: engaging with sustainability in the fashion industry. A discussion paper
New Delhi: Social and Political Research Foundation <https://sprf.in/engaging-with-sustainability-in-the-fast-fashion-industry-2/>.
- Steen, A. (1993). Deregulation (No. 2) House of Commons Debate 22 June 1993 (227)cc172-4.
<http://hansard.millbanksystems.com/commons/1993/jun/22/deregulation-no-2>
- Stevens, B. (2020, August 3). How to make money in Adopt Me on Roblox. Entertainment Focus.
<https://entertainment-focus.com/2020/08/03/how-to-make-money-in-adopt-me-on-roblox/>
- Swansen, H. E. (2016). Milton Bradley's Game of Life: Constructing a National Narrative through Board Game Analysis [Bachelor's thesis, Pennsylvania State University].
https://honors.libraries.psu.edu/files/final_submissions/3726
- Szakály, Z., Pető, K., Popp, J., & Jasák, H. (2015). The Characteristics of the LOHAS Segment, the Consumer Group Which Is Devoted to Sustainable Consumption. *Táplálkozásmarketing* 2 (July): 3–10.
<https://doi.org/10.20494/TM/2/1>
- Tarratt, E. (2012, July 21). Pretender to the Throne- Historical Editions About. Retrieved 22.2.2023. from
<https://www.facebook.com/Pretender-to-the-Throne-Historical-Editions-162098407259413/about/>
- T&A Reporters. (2021, June 17). Bradford Residents Urged to Join Groundbreaking "citizen Coin" Scheme to Get Rewards for Volunteering. *Telegraph & Argus*.
<https://www.thetelegraphandargus.co.uk/news/19376451.bradford-residents-urged-join-groundbreaking-citizen-coin-scheme-get-rewards-volunteering/>
- Teli, M., Lyle, P., & Sciannamblo, M. (2018). Institutioning the Common: The Case of Commonfare. *Proceedings of the 15th Participatory Design Conference: Full Papers Vol.1(6)*, 1–11. Association for Computing Machinery. <https://doi.org/10.1145/3210586.3210590>
- Thompson, E. (2022). *Escape From Model Land: How mathematical models can lead us astray and what we can do about it*. Hatchette UK Ltd.
- UoJ. (2022). Research ethics. 30.9.2022. University of Jyväskylä. <https://www.jyu.fi/en/research/doctoral-studies/guide/ethics>
- Uplift Game Support. (2023, April 28). Can I Cross Trade? <https://upliftgames.helpshift.com/hc/en/3-adopt-me/faq/15-can-i-cross-trade/>
- Ussher, L., Ebert, L., Gómez, G. M., & Ruddick, W. O. (2021). Complementary Currencies for Humanitarian Aid. *Journal of Risk and Financial Management* 14 (11): 557. <https://doi.org/10.3390/jrfm14110557>
- Varese, F., Wang, P., & Wong, R. (2019). 'Why Should I Trust You With My Money?': Credible Commitments in the Informal Economy in China. *British Journal of Criminology* 59 (3): 594-613.
<https://doi.org/10.1093/bjc/azy061>
- Victor, P. A. (2012). Growth, Degrowth and Climate Change: A Scenario Analysis. *Ecological Economics* 84: 206–12. <https://doi.org/10/bwr6n5>
- Vickery, J. (2019). *Creative and cultural spillovers : an e-Compendium of project publications (2015-2018)*. Dortmund: European centre for creative economy.

- Videira, N., Antunes, P., & Santos, R. (2017). Engaging Stakeholders in Environmental and Sustainability Decisions with Participatory System Dynamics Modeling. In S. Gray, M. Paolisso, R. Jordan, R. & S. Gray (Eds.) *Environmental Modeling with Stakeholders*. (241-265). Springer. https://doi.org/10.1007/978-3-319-25053-3_12
- von Ahn, L., & Dabbish, L. (2008). Designing games with a purpose. *Communications of the Association for Computing Machinery* 51 (8). 57-67. <https://doi.org/10.1145/1378704.1378719>
- Weick, K. (1988). Enacted Sensemaking in Crisis Situations. *Journal of Management Studies* 25 (4): 305-317. <https://doi.org/10.1111/j.1467-6486.1988.tb00039.x>
- Winnicott, D. (1971/1989). *Playing & Reality*. Routledge.
- Wright, E. O. (2010). *Envisioning Real Utopias* (1st ed.). Verso.
- Yamagishi, T., Li, Y., Takagishi, H., Matsumoto, Y., & Kiyonari, T. (2014). In Search of Homo Economicus. *Psychological Science* 25 (9): 1699–1711. <https://doi.org/10.1177/0956797614538065>
- Yapp, M. (2001). The Legend of the Great Game. *Proceedings of the British Academy* 111: 179–98.
- Yin, R. (2018). *Case Study Research and Applications: Design and Methods* (6th ed.). SAGE Publications.
- Yoshida, M., & Kobayashi, S. (2018). Using Simulation and Gaming to Design a Community Currency System. *International Journal of Community Currency Research* 22 (Winter): 132–44. <http://dx.doi.org/10.15133/j.ijccr.2018.011>
- Zelizer, V. (2000). Fine tuning the Zelizer view. *Economy and Society*, 29 (3), 383–389. <https://doi.org/10.1080/03085140050084570>
- ZEMOS98. (2019a, June 7). About - ZEMOS98. ZEMOS98. <http://zemos98.org/en/about/>
- . (2019b, June 7). Commonspoly. ZEMOS98. http://zemos98.org/en/portfolio_page/commonspoly/.
- Zitter, I., & Hoeve, A. (2012). OECD Education Working Papers No. 81: Hybrid Learning Environments: Merging Learning and Work Processes to Facilitate Knowledge Integration and Transitions. <https://dx.doi.org/10.1787/5k97785xwdfv-en>
- Zubrin, R. (2018). The Economic Viability of Mars Colonization. In T. James (Ed.), *Deep Space Commodities: Exploration, Production and Trading* (159–80). Springer. https://doi.org/10.1007/978-3-319-90303-3_12

Image credits

- Image 1. Bonelli, F. 2018. *Helsinki Oma Maa Community Building Workshop* [Photo]. Trasformatório. CC BY-NC-SA 4.0.
- Image 2. Rovida, R. 2020. *2020 LGJ-DIY* [Video]. Trasformatório. (<https://vimeo.com/477278036>). CC BY-NC-SA 4.0.
- Image 3. Chiaudano, L. 2016. *Go Stones* [Photo]. Trasformatório. CC BY-NC-SA 4.0.
- Image 4. Le Gran Jeu 2016. 2016. *Le Gran Jeu 2016* [Photo]. Trasformatório. CC BY-NC-SA 4.0.
- Image 5. Le Gran Jeu 2016. 2018. *Fredd & Raffa legrandjeu.net 2018 Slide 7* [Slide 7]. Trasformatio. CC BY-NC-SA 4.0.
- Image 6. Chiaudano, L. 2016. *Le Grand Jeu event cards*. [Photo]. Trasformatório. CC BY-NC-SA 4.0.

Image 7. Le Grand Jeu Fusion. 2020. *Fusion Playbook General Events Table, Page 38* [Photo]. Trasformatório. CC BY-NC-SA 4.0.

Image 8. Bonelli, F. 2018. *La Ruota – Wheel of Fortune* [Photo]. Trasformatório. CC BY-NC-SA 4.0.

Image 9. Bonelli, F. 2018. *I bari* [Photo]. Trasformatório. (<https://vimeo.com/397732826>). CC BY-NC-SA 4.0.

Image 10. Bonelli, F. 2018. *Taipei ROC* [Photo]. Trasformatório. CC BY-NC-SA 4.0.

Image 11. LGJ Venice. 2016. *Gameplay* [Photo]. Trasformatório. CC BY-NC-SA 4.0.

Image 12a.b.c. Le Gran Jeu 2019. 2020. *LGI-2020 MUNCHEN* [Video]. Trasformatório. (<https://vimeo.com/376314936>). CC BY-NC-SA 4.0.

Image 13. Nopparalli. (2022, December 8). *Puutarha | Taktinen viljely ja kasvatuspeli | Suomi-indiepeli.* [Garden | Tactical farming and growing game | Finnish indie game]. [video]. <https://www.youtube.com/watch?v=n9VwdLWxJ2s> Copyright 2022 by Nopparalli. Reprinted with permission from Tommi Sirén, Nopparalli.

The authors

Marcus Petz' expertise is in Public and Social Policy. He defended his doctoral thesis on Community Currencies in 2023 at the University of Jyväskylä. He takes an integral economics perspective and has engaged in activism, networking, and gaming. His main interests are around the Great Transition, resilience building and effective networking. Petz has around 20 publications. He regularly games at The Church of Jesus Christ of Latter-day Saints in Tampere weekly open sessions.

Teppo Eskelinen is a Senior Lecturer in Social Sciences at the University of Eastern Finland. He obtained his doctoral degree in philosophy in 2009. Since then, he has worked in the fields of social and public policy, global development studies, and general social science. His main fields of research are political economy and global justice broadly understood, along with sustainability, economic alternatives, and radical democracy theory. Eskelinen has published over 50 research articles, as well as monographs and edited books.

Federico Bonelli, (aka fredd) was born in Rome in 1969, currently lives in Amsterdam (NL), and works as the Director and Creative Producer for Media Rich Projects and Film. He has been into media-rich projects since 1997, after gaining a degree with honours in the Philosophy of Science with a thesis on the impact of non-linear systems and chaos in epistemology. As an independent researcher, Federico now directs the Trasformatório Laboratory and has founded the Trasformatório Foundation (<https://do.trasformatorio.net>). He worked alongside others as a freelance consultant for the Next Generation Internet EU projects Decode and LEDGER. His visual work includes generative art, film, sound, and creative production for unconventional media-rich projects. He is one of the game designers of Le Grand Jeu.