Cultural Festivals in the Age of Blockchain: Economic and Social Models for Festival Support and Community Engagement

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Abstract

Blockchain technology holds interesting possibilities for building novel financial structures around cultural festivals. In this paper we build a conceptual framework for blockchain-enabled systems of community governance, risk-pooling, and resource-sharing. We model this framework around the challenges faced by two festivals that closed: City Stages, a music festival held around a large downtown park in Birmingham, Alabama, from 1989-2009, and CMJ Music Marathon, a music festival and conference held across locations within New York City from 1980 to 2015. We focus on difficulties including seasonality, pressure and uncertainty around annual fundraising, gaps between planning and fundraising timelines, and year-to-year fluctuations in revenue. Our conceptual framework could be implemented to create festival networks around blockchain investment trusts and token structures to better support the capacity of these festivals to bring whole communities together, to create career-making venues for musicians, and to build economic development as well as social inclusion.

Keywords

Blockchain, cultural festivals, investment trusts, spatial web, community economic development

In August 1969, the original Woodstock music festival was held in Bethel, New York. The now legendary event connected local people and visitors in a community in which they were all participants. More than fifty years later, we propose that, counterintuitively, new blockchain-enabled technologies can support music, arts, and other cultural festivals by creating dynamic, collaborative funding models that have not existed before. Blockchain is a distributed ledger that allows decentralized trust in information and thus new structural tools for creating cooperative networks of festival organizers. We describe the

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technological applications later in this paper. These models can smooth earnings year over year, support cooperative lending across networks of festivals, formalize philanthropy through token structures, and build community investment trusts, as part of the outgrowth of arts festivals' more general contribution to community engagement (Ellis 2018). We present three conceptual frameworks that escalate in complexity from community tokens to community investment trusts issuing wholly new currencies.

We root this theoretical framework in the well-studied economic challenges of performing and fine art production (Abbing 2002; Baumol & Bowen 1966). Baumol and Bowen (1966) identified "cost disease" as the tendency of performing arts organizations never to get cheaper but in fact more expensive to run over time (cf. Besharov 2005; Towse 1997; Cohen 1996). These organizations never achieve economies of scale (Chandler 1994) because they do not produce the same events in bulk, leading to cheaper costs of production, but instead are always mounting new productions or planning new programming. Fernández-Blanco et al. (2019) make this point empirically in a study of municipal theaters in Warsaw, Poland. While the authors do find that some cost savings may be possible without sacrificing artistic quality—7% possible savings in their study (Fernández-Blanco et al 2019: 113)—they also found that developing new performances cost 3.33 times as much as staging works that they had already created and workshopped (Fernández-Blanco et al. 2019: 114). This study echo the effects Baumol and Bowen (1966) originally found that economies of scale are categorically elusive in performing arts.

As Whitaker (2021a) has explored in the context of arts incubators, economics of scope—that is, those advantages brought about through joint production (Chandler 1994)—may be more attainable in the arts. Whitaker argues that artists' incubators could achieve these benefits in the economic form of joint production (Chandler 1994) *or* in the financial form of risk-pooling (Markowitz 1952). This logic of shared resources and collectivization of risk is, in this paper, applied to networks of cultural festivals. The significance of this application to theory-building is that festivals have different footprints than artists' incubators. While incubators can aim to create robust culture in urban areas, the effects are more indirect, for instance, championing makers to further their idiosyncratic and original creative productions, rather than, as in the case of festivals, offering programming directly to the public. Still, the same model of network—whether federation or resource-sharing network (Whitaker 2021a)—underlies the conceptual models drawn here from festival case studies.

This application of economies of scope to creative industries (Caves 2000; Whitaker 2021a) relates to academic studies of agglomeration, that is, the benefits that accrue to creative producers from co-location in urban areas. Coll-Martínez (2019) and Coll-Martínez et al. (2019) have found these positive effects of agglomeration across creative industries in Barcelona. Borowiecki (2015) has found similar among classical music producers in Europe in the eighteenth and nineteenth centuries, while Borowiecki and Dahl (2021) have found these effects in the United States since the mid-nineteenth century. Studies of agglomeration have generally found positive network effects up to a critical threshold of overcrowding of talent, echoing the more applied strategy frameworks of "co-opetition"—the combination of competitive and also cooperative strategies—put forward by Brandenburger and Nalebuff (2020). This work in agglomeration also echoes work on geographies of scope and the relationship of creative clusters to economic development

(cf. Florida 2014; Florida et al. 2012) and the shaping of neighborhoods around cultural districts (Noonan 2013).

In order to draw a theoretical framework from case studies, we rely methodologically on Yin's (2009) case study method, alongside Siggelkow's (2007) frameworks for generalizability and persuasion in case-study research methods. We especially draw on Eisenhardt and Graebner (2007) concept of "replication logic" and "theoretical sampling" to extract a conceptual model from the distillation of economic and governance mechanics from the festivals we study. As Eisenhardt and Graebner (2007:27) write, "Theoretical sampling simply means that cases are selected because they are particularly suitable for illuminating and ex tending relationships and logic among constructs." In this sense, we specifically choose two festivals that closed for economic reasons so that we may extract an understanding of the mechanics of why they failed and how that failure could be structurally prevented through these models of economies of scope and risk-pooling. Given the geographic logic of festivals, we especially consider blockchain-related governance structures.

The particular nature of blockchain as a distributed, append-only public bulletin board (Bonneau 2021) supports development of new cooperative structures because the distributed ledger enables trust in information without trust in a central authority. The ledger is kept in decentralized fashion by incentivizing miners to solve puzzles to verify the blocks of information ("transactions") as they are added to the chain. The mining—originally of bitcoins—led to the development of tokens, which are essentially digital smart contracts defining unique assets. These assets could be digital images such as the cats depicted in Cryptokitties, or the assets can be imageless contracts recorded on the blockchain. Tokens can tangibly—if in a digital sense also intangibly—represent donations to festivals. They can also be used to manage and track flows of money. For instance, small percentages of hotel or other tourism revenue can be sent directly to a festival instead of to a tourism bureau that then distributes it to festivals. Speculatively, tokens can also be used to issue new currencies to whole communities, tracking and sharing value that way.

In order to explore these blockchain structures, we investigate three distinct case studies: CMJ Music Marathon in New York City; City Stages Music Festival, in Birmingham, Alabama. We explore the ways in which blockchain structures can help to address significant challenges of seasonality while capturing the essence of what festivals contribute. We argue that the transparent accounting and fractional ownership structures of blockchain can usher in a new era of collaborative and shared economic support for cultural festivals.

In proposing new conceptual model for using blockchain technology, we ask how blockchain technology can not only address challenges but enable radical models of collective ownership of festivals recognizing them as both social and economic networks (Gallelli, 2016). These investment trusts, referred to as "community mutual trusts" (CMTs), can create sustainability in managing the demands of annual fundraising. They can also distribute value across the network of festivals stakeholders. This is done by using "smart contracts," or computer programs that self-execute contract terms. In addition, smart contracts can be combined to create governance agreements across groups of people or organizations. These groups of smart contracts, each called a "decentralized autonomous organization" or DAO, allows the creation of the community investment trust. For

example, a consortium of festivals could agree to place a portion of their proceeds in the community mutual trust so that if there were surplus funds and a festival in need, those proceeds could be voted—by the collective members—and recorded by the public ledger of blockchain. CMTs can also help smooth demand for annual fundraising by pledging or guaranteeing support of individual festivals that suffer from short-term funding gaps or the time lag between needing to commit to a contract for planning purposes and knowing the outcome of a civic, philanthropic, or sponsorship decision for festival financial support.

We apply leading-edge blockchain use cases involving Bitcoin and Ethereum (token) protocols, as well as new "Spatial Contract" protocols for blockchain that may be uniquely applicable by leveraging location-based information. Especially given the difficulty in valuing the intangible cultural capital of festivals (del Barrio et al., 2012), investment trust models can be helpful. The "Spatial Contract" and other aspects of blockchain may appear overly technical but essentially take a new distributed ledger technology and allow it to map a geographic area. The core ideas of blockchain itself—the way of registering contracts and shared governance structures—is the core application to allow groups of cultural festivals to enter into collaborative governance and mutual support. We also include these more speculative "spatial" proposals because they are rapidly developing and could, in time, add even more meaningful options for support to festival organizers.

While the number of festivals has increased (Baez-Montenegro & Devesa-Fernandez, 2017), the pressures of seasonality and collaboration continue (Abfalter et al., 2012). These new theoretical models offer tools for sustainable funding and community governance (Yermack, 2017a, 2017b). The collective ownership in the community mutual trust incentivizes local participation and involves people as direct stakeholders, creating positive feedback loops and a more direct connection to sustained community benefits.

I. Case Studies

We begin by sketching the two core case studies so that we may draw on these stories to build an analysis of stakeholders. We note that the two music festivals—City Stages and CMJ—closed for budgetary reasons. Although it is difficult to measure the benefit of community benefit (Noonan 2003), these two festivals, according to our interviews, provided substantial community benefit. We do not set out to prove that benefit by quantitative method but rather to name categories of activity that the reader can deem of benefit, including access to live music and entertainment, tourist revenue for cities, and in the case of CMJ especially recording contracts for performers. Both institutions faced cost and fundraising challenges, many of which were structural with regard to the funding of public support, not the failure of revenue to cover cost.

These case studies are drawn on in-depth interviews with the managers and founders, as well as consideration of primary and secondary materials about these festivals.

City Stages (1989-2009)

City Stages was a music festival founded in Birmingham, Alabama, by George McMillan, Jr, an attorney and former Lieutenant Governor of Alabama.[2] In 1989, McMillan launched the outdoor music festival held annually in Linn Park in downtown Birmingham. City Stages occurred annually until 2009 when the festival announced it would be closing for financial reasons. Run under a U.S. 501(c)3 called the Birmingham Cultural & Heritage Foundation (Colurso 2009), the festival raised funds annually from a combination of city, county, state, and non-profit organizations and foundations that would be common to music festivals across many cities in the United States. In addition to governments, these included the Chamber of Commerce and economic development entities such as the Alabama State Department of Tourism and the Economic Development Partnership of Alabama.

As part of the original agreement with the City of Birmingham, City Stages was not permitted to create an endowment or to keep any net assets in order to fund future years. By this agreement, in the first few years of the festival when City Stages ran a surplus in the $100,000 to $200,000 range, they donated those funds to other non-profits operating in the City of Birmingham. Over those years, the festival funded programs such as "Americorp In-Tune," the Birmingham Repertory Theatre Company, and music scholarships for high school seniors, to name a few.

As McMillan said, City Stages was an event that brought the entire community of Birmingham together. Attendance at the festival represented the demographics of the city however sliced: gender, race, socioeconomics, sexual orientation, family structure. The tickets were intentionally priced at non-prohibitive levels. McMillan estimates that the real cost of a weekend pass would have been north of $150. The highest weekend pass ever sold hovered around $50, and ticket prices started at the $5 to $10 level. Birmingham hosts numerous events that bring large crowds or that are successful by general economic metrics. These events include college football rivalries, for instance. But City Stages was arguably alone in its diversity reach, particularly in a city with one of the worst histories of segregation and civil rights in the United States. In fact, City States has been cited as a major catalyst in bringing people together in the heart of the City Center of Birmingham, which has contributed meaningfully to the broader revitalization in the core of downtown Birmingham. Yet in 2007, City Stages announced that it was running a deficit in the hundreds of thousands of dollars, and then approaching $1 million on a $2.25 million annual budget. The festival ceased operations in 2009.

Over its twenty-year arc, some of the most important outcomes were the least measurable. McMillan cites these outcomes, saying, "Communities need pride and the opportunity to rub shoulders with people with whom they may not usually engage, nor for whom they might have a normal affinity." In order to create the circumstance for that

[2] McMillan served as the 23rd Lieutenant Governor from 1979 to 1983. He ran for Governor in 1982 and was narrowly (less than 1 percentage point) defeated by George Wallace, the infamous segregationist, in the Democratic primary. McMillan also served in the State House of Representatives and the State Senate and practiced law for over forty years, for sixteen of those years as a partner in the firm McMillan & Spratling (https://mcmillanmediation.com/about-us/). McMillan has founded and been involved in other community festivals including Cruisin' the Coast on the Mississippi Gulf Coast, which celebrated its 23rd anniversary in 2019. That festival appeals to certain groups of people, including classic car collectors. McCullough is currently a principal consultant in the firm Clarus. Throughout, based on personal author communication (interviews) with George McMillan and Kristie McCullough, October 2019).

community interaction, each year in June (usually on Father's Day weekend), the festival would take place. The festival would typically close its books around the middle of August and then in September or October start the annual cycle of going to the various funding agencies. The funding was integral and highly uncertain. The agencies, individual foundations, corporations offering sponsorship, and governments often wanted to support the festival but did not have the funds.

As is commonly understood across grant-getting, it can be increasingly difficult to raise funds for operating expense year over year. Nonprofit organizations are often stuck in a window between needing a track record, on the one hand, and needing to seem new and exciting on the other. The grants awarded to City Stages often amounted to $5,000 to $10,000 or $25,000 to $35,000. For a budget in the $2 million range, and a business model for which about half of revenue was earned and half gained through donations and sponsorships, the fundraising process was extremely important. One can see how easy it would be to fall into a $100,000 shortfall in any given year, simply by one prior major sponsor choosing not to renew their sponsorship. And because of the original arrangement with the city, the festival did not have a residual fund that it could tap to smooth these cycles. In addition, the contingency of the funding made programming hard. The festival was in a position of needing to book talent before all of its funding was known, fronting risk and making trade-offs that might not have ultimately been necessary, in a more stable funding scenario. This issue of seasonality and cyclicality is common across many festivals. Perhaps the model was in need of reimagination. As McMillan said, "If you're going to have a community-based event—that brings the community together as a whole—it has to have an economic foundation that is different from a concert down the street at the Lyric."

City Stages also depended on a mostly volunteer workforce. The task of managing volunteers is challenging, and the festival also gave away many complementary tickets to volunteers and their families. Kristie McCullough, the former Executive Director of City Stages, noted this volunteer dynamic as a core challenge--and also an embodiment of how amazing festivals are at bringing communities together. As McCullough said, many people would take a week's vacation to work on the festival. Many became lifelong friends.[3]

CMJ

CMJ, which takes its name from *College Media Journal,* was founded by Robert Haber in his student days at Brandeis in the late 1970s. Haber then developed CMJ into a music marathon that took root in New York City in 1980 and 1981. Haber had, in 1978, founded the namesake publication, a twice-monthly newsletter circulated to college radio stations which paid annual membership in the low hundreds of dollars. The CMJ Music Marathon ran from 1980 through 2015. Keith Garde, former co-manager of the band Aerosmith, worked with CMJ management in the last years of its life. The festival did not continue after encountering severe financial difficulties despite drawing 125,000 attendees and creating many opportunities for emerging artists over many years. CMJ became a hybrid conference and music festival over five days. In our understanding, the festival kept its integrity and the heart of focus on music, discovering and curating emerging talent. As such, the festival had a profound commercial impact on musicians' careers, and by

[3] Personal communication with McCullough, October 2019.

extension the livelihoods and professional successes of managers, music publishers, and others in the business. As Garde described it, one year you would see "Stephanie" on stage at CMJ and the next year she would be Lady Gaga playing arenas.

Garde had known Haber, the founder of CMJ, for many years but was formally introduced by a business professional they knew in common. Garde was given the understanding that CMJ was having some troubles and they were "shopping for help." Many of CMJ's venues had been in lower Manhattan, including around the New York University campus. Given the festival's timing in early autumn, they lost a fortune in September 2001. The festival was already in some financial distress. It had been acquired during the first dot-com boom and an attempted expansion had not been successful and Haber was left with a CMJ in considerable debt.

Hard to conceptualize just as a festival, CMJ was aptly described by Brad Nelson as "music's fashion week" (2014). CMJ's longstanding success as an organization stemmed from an analog world of mailing newsletters and magazines to subscribing college radio stations; subscription sales of college radio-play data to music entertainment companies; conference booth sales; conference and music festival attendee badge sales. The festival experienced a gap between its history and resources and its digital footprint and marketing strategies. As Garde observed, there was a "shift in how music was being delivered and consumed. Analog dollars were not being replaced by digital pennies. You either learned how to make the shift to the digital age or you were going to go away."[4]

CMJ was hosting a vast array of cutting-edge music events, while also maintaining a network across 400 colleges. At its peak, the festival comprised 1,200 acts across eighty New York City venues and representation from over thirty-five countries (Nelson 2016). The events in New York were so ubiquitous that many people seemed to attend them without necessarily knowing they were attending a CMJ event. Yet within the music industry, the forms of value generated by the festival were not captured by CMJ. Musical careers were made, contracts signed, future financial successes consummated. CMJ made that work happen, and also brought tourist revenue, but its business operations, communications and engagement tools were outdated and insufficient keeping CMJ from benefiting financially from the community it had built and the rewards it generated. One can begin, as we will, to consider how CMJ might have fared better in 2001 if given some of the blockchain funding options.

Observationally, the problem was raising funds for the festival every year. There was cash flow risk, programming risk, and grant- and sponsorship-getting risk. At the same time, the festival was generating value for the community and the industry every year without being able to capture that value. City Stages, in its own way, shared this challenge. The ability to capture this value and to better predict fundraising revenues can be remedied with token, fund and shared value trusts. That is to say, the features of blockchain can enable a smoothing of financial flows, token or trust could be supported by the relatively stable roster of stakeholders, including: local businesses, record labels, music goers, universities and other radio entities, fans, lawyers, critics, agents and any other of the consumers, producers, and investors in music.

[4] Personal communication, October 2019.

Theoretically, the problem was reconciling the difficulty of forecasting success. CMJ was a vehicle for the discovery of music. Discovery is difficult to shoehorn into an economic model based on consumption. Discovery is easier to represent by investment terms. This structural difficulty is endemic to creative work across many domains. As Whitaker has proposed conceptually (2016) and investigated empirically (Whitaker & Kräussl 2020), if one is making a work of art in any field, one is not going from a known point A to a known point B but *inventing point B.* One is asked to invest resources in the point A world but one does not know value or success until the point B world. Thus, a price set in the point A world is unlikely to carry an accurate sense of value that might be known in the point B world. For instance, a ticket sale to a venue at CMJ does not capture the value created in the Stephanie-to-Lady-Gaga arc that the event creates. It may be that the festival would not want to take equity stakes in music acts. That might be onerously complex contractually. At the same time, blockchain may make such a system easier.

In addition, blockchain may be able to manage for the forms of value that also happen in the point A world. These include the cultural tourism impact to restaurants and hotels, as well as the venue ticket charges. We investigate ways in which community investment trusts could approach both of these problems—the capture of positive externalities in the point A world and the alignment of value creation artistically in the as yet revealed point B world. Foremost, CMJ is a network of relationships and an ecosystem—organism even—in its own right. As Garde observed, "Each one of those participants can provide value and wants to derive value—giving and receiving." One can track and observe these energy flows generally or specifically and then choose whether to map them financially or to support them sustainably. Reverence for the creative process is earned, as is respect for the necessity of financial stability from which that creative risk can safely cantilever.

II. Festivals as Economic Models

Many of these festivals have a common economic structure of ongoing annual fundraising to cover costs of production. The model is based on cost—which is to say the economics of consumption—rather than investment and stakeholding. The festivals tend not to carry forward large budgets from prior years, and tend to operate with a degree of precarity or marginality, meaning they could raise substantial sums of money with great success but still fall $100,000 short or be exposed to systemic risks such as the 2008 financial crisis (City Stages) and September 11, 2001 (CMJ).

Festivals, like museums and public artworks, are from an economic standpoint public goods, or quasi-public goods (Whitaker 2021b). A public good is defined by being nonrivalrous and nonexcludable. Festivals can charge tickets to exclude people, making them only quasi-public goods, but they are non-rivalrous in that many people can enjoy them at once and non-excludable to the extent passersby can hear music without purchasing a ticket. In the case of many public goods, such as museums, scholars and practitioners have undertaken to measure their impact in other terms. Economists have developed contingent valuation methods (CVM) to estimate the value of public goods through survey methods (Noonan 2003; Sanz 2003). Economic development studies consider indirect measures such as changes in employment rates, real estate occupancy rates, cost per square foot, estimations of job creation, and impact of spending in hotels, restaurants, and other city sources of private and tax-related revenue. Festivals are evaluated for impact empirically using economic development indicators that are well developed (Del Barrio et

al. 2012; Esu et al. 2011; Gibson et al. 2010). Studies of cultural heritage (De Carlo & Dubini 2010) and theories of the general difficulties of valuing culture (cf. Klamer 1997) complement our understanding of festivals and other arts attractions.

Adding to the challenges of festival funding—and economic modeling—is the seasonality of many festivals (Abfalter et al., 2012). Many festivals tend to occur at a certain point in time each year. The management tends to operate on an annual schedule of fundraising, promotion, and planning. While music recording itself may at least be perceived as money-making (Montoro-Pons & Cuadrado-García 2018), in fact the structural economic difficulties of festival management place them squarely within literatures of performing arts entrepreneurship (Preece 2011), including the connections of entrepreneurialism to sentiments of public ownership (Ragsdale 2017), and the general necessity of entrepreneurial thinking in contexts that lack foreordained public arts funding (Wilkerson 2012).

We extend these models of economic impact to *investment impact.* We begin by asking what would happen if we created various forms of radical community investment trusts around cultural festivals where everyone is a stakeholder. These new blockchain-enabled investment forms can smooth the annual process of funding the festival by creating a pool of capital that accumulates from prior years and can also include local community members in the benefit of the festival.[5] In our framework, the festival can issue FINRA and SEC-approved asset-backed tokens that creates a fundamentally equity- and investment-based, rather than debt-based, intervention in the local economy. These proposals together offer new ways of building decentralized and neighborhood-based financial systems.

Because these models are shared, they may stabilize the ecosystem around funding, as observed in Woronkowicz's study of how capital campaigns destabilize ecosystems of arts funding (2018). A core challenge for festivals is the securing of annual funding and the time frame of funding relative to execution of the festival, especially given the seasonal nature of festivals. The growing preponderance of digital communities changes the in-person nature of the festival. At the same time, festivals drive many forms of value creation for local communities, including financial impact through tourism dollars.

To explore these options in more depth, we first introduce blockchain technology in more depth and explore its application to new spatial internet protocols.

III. Blockchain and Community Investment Trusts

Blockchain is a decentralized, distributed database structure that allows for the certification of information without having to entrust a central authority (Haber & Stornetta 1991; Narayanan et. al. 2016). Cryptocurrencies were created to incentivize "miners" to maintain the distributed copies of the ledger (Nakamoto 2009; Brekke 2019; Bailey 2018; Brunton 2019; Catlow et. al. 2017). In 2014, Vitalik Buterin conceptualized the Ethereum protocol which creates a system of smart-contract-based tokens (Buterin & Obrist 2018). Of those tokens, the ERC-20 is fungible, in the manner of cash. The subsequent ERC-721 defining "Non Fungible Tokens" enables structural forms similar to traditional art investment.

[5] We focus on ownership, but note that some newer blockchain ventures record other aspects. For example POAP, an Ethereum-enabled took, issues non-fungible (ERC-721) tokens based on attendance (POAP, n.d.)

Both Bitcoin and Ethereum protocols are used as the basis of financial, and other kinds of investment trusts, based on property and use (Alt et al. 2017). The company Bitmark uses the Bitcoin protocol to create investment trusts for healthcare data. Patients in clinical studies at universities can own their own medical data, in this trust, and donate it to science or sell it to industry (Bitmark, 2019). The company Decentraland creates a blockchain-based alternative digital universe—like Second Life 2.0—in which developers own and build neighborhoods in a digital world.

Newer, radical protocols for spatial and investment trust models are being developed. The MIT Media Lab City Sciences Research Group and other collaborators have built systems economies that price in externalities (such as environmental damage or, in this case, the cost to local communities of being overrun by tourists visiting for festivals) by creating asset-backed currencies and allocating them on an appreciating basis (Clippinger 2019). These tokenized assets create a hybrid of crowd funding and asset management while also contributing to symbolic capital, for instance in construction of community identity and citizenship (Akoth 2017). This distribution of financial capital also addresses some challenges related to the exclusion of indigenous peoples (Whitford & Dunn 2014) in festival governance and benefit. For instance, in cases where Indigenous populations have had traditional knowledge or local culture extracted (Anderson & Christen 2019; Carroll et al. 2020; Hudson et al. 2016), a community mutual trust could assign property rights to members of the community or to the community overall, creating protective ownership of that knowledge.

Organizations have built similar structures that create potential new models for funding cultural spaces. Metabolic in the Netherlands created De Ceuvel, a playground built on a waste site in Amsterdam that is designed to be a circular living laboratory on a piece of polluted land. Their work there created Spectral Energy, creator of advanced smart grid hardware and software, as collectively owned. We propose from these models that cultural festivals are seasonal ecosystems and that the stocks and flows framework of systems thinking (Meadows 2008) can be adapted to blockchain-enabled investment structures.

The Spatial Web -- A supporting technology platform for blockchain investment trusts

Recent initiatives in spatial blockchain are exemplified and led by Verses.io. The start-up recently developed Location-Based Spatial Contracts for Community Improvement. Often referred to as "Web 3.0", the Spatial Web is based on a new multi-dimensional networking standard called the Hyperspace Transaction Protocol (HSTP), intended as a successor to the Hypertext Transfer Protocol (HTTP). Networking packets on the Spatial Web are structured as "Spatial Contracts" and are developed in a new programming language called the "Hyperspace Programming Language" (HSPL).

The significance of the technology in this context is that enables modeling and representing a community such as one gathered around a festival all through a series of transparent spatial contracts and associated spatial workflows, where money flows can be triggered and optimized in an escrowed context with no counterparty risk. A spatial

contract can include any information about the movements of people or things in space,[6] where, in contrast, the longer standing HTTP protocol has no inherent notion of location.[7]

Furthermore and importantly, on the spatial web, every user and every asset registered has a cryptographic wallet backed by an untraceable security infrastructure that makes correlation of user data across services and domains technically impossible. Spatial contracts can trigger financial transactions among these wallets at any time, such as through the fulfillment of one or more contracts spanning one or more spaces involving one or more parties or assets.

In the festival context, this network of wallets can be structured as a community mutual trust (CMT) from the beginning, with clear dynamic ownership allocation, where as a default starting point, all assets are distributed to the community as a form of algorithmic "commonwealth" to which new assets and users can be registered. The spatial contract flows can manage the distribution of assets to community members, and the consolidation of revenue to the festival, to support funding year over year.

Green Energy and Environmental Tokens as a Model for Festivals

Experimental community trust and shared ownership models are being used increasingly in real estate development projects, which can provide templates and legal precedent for integrating finance around multiple asset classes, revenue streams, and shared ecosystem models. Taurus Investment Holdings, a real estate private equity firm based in Boston, led the development of a large net zero eco community of 7500 eco homes in Whisper Valley, Texas, just outside of Austin (Taurus 2019). Conceived in partnership with numerous companies such as the appliance company Bosch, as well as Google, Tesla, and Shell Energy, Taurus developed a financial model to suit developer, investor, and community members alike (EcoSmart 2018). More specifically, in order to fund the geothermal infrastructure, Taurus created a second mortgage for each home, before any of the homes were built. Those mortgages were then bundled and sold to outside investors in a traditional private equity "club deal" structure. The capital available from that sale then funded the buildout of geothermal infrastructure buildout. After the buildout, when residents moved in, they received a percentage reduction in utility bills anticipated to be upwards of 60% to 70% below average per-capita energy usage in the United States. This foregone energy bill

[6] One might think of an Uber or Lyft ride as a series of interconnected spatial contracts, i.e. pick up this rider with a car at this location and drop them off at this location, or even a mortgage in a similar way, i.e. pay this amount per month and freely enter and exit this location with the ability to invite others to do the same, within certain legally governed constraints. In fact, multiple new models emerging in the real estate market suggest trends in both securitizing real estate and new ways of connecting financial investments across multiple asset classes, namely such as housing, energy, and mobility. For example, Point.com, a Palo Alto-based startup funded by Andreessen Horowitz and others, offers outside investors and funds the ability to invest in a percentage of a homeowner's mortgage, either individually or as securitized bundles. What makes this effort noteworthy in this regard, is that investors only receive a return on the appreciated value of the home after investment, making both the homeowner and the investor stakeholders with shared vested interest in seeing the home go up in value.

[7] HSTP by contrast makes location in space the core of the protocol, and also uses an identity technology called "Self-Sovereign Identity" (SSI) that establishes private identity based on zero-knowledge "Verifiable Proofs" (Sovrin, 2018).

functions as a long-term benefit accruing to the community, particularly around strong long term secondary effects on property values themselves.[8]

The Taurus model connects different asset classes in a unified investment approach that benefits different stakeholders in different ways. This approach has been further developed by MIT Media lab's City Science area through its "CityScope" platform, which allows city planners to model with large data sets across different asset categories (MIT Media Lab, n.d.). Both Taurus and CityScope recognize the interconnection between different asset classes and community service categories and the need to think holistically about overall living environments.

A Community Trust Ecosystem for Festivals

The intention with the community mutual trust model is to synthesize this type of integrated investment model in ways that are repeatable and scalable but also flexible to the needs of specific stakeholders. For a festival, a community mutual trust can plug directly into the existing community financial fabric, while also allowing festival visitors to become stakeholders and investors in the community.

A CMT can be thought of as integrating multiple strands of banking and capital functions within communities including those functions served by credit unions, pension funds, social security, insurance, escrow, and even geopolitical reserve currency "Special Drawing Rights" (International Monetary Fund 2019). These systems can be deployed locally or networked to function regionally or nationally. A special drawing right is a reserve asset in a fixed exchange rate system such as that under Bretton Woods. Furthermore, International Monetary Fund Special Drawing Rights-like instruments can allow for sharing between communities at a fixed above-cost basis (i.e. 5-10%) for adjacent communities, as well as automated equity swaps between stakeholders to increase diversified investment exposure both in terms of asset type and geography. This structure could benefit local communities and also connect festivals in different cities into a network, as discussed in the next section of the paper.

The core idea of a community mutual trust is a membership-based hybrid public-private reserve liquidity pool. Every community member is included in the trust at the outset, but then there are transparent rules about how members can take money--that is, appreciated value--out. In other words, this common pool functions as a single payer community account, governed by a spatial smart contract framework with associated liquidation preferences and options similar to those observed in private equity or venture fund investor payouts. This type of structure significantly de-risks interactions between community members as well as with external parties. Speculatively, some forms of artificial intelligence (AI) could help manage the ecosystem, if designed to be non-discriminatory and inclusive (West et al. 2019).

[8] Another complementary effort, New Haven-based Raise Green, (see http://raisegreen.com), has developed a crowdfunded SEC and FINRA compliant investment model for renewable energy projects such as solar panel installation. This allows small investments from the community, which can then be paired with other risk capital such as from private family offices, which can then be standardized and bundled to become eligible for larger scale tax subsidy and equities (EveryCRSReport.com 2019).

This HSTP location-based protocol can be used to create community mutual trusts that exist in an ecosystem in and across specific physical areas and regions. This shared investment trust model has been investigated in blockchain by the company Bitmark (2019), which creates investment trusts for data in other areas. For example, patients in clinical trials can own their own health data and place it in trust so that they may give the data to research or sell it collectively to pharmaceutical companies.

To apply these ideas one needs to address several key governance questions. First, one needs a mechanism for a *census,* that is, for defining the scope of who participates. Second, one needs a mechanism of equal, equitable, or earned distribution, making sure structural discrimination or inaccurate representation of value is not included in the system at the outset. Third, one needs to mindfully design structures that support people or institutions with cash flow funding or that allow them to accumulate wealth, or both. Those needs will vary with personal and institutional characteristics.

In applying these ideas to festivals, we find that blockchain-based trusts can also be used to price in externalities such as tourism revenue, to create collaborative systems across festival ecosystems in different cities, to smooth earnings and create a year-on-year safety net, and to build investment structures, whether based on future appreciation of music assets or on speculative generation of new models. These models, while technical, hold great promise for the central role of the arts as both vibrant contribution to society and as hub for interdisciplinary problem-solving. The development of these systems is both an art project unto itself and a structure that may be able to support economic sustainability within and across cultural-festival communities.

VI. Managerial Implications

We propose that several levels of blockchain optionality—from simple or foundational to complex and speculative—could energize festivals, stabilize their funding, and connect them with their audiences. We begin by returning to the case of City Stages. As above, the festival ran a surplus the first few years but was not allowed to keep it. Probabalistically, one can imagine all cultural festivals in a country or a region—or in the world—as a portfolio of investment in cultural life. There may be times when the portfolio functions the same everywhere. For instance, a downturn in 2008 would affect markets everywhere. But suppose that City Stages had been able to keep the monies from the first few years. They would then have had a surplus fund that had been invested in whatever strategy from money-market or bonds to somewhat riskier equity-debt mixes. Imagine that there is a year that City Stages has the money it needs, but Bozeman, Montana, does not have the money it needs for a festival. Suppose that ski tourism was down because of weather, an event that does not affect Alabama. In this case, Bozeman and Birmingham can exist in a network that offers microloans or even cash flow short term. Birmingham could seed their festival for three months as an advance or for a year.

This structure shares some characteristics of microlending, such as Muhammad Yunus and the Grameen Foundation (Grameen, n.d.). It also shares structural similarities with the aftermath of economic development projects in the arts. After the Guggenheim Foundation opened the Guggenheim Bilbao in 1997 and the Tate opened Tate Modern in 2000, many arts organizations asked those museums to help them recreate the effect. The

institutions took on very different strategies. The Guggenheim essentially franchised the Guggenheim model, raising funds from governments in other countries and hiring star architects. Thomas Krens, the Guggenheim director, started a consulting practice to do this work after he left the museum. In contrast, when the Tate was approached by cities all over Britain, they replied differently. They told people that it was likely there was already an existing arts organization (or more than one) in their city or town. The Tate offered to be of support and to share resources, and to gather those organizations together in constellation to learn from each other and to benefit from collective action. A book, *On Collaboration,* chronicles these efforts (Mortensen & Nesbitt 2012).[9]

If we consider City Stages or CMJ, they would benefit from developing a variety of token and investment trust structures, noting considerable research on tokens as a fundraising tool (cf. Howell et al.). First, the tokens allow them to fundraise directly from the public and to offer the benefits of corporate sponsorship in the marketing boon of public token issuance. For instance, the token can be named for the sponsor and co-branded as a festival token, and then purchased by members of the public. The token serves a better price discrimination structural offering than simple tiered pricing. Token purchasers can opt in at different levels and denominations, and they can be reached more seamlessly than through traditional, labor-intensive development projects.

The token structure can support the festival or it can support specific musicians and projects. George McMillan from City Stages cites the Better Angels Society as a model. This collective supports film documentaries that might never get made. A similar model could be used to fund risk-taking or high-value musical acts who might otherwise be hard to program, given higher fees or risk of locking in the schedule before the city and agency funding is known.

These tokens could also benefit musicians and function as a profit sharing mechanism. The musician can benefit in the back end of the festival, the way some stars do in the gross of a film. And the token can represent a live recording in which the festival also benefits from royalties or residuals.

A second tier of more complex token structure involves essentially replicating the way that some tourism boards are funded but without the middlemen of bureaucratic governmental process and delay. For instance, if the visitors' bureau is funded through a tax on hotels and rental cars, the hotels and rental car companies—and restaurants and other stakeholders—can buy into a token structure that gives the festival up-front cash or into a structural financial instrument that passes along a small fraction of hotel revenue during city stages to the festival itself. The structure ideally better aligns price and value and gives back to the festival a more accurately representative share of the value it has created. In this scenario, the festival can in fact keep residual earnings (in the net assets or non-profit endowment sense), and then participate in the larger cooperative network of festivals that pool resources and essentially self-insure, collectively, about flows of money over time.

Lastly, festivals can participate in a more complex and experimental tier of token that, following from spatial blockchain protocols and the ability to target specific regions,

[9] For further information, see the Tate's National Programmes (https://www.tate.org.uk/about-us/national-international-local) and Plus Tate network (https://www.tate.org.uk/about-us/national-international-local/plus-tate).

can demarcate a whole community or specific populations and distribute currency within it. These systems would have extremely sensitive questions of inclusion attached to them, in the same way that a census does. With structural privilege excluding some people from being counted, it would be important to make sure that in practice such a currency were equally—or even intentionally equitably—distributed. In theory, this currency or this set of shares could represent and make tangible the value and the shared community experience that is already so much a part of these festivals—from Woodstock onward.

V. Conclusions

These structures could take many different forms according to the type of festival and the business models existing in the field. For example, the Hay Festival, a book festival in Wales, would have a possible relationship to authors with physical books (perhaps keeping a share of each book sold, beyond the bookstore function), as well as a town of used bookshops. The premise behind the community mutual trust structure has more to do with integrating existing financial structures, systems, and models into a new type of financial commons that align stakeholders incentives more explicitly to enable new degrees of stability and resiliency based on broad and diversified participation. Many different formats can be designed including those for which performers are stakeholders in the trust, community members are, or the festival itself is connected to other festivals in a network.

We also note that these structures do have precedent in both newer and more traditional settings. In near technologies, starts-up companies such as Point.com tokenize investment structures. The company Bitmark has developed investment trusts for data and other asset classes. Various companies such as Paperchain.io, MediaChain (acquired by Spotify), Ujo and others provide blockchain-based royalty systems integrated with multiple music streaming services. Codex, Artory, Blockchain Art Collective, Masterworks.io, and Artlery (acquired by Verses) have explored similar initiatives for the art market. In the energy market, Swytch.io provides a marketplace for tracking renewable energy through non-fungible tokens. The company Raisegreen.com, mentioned earlier in this paper, has successfully piloted the first FINRA and SEC-approved crowdfund of community-owned renewable energy infrastructure development and maintenance. As non-fungible tokens proliferate in the arts and as related governance models are built, these principles of risk-sharing and community investment trust can secure the funding future of festivals while creating a constellation of festival organizers.

Even a more traditional organization like DACS (DACS.org.uk) not only supports copyright and resale royalties, but also a probabilistically governed Payback revenue for estimated copies of works. Movie studios such as Disney, NBC Universal, and Warner Bros, all have “rights master” extending their new markets and mediums. Movie studies have also developed highly sophisticated and nuanced models for apportioning rights and credits to creative contributors based on attributes such as time spent on a work, ideas contributed, ideas used, experience level, or other means. These rights systems apply particularly to festivals such as CMJ which place at the center the musicians whose performances the community members can attend but whose careers are served by the festival’s role as an audition. Many different applications of blockchain investment trust could be imagined around CMJ. For example, each year all of the artists in the festival

become holders of equity in a common investment trust. Artists designate some rights to their songs into the trust. The growth of the trust funds the artists individually—much like a pension trust—but also the group as a whole by the distribution of surplus, whether as dividends to all or concentrated grants for some. Community members can also join a separate trust to place funds into the festival, buying tickets ahead of time and receiving special benefits to stabilize the festival's year-on-year access to confirmed funding.

New areas of research that follow from this work include identification of experiments and structuring of governance process. We hope to feed and seed these conceptual frameworks to the broader cultural festivals community and to build a taxonomy of types so that festivals that bring together whole communities, which either focus on tourism from outside, range in degree to thematic and participatory, which can adopt blockchain structures that suit both them and the broader communities that host and nurture them in space over time.

Ultimately the digital age offers ways of financializing the wonder, joy, care and connectedness that festivals make possible. Although financialization is risky and often smacks of capitalism or alienation from art, we feel that, following from Zelizer's work on circuits of commerce (2000), it is possible to imagine ways in which technological and financial tools can acknowledge the support required to fund these events to begin with, and then to energize and steward their futures as transparently, equitably, sustainably as possible.

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