

# **Proof-of-Stake Non-Fungible Tokens, The Distributed Autonomous Organization and the Valuation of Art: A Proposal for a Non-Profit Community Controlled NFT**

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*“The funds that are possible with digital art delivered by NFT technology are both large in volume and precarious because of the volatility from the underlying crypto tech wave, which pulls the value of the products d’art along without anything to do with art. also the inherent function of the system wherein people involved in the entire value chain do not understand art, have a narrow and shallow knowledge about “art”, and see that NFTs are first as a financial product to be speculated, traded electronically (enabled by rapid and low friction transaction costs) that allow fast turnover, which always come with greater volatility of prices of products - not by value of the art or its maker. The lack of critical knowledge of art is a secondary or tertiary concern to most actors. It is a place where art exists at cross purposes to an overhyped crypto technology market driven by massive amounts of venture capital money flows.”*

- Mario G Alberico, Managing Director, Accenture (retired)

## **Summary**

This paper describes a way to use blockchain-based “non-fungible tokens” (NFTs) to address some fundamental failures of the art world introduced when the early 20<sup>th</sup> century evolution of financial markets expanded to include objet d’art as commodities. It proposes the creation of a DAO (“distributed autonomous organization”) that uses domain experts’ Delphic consensus methods embedded in “smart contracts” to provide NFTs with meaningful non-financial assessments of intrinsic artistic qualities and merit.

Intermedia Projects, Inc. (ImP) is proposing to be a kernel around which a distributed autonomous organization can crystallize. The DAO will use blockchain technology for the secure storage and administration of a large collection of user-generated knowledge of artworks displayed as non-fungible tokens (NFT’s) contained as digital binary large objects in the blockchain data. Smart contract technology will implement all transactional and interactional relations among the people in the DAO, both the members, who contribute to the DAO’s blockchain, and the viewers or users, who interact with it.

The DAO philosophy: non-hierarchical, egalitarian, non-capitalist, intentional, inclusive, rigorous, interactional, collaborative, consensual, informed, and participatory.

Supplemental administrative, maintenance, communication, analysis and reporting functions will be inherently integrated into the DAO’s software systems, automating as

much routine work as possible, and using neural AI processing to create and maintain a systemic self-awareness.

A group culture is required to emerge, and like all emergent properties it will be dependent on its initial conditions, including these elements:

- the digital core blockchain computing infrastructure,
- the people who will construct the initial membership and create the initial content,
- the processes and behavior expectations governing their organizational culture,
- the use of web3 style distributed computing techniques to spread the workload, and to support resilience, security and fault tolerance, and to facilitate widespread global engagement at scale.
- the development of AI-supported self-management and self-aware administrative tools to ensure everyone always knows everything.

ImP plans to introduce this proposal to the art community as it searches for an initial institutional technology partner. When we have enough committed people we will pilot test the emerging system and the community will establish an initial “constitution” to guide the initial structural smart-contract software agreements to begin operations.

## **Background**

Historically, “art” in some sense has been part of human experience, embedded in every culture on Earth, since at least the 40,000-year-old Neolithic paintings in the cave of Lascaux, and probably much earlier. While the definition of “art” as such is too complex and contested to be thoroughly explored in this paper, we generally agree we know art when we see it. What happened beginning in the years following the First World War, as capitalism expanded and capital markets became more globalized and the financial sector more structured and corporate, was that expensive and relatively rare works of art began to be more routinely bought and sold and resold at a profit. Works of art, at least those that were obviously recognized as such, became commodities, suitable not just for collection, as had been the practice for centuries, but for investment. (1)

Commodification introduced a new definition of value into the process of assessing putative works of art. Already there were several attributes’ collectors would consider in choosing whether to acquire a work of art:

- foremost, perhaps, the object’s essential aesthetic appeal, its beauty or elegance;
- its rarity, age or unusual-ness or distinctiveness within its category of object;
- the skill or craftsmanship and effort or time that its creation exhibited;
- its semiotic significance, its message, what it stood for or conveyed.

- the inherent value of the materials it was made from;
- its social standing or cultural status-conveying capacity;
- and of course, how much it cost (both to make and to buy), in fungible currency and material resources, as well as in intangible social costs of access to resources and special people.

Now, another dimension of value was added; how much it could be resold for? How much profit might it generate? How secure was it as an investment? These latter considerations could not be addressed without active markets for artworks as commodities.

Historically, art collecting has been the province of economic elites. The rulers of Egypt commissioned the pyramids, Louis XIV had Versailles built and filled with things of beauty, Michelangelo worked for Pope Leo, the wealthy families of Amsterdam commissioned portraits by Rembrandt. As the Renaissance led to the Enlightenment and capitalism emerged to create the Gilded Age, the role of artist emerged as a profession, an early form of gig economy sustained by word-of-mouth and social standing, in which a robber-baron titan of industry could become a patron of the arts. The decorative arts as well as the fine arts (i.e., useful things like furniture as well as paintings) were trappings and evidence of good taste and high social graces, status symbols both enabled by and signifying wealth and access to all the best things. Auction houses had emerged in Europe by the 1830's enabling the emerging industrial and mercantile class to share in the noble class' acquisition of such luxury goods.

In the late 19<sup>th</sup> and early 20<sup>th</sup> century many of the Gilded Age wealthy founded and endowed institutions to take over caring for their objects of art, creating museums and establishing academic programs to ensure their names and their collections carried on after their deaths. But, especially in the aftermath of two World Wars, many items from private and public collections supported an auction market (2) for esteemed collectibles and antiques as well as newly discovered lost antiquities. As the post-war Modern Era began, the commercial world of art galleries and independent dealers sprouted alongside the auction markets. Capitalism engulfed the art world, and the concept of the value of art narrowed to what a willing buyer would pay to a willing seller in a free market. Professional fine artists, however, were still stuck in their word of mouth gig economy. Without any industrial structure they had no unions or regulatory protections, and rapidly became exploitable and dependent on galleries to sell their work, at significant commissions, to the wealthy, who could resell it at will through auctions, brokers or galleries, without any residual fees going to the artists. As an artist becomes known and popular their works re-sell for greater prices at auction, but even when their previously sold work appreciates in value due to its excellence and high continuing demand, they gain none of that wealth appreciation, except what might

accrue in increased demand for their new work. Even for this, the gallery is their only hope.

The gallery owners define the social reality of art for their clients, the buyers. Along with art galleries and art museums and academic art programs the literary field of art criticism emerged in the post-war era, notably with the work of Clement Greenberg. [ref.] The art critic became the definer of what was good or bad art, persuading or overbearing all other opinions with fancy language and absolute confidence.

Most people actually don't know much about art, so even if they know what they like, they can be pressed to accept the critic's opinion, especially when it is a matter of investment rather than personal taste. The critic/gallery defines what's good (even forecasting what will increase in resale value), the investor believes it and buys it, thereby causing the critic/gallery to become correct, by definition of the capitalist market. This is nearly a con game, but the galleries make a lot of money, the artists they exploit get some of it, hopefully enough to survive and keep making art, and the buyers can show off their now-validated-as-valuable artworks. The trick is like playing the stock market, where what you need to be good at is betting on what the other players believe. The crucial difference between this and the stock market is that stocks are actually backed by the intrinsic value of the firm's production capacity and sales revenue income.

Art has no intrinsic value other than people's opinion of it, their impression of it, how or what it makes them feel. The output of a work of art is your reaction to it. Sometimes your knowledge of the artwork's social context influences that reaction, such as who, when, how or what circumstance produced it, or what its history is or what other people have said about it, but none of that is inherent in or intrinsic to the artwork itself.

The market-based commodification of fine art is thus built on sand, ready to wash away with the tide or blow off in the wind. Curiously though, when we ignore the market and the commodification and the sales pitches, we can find the real substance that makes a supposed work of art be a work of art, and which shapes its quality as such.

As we noted earlier, there are real elements to consider: the aesthetics, the distinctiveness, the skill, the significance or message, the materials, and the overall social context of its history and current condition. Knowing these with any depth and being experienced with how to assemble them and weigh them as appropriate for any specific work is not algorithmic or straightforward, and requires a lot of knowledge. There is likely a lot of room for opinion as well, but it is opinion of a different category

than that which shapes a gallery's sales pitch. It is the opinion, backed by experience and knowledge, of actual deep expertise and scholarship.

Here we need recourse to the resources enabled by the art institutions supported by the benefactors from the Gilded Age: the museums and the academic programs. They have no skin in the gallery game, no stakes in the market commodification of fine art, or at least they understand that professional ethics call them to stay at arm's length from such. These not-for-profit organizations generally employ as staff the people who study, teach about, write about, curate and conserve works of art, and in fact know the most about the artworks as objects, their history and social context. Although some are themselves artists, they are rarely personally immersed in the high stakes froth of the art commodification markets.

## **The Current Situation**

At this moment, the art world faces the technologically enabled ability to market digital objects (ordered collections of ones and zeros, binary large objects, or "blobs") as works of art, using block-chain based non-fungible tokens, (NFTs) as described by Mario Alberico in the opening quotation. Is this a better world becoming possible or is it barbarians at the gates?

We maintain that it is the barbarians currently, because of two factors:

- Art is a poor commodity for market trading because its value is entirely based on arbitrary and potentially wildly fluctuating opinion, not on any stable intrinsic attribute, in contrast to, say, corporate stocks or soybeans. Without measurable external attributes to validate it, anything at all can be declared a work of art and given an NFT. The post-war commercial or investment market for art appraises a work's value as strictly based on its auction history and factoring in auction history of other works of the artist, and that of similar types of work, carefully avoiding any opinions. Factors such as the authentication of the piece, its provenance and its condition may affect the appraisal, but the appraiser's opinions of its intrinsic artistic merit do not matter. The market, like the storied Emperor, has no clothes.
- The non-fungibility of NFTs is inherently inappropriate for market commodification because each artwork (and thus each token) is by definition unique and cannot be arbitrarily or algorithmically swapped for other artwork, since the conditions and opinions that created their original sale prices cannot be meaningfully measured for comparison purposes to determine their relative current market values. Two CryptoPunks don't necessarily equal a Banksy. Only a

system that could provide a closer approximation of real intrinsic value than a speculation-driven free market can deliver would make sense. Specifically, mere comparison of current market prices misses the point of art completely.

In actual practice in early 2022 for example, the “Bored Ape Yacht Club” NFT line suffered due to its non-fungibility, as its use as collateral for loans to buy other NFTs collapsed due to non-liquidity when the market price for Bored Ape NFTs dropped suddenly, and the reduced valuation fell below the level required for use as collateral. (4) Borrowers lost out as their NFTs were automatically liquidated at the new low market prices. The market forces and the collateralization process presume and require fungibility; they are processes designed for cash, not unique digital blobs. To adapt to this weakness, art NFT aficionados have adopted the DAO, which is not the spiritual one that if it can be spoken of is not the true one, but just the acronym for “distributed autonomous organization.”

DAOs are joined at the hip to NFTs because they take advantage of what NFTs are actually good at: providing trusted, verified validation of authenticity that does not depend on trusting people and is very difficult to hack or fake. The use of two very large prime numbers as keys for dual (public-private) key cryptography is essentially unbreakable by brute force methods, so each block in a blockchain is well protected, but when many independent blocks are linked in a chain that depends on all of them being unchanged to be able to open any of them, the security of each is assured by the security of all, so it is an ideal structure for many separate individuals to collaborate without fear of being cheated by misrepresentation. Each block is transparent (i.e., viewable or read-accessible to all) and cannot be changed without making all of them unreadable. As a new block is added to the chain, every block is re-encrypted, so every block owner has to know and agree, thus the chain is immutable, or more accurately is mutable only by full consensus. This enables agreements or contracts or arrangements of any sort to be defined and described digitally and placed in blocks, which then cannot be hidden, removed, changed, misrepresented or lied about.

Since the blocks can be read digitally, they can contain software and data that enable computer operations to be executed algorithmically, automatically. This enables what are called “smart contracts” that are programs run automatically when some condition occurs. That’s what happened to the Bored Ape NFT holders’ collateral obligations.

The founders of the Ethereum cryptocurrency (“ETH”) realized that this capability enabled forming self-organizing operations based on rules that all participants agreed on, or that a majority agreed on, or whatever procedure or decision-making

process was defined, so there would be no arbitrary or capricious actions, only correct ones following clear agreed on rules. This replaced administrative hierarchy and office politics with equals participating in collectively decided choices. In 2016 they implemented this using their newly built Ethereum blockchain, calling it The DAO, and used it to build the rules for operating the complex administrative processes controlling the creation, distribution, operation and use of the Ethereum blockchain cryptocurrency itself. (5)

Unfortunately for them a few months after launching, it was the rules, not the blockchain itself that got hacked, as someone discovered a way to withdraw excessive funds by transferring them to another DAO and stole 3.6 million ETH. Ethereum was forced to revert to an earlier backup of the blockchain, which left a lot of folks losing ETH. (6) Still, the principles had been demonstrated, and the NFT-based DAO model began to spread. Now, there are many newly hatched DAOs, mostly using preexisting cryptocurrency blockchains because that's easier than rolling your own.

The most common purpose of these new NFT DAOs is to provide a sort of art-investor community consortium. A group of like-minded people set up a DAO to pool their crypto funds to buy NFTs they agree on, using the DAO rule-making ability, in hopes the NFTs will appreciate in value, which might happen partly because these NFTs have just been bought, showing that someone believes they are worth it. The constant self-fulfilling prophecy may seem a bit like a pyramid scheme for digital tulip bulbs, but in the short run some people are prospering, and it has certainly opened whole new markets for what are being called “Web 3” artists. (7)

NFTs are disrupting the art industry, by essentially disintermediating the old guard of gallery and brick-and-mortar auction house art sales, as the NFT-based DAOs expand the actual market itself to include purely digital art. They are also disintermediating, or perhaps simply discarding, the art critics, as they define their artwork's value as nothing but its cryptocurrency price.

The barriers to entry into this brave new NFT art world are relatively low, since most computers, even smartphones, can produce digital images, and there are various approaches to getting your images turned into NFTs, ranging from paying for it to be added to a pre-existing NFT collection, or offering it to one on commission, to starting your own NFT blockchain using open source software, or using a low-cost software-as-a-service web provider. Then, marketing your NFTs becomes a matter of skill with social media. If the artist can get connected with an existing NFT investment DAO, then that DAO provides all the needed resources including inherent incentive for marketing support. The online DAO becomes the new alternative to the old art gallery. The

overhead and risks are lower, the reach is global, and the sky is the limit. Obviously this is very appealing to younger and digitally-skilled artists.

However, even the artists who do decide to produce digital NFT art are likely to find themselves significantly exploited. They will be joining yet another digital gig economy in which they have little or no control nor protection from financial exploitation as they depend on others for whom their art is just another commodity.

## **The Problem**

The art world's academic and institutional organizations have been mostly left out of this disruption so far. The academy and the non-profit museum worlds are already suffering from effects of globalized financialization, reduced public funding, privatization and corporatization, which have resulted in cutbacks of staff, reduction of programs and services, and diminished philanthropic contributions. Academic programs and museums are now struggling to stay afloat, without the capacity and resources to take risks or to expand into these new areas that seem superficially more like business and computer science than art because the use of DAO and NFT cryptocurrency blockchain technology has been focused exclusively on capitalist profit-driven ends.

We believe the DAO/NFT technologies, both computer and social, provide the potential for radical social transformation. What is problematic is that the art world communities who actually know the most about art, and have the most commitment to it as a field and bring deepest and widest knowledge of its history, philosophy, theory and practice, i.e., the scholars, teachers, curators, and conservators, have no structural role or engagement in the burgeoning DAO/NFT financial and cultural tsunami. Worse, the practicing artists themselves, those whose primary way of life focuses on creating new artwork, are unable to participate, except for those few whose art media are entirely digital.

## **Our Proposal for a Solution**

Curiously, the core nature of a digital autonomous organization lends itself to a very different attitude and style of human social and economic relations than what has emerged for the digital image NFT economy. The DAO is perfectly suited to be a digital instantiation of Occupy Wall Street. Not the barbarians at the gates after all, but the better world is possible version.



The original Ethereum DAO that essentially invented the means for the current NFT economy was exclusively focused on financial relations, specifically how to solve the problems of protecting participants in economic transactions from failures of trust. They sought to use blockchain technology's inherent attributes to enable multiple participants within the group to collaborate independently to arrange things so that all elements in even complex arrangements were transparently known, assured to be valid and verifiably accurate, self-implementing and immutable to being corrupted by unequal power relationships. Transaction rules were determined with full direct democracy, and individual behavior within those rules was equally available and knowable to all, so no one could cheat on or steal from the others.

The original Ethereum developers implemented the first of what are now called "smart contracts" in their blockchain to accomplish this. These are computer programs that are placed into a block and can be arbitrarily set to run when triggered by conditions in the blockchain, such as the arrival of a new block containing relevant data. Initially they were conceived to enable economic agreements to automatically consummate under specified conditions, as "when X is paid, ownership of A is transferred to B", where X, A and B are all internal to the blockchain, and therefore immutable, so no human trust is required to verify or execute the agreement. This capability, they realized could enable the community to come to agreement on conditions that would auto-regulate the operations of the blockchain, including adding new blocks, since community members could independently "vote" on choices by allocating (i.e., spending) their ETH to indicate support for the choice. They pioneered the use of blockchain technology's inherently trustworthy crypto-protected validity (or "trust free" nature) to support human social interaction systems.

As noted earlier, the value of a work of art is not meaningfully captured by its last current sale price, nor by any such economic measures. What we need is a mechanism to capture a valid and trustworthy assessment of an artwork's value and importance as a unique work of art, not as a replacement for some amount of dollars. A DAO in which the participants are drawn from the art communities that truly have a stake in the world of art appreciation, the scholars, teachers, curators, conservators, and practicing artists themselves, could provide this for us.

### **Implementation overview: goals**

The mechanism for constructing such a DAO involves creating a blockchain and recruiting participants from this art community target population to become engaged in its operation. That decentralized community could then establish priorities, procedures

and rules for issuing NFT blocks that carried the collective expertise and assessment of the intrinsic artistic value of an object referenced or pictured in the block.

By self-regulating the inclusion of participants in the assessment process with its “smart contract” software, each block would contain both an image or other digital blob, including music, video, interactive software, text, high resolution photographs, etc. characterizing, defining, displaying or otherwise manifesting or being the work of art the block contains, but also, the indisputable, validated and verified collective wisdom, knowledge and expertise of the community of relevant domain experts with respect to the nature, significance and intrinsic artistic value of that artwork.

Research in cognitive neuroscience has identified perceptual mechanisms that process “trust” in distinct brain areas differently in different conditions. [ref.] We humans are hardwired towards more collaborative and socially positive interaction when we trust the interaction process. Experiments using game theory models such as the “prisoner’s dilemma” display different brain activity patterns when participants are given different trust relationship scenarios. (8) The game is where the player is one of two prisoners, whom the police are asking to rat each other out. If both trust the other prisoner and the trust is deserved and neither betrays the other, this allows both to win release. If both betray the trust, neither is released, but if only one betrays the other, just the betrayer gains release but not the trusting one. Adding the possibility of either ensuring or making the issue of trust moot changes the game. It produces cooperation and collaborative maximization of group success. DAO smart contracts provide this possibility.

The fundamental purpose of this proposed DAO and its blockchain of NFTs is to provide trustworthy, validated information, gathered generally in the manner of Delphi decision making, which enables a group of domain experts to share opinions and then recalibrate and re-share opinions based on the collective sharing. This provides each of its NFTs with an expert assessment of its merits as a work of art, independent of any market economy valuation. The DAO, like most blockchains, will require its participants to collaboratively maintain it, contributing their time and expert opinions. Their maintenance effort is rewarded as “proof of stake” and tracked with blockchain tokens.

Works to be considered for inclusion in the blockchain will need collective approval and Delphic curatorial review. Every time a new block is to be added, and frequently when block-embedded code (the smart contracts) is triggered, the collective will need members to act as validators, checking transactions and verifying actions, participating in consensus-constructing decisions and monitoring records and data integrity. This work constitutes what blockchain jargon calls “proof of stake” as these

stakeholders oversee the automatic governance of the blockchain. As part of the governance process they will also be automatically monitoring their own collective behavior and actions, to ensure internal accountability and equity among the participants.

Their contributions of the time this takes are compensated by social recognition, in the manner of academic peer reviewers or open source software developers, as well as blockchain tokens (the technical equivalent of bitcoins) that both authorize and reward continuing participation and can potentially have external economic value. The collective maintains the rules and sets the structure for this participation and compensation, within the basic principle that participation is directly correlated with stake in the DAO's success, and equally available to all.

Existing within the general context of the global Internet web-based blockchain ecosystem, the DAO will be able to choose how, when and if to participate economically by buying or selling its NFTs. The DAO may, for example, enable artists in general to submit works for consideration, to be maintained as NFTs. It may solicit works for inclusion as NFTs, and it may sell NFTs itself, provided that it retains a non-profit status, and no proceeds or net profits accrue to the DAO participants, who can individually earn valuable blockchain tokens with proof-of-stake services but cannot place themselves in direct material self-serving conflict of interest. Working artists who are accepted as members of the DAO collective can submit their work for inclusion, but cannot participate in decisions about it, but can receive compensation if the DAO sells the NFT, but only at the same rates of commission and same processes as any arms-length artist. The DAO may also create and provide NFTs for non-digital art works, for which the NFT serves as unique verifiable, certified, trusted information about the artistic attributes and the authoritative provenance of the piece, providing both definitive background and legal statement of ownership of the physical non-digital work, potentially incorporating smart contract conditions such as the payment to the artist of residual fees upon resale, or restrictions on the treatment, display or use of the artwork.

We hope that this DAO will enable a single global authoritative catalog of all major art to emerge eventually. Like Wikipedia, only one of these is needed, if it is well managed and appropriately structured, and open to volunteer curators, collectors, critics and teachers and other academics who are all themselves in effect "curated" into the organization. The DAO can have blocks which themselves are subsidiary DAOs, autonomous nodes that may focus on different communities or sub-topics, potentially enabling a federated complex adaptive network system to emerge, decentralized but linked and coordinated by smart contracts. Such a universal catalog available online

would be of great benefit to the entire art world as a public service and collective information commons.

In the immediate run, it will serve to swap expert assessment of a work of art's actual merit and value as art to replace the nonsensical notion of using digital artificial scarcity as a pretense for actual value. It will also open the world of collaborative discussion and communication about artistic values to a general commons, protecting the commons from economic exploitation by sales hype and social exclusivity for personal gain. In that possible better world it might actually support the spread of institutionalized fairness and equity, as a payoff for collaborative digitally enabled trust.

### **Implementing a new use of blockchains**

We are proposing that NFTs can be usefully associated with physical works of art, linking the artwork to a digital context that provides authority of provenance and expert assessment, as well as potential ongoing legally binding restraints or obligations embedded in smart contracts, and possibly to links that relate to the physical object's security, insurance, location and care, potentially connected to "Internet of things" sensors or networked devices. A securely kept artwork could be made available for remote viewing, for example, in a structured and controlled way, enabling globally decentralized museums and collections. The blockchain validated NFT can serve as an authenticated gateway for the physical object to relate to the virtual online world.

We are also proposing that the DAO blockchain "proof of stake" concept can be usefully extended to supporting social organizations' collective activities far beyond the technical validation procedures minimally required to ensure a blockchain is digitally secure in its cryptographic integrity and physical computer network infrastructure functioning. We expect to embed the principle of freedom from distrust that the NFT embodies to support radically egalitarian consensus-oriented decision making for essentially all of the significant organization operations, including social and opinion-based decisions.

The use of a blockchain-based DAO for a non-for-profit organization is a radical twist from the financially motivated, profit-driven, purposes for which the technology was originally created, but the essential element of managing trust and maintaining an egalitarian, non-hierarchical, level playing field is at least as important for effective non-profit collaborative enterprises as for greed-based financial ones.

## How does it work in actual practice?

The mechanism that blockchain systems use to enable and keep track of transactions among people and the digital data of the blocks is to issue and receive what are called tokens. In the cryptocurrency world tokens are the currency, the equivalent of money, and the blockchain is essentially a financial accounting mechanism. We are proposing to adapt this to be used as a method for measuring and documenting inherent artistic value, not monetary or financial value.

“Tokens” are the decision markers used in blockchain operations, e.g., bitcoins, conceptually replacing money in measuring amount of willingness to commit to a decision, such as buying something or voting on something. Digital tokens are data associated with a block that have been assigned to an individual, who receives them in exchange for something of value, such as actual money or cryptocurrency, or in our case, for time and effort expended in the service of the DAO. Tokens can be used to buy things or as votes to support decisions about things, or as commitments of future actions.

Typical blockchains used for cryptocurrency essentially exist to sell tokens that indicate amounts of fungible financial value (or “money”) that can be exchanged for goods or services for which the seller is willing to take payment in the form of that variety of token. Tokens can now routinely be exchanged on the Internet for other types of tokens, or used instead of other types, in common cryptocurrency exchanges, so most common cryptocurrencies are essentially fully fungible, and even can be exchanged for fiat currency (real money).

In current online practice people use software applications called “wallets” that receive and dispense tokens anonymously and very securely. A digital wallet has a unique address that identifies it and keeps track of tokens it receives and dispenses on behalf of its owner, who uses a highly encrypted password to open it. The wallet acts like an online credit card, accounting for the tokens the user receives or spends, and enabling digital interactions with other online programs that engage in token transactions.

A token is generally associated with a specific block (which may have many tokens associated with it, depending on the way its blockchain is defined and used) but it is not a block itself. The block is a single structured collection of binary digital data, i.e., on and off switches or ones and zeros, recorded on digital media storage accessible to be read and written in a computer network. All the blocks in a blockchain share the same structure, so they are conceptually similar to a record in a standard database in which all the records have the same set of fields, but each record’s fields hold different values,

such as a list of names and addresses, where each name is distinct and each address is specific to that name. Each block also has a unique identification number, even if it contains the same data as a different block. Each individual token has a unique identification number connecting it and its usage history to a specific block in a specific blockchain.

In current general cryptocurrency use, all tokens issued from all blocks in the cryptocurrency's blockchain are asserted to be of equal value, so as to provide a standard measure of value, and to enable ease of transaction processing, so in cryptocurrency all bitcoin tokens are equal. Like dollar bills, any one bitcoin will serve in any bitcoin transaction. That is, all bitcoins are interchangeable, they are fungible.

NFTs are tokens issued from blocks in today's current NFT blockchain market that generally include a data field containing a unique digital image. These tokens linked to such a block are considered "non-fungible" because their block's digital image is assured to be unique and not replaceable with the image from any other block, or any other image, so it is not inherently an equivalent swap for any other image. In particular its value is not assured and is assumed not to be the exact same as any token from any other block; unlike dollar bills, which are fully interchangeable regardless of condition or year of issue, NFTs are tokens derived from blocks that are guaranteed not to be interchangeable, or at least not assured to be of the same value as any other NFT.

Depending on the way the specific NFT blockchain is set up, there may be only one token associated with the block, usually indicating the holder of that token is the owner of the contents of the block. Alternatively, there may be many tokens issued for the one block, indicating that the holder of each token has a relationship to the block's content that is specified in the block itself, as a contractual agreement set forth in "smart contract" software within the block. This might, for example, indicate that the holder owns one of a set of many copies of the image contained in the block, analogous to owning one of a limited edition of lithograph prints.

It is this powerful addition of smart contracts to the blockchain process that allows us to imagine and create whole new ways to apply the blockchain's assurance of trust and security and anonymity to enable safer, more egalitarian and more effective human social interactions. Moreover, in our globally networked digital society we can use this to manage geographically distributed and temporally asynchronous collaboration among equals to eliminate any need for hierarchical dominance yet still sustain optimum group synergy for best decisions and self-organization.

This approach to supporting group decisions is influenced by Quaker practice. Collective decision-making in the Religious Society of Friends is often referred to as

“coming to unity” rather than mere consensus: finding the best inspired decision for the group rather than simply accepting the lowest common denominator. In a political framing, it supports full participatory direct democracy, Occupy-style but without the limitations and difficulties that in-person versions face. (9))

Technically, this works in the non-profit organization by “paying” participants for the time, attention and work they contribute to the support of the organization’s operations. In commercial blockchains like bitcoin, people support the work by using their computers to find very large prime numbers, used to create new blocks, the process of “mining” bitcoins, (called “proof of work”) that earns the miners new bitcoins, fungible cryptocurrency they can spend. They also earn tokens (bitcoins) by working to validate the security and adequacy of the blockchain’s many copies, which must all be cryptographically verified as unchanged, and if any copies are different, the correct version selected, so the new blocks can be added and the entire chain re-encrypted and redistributed. It is a group process to maintain a blockchain, and the people who do the work get paid with tokens.

This mechanism will work as well for the “proof of stake” model of blockchain validation that is appropriate for a non-profit organization, whose participants all have a personal and/or professional (rather than financial) stake in the organization’s successful operation.

The specifics of the work to be done and who gets to do it, and how much is earned will all need to be worked out by the participants, who will be issued tokens from the “genesis block” (the initial start of the blockchain) and will use them to indicate their level of approval or preferences or assent in the forming of group collective decisions. Participating in the decision processes itself “earns” more tokens, as well as does doing work to carry out the actions determined by the decisions, including in our case, contributing their highly informed assessments of artistic attributes and merits.

A simplistic view is to see the allocation of tokens as “voting”, but in actual practice the process is much richer, in that opinions, suggestions and preferences are collected and presented collaboratively for discussion and refinement using group decision-making support software, that itself is tailored by collective choices that decide how to handle different kinds of decisions. This enables the group to have asynchronous decision-making, or, when time or specific expertise is a critical factor, to have sub-group assignments, or to create any other appropriate flexible options. Decisions and discussions are generally made online and not necessarily in real time, enabling a decentralized and distributed egalitarian participation open to all.

The underlying process is similar to Delphi decision-making, in which experts share their opinions among themselves, then hear what the collected opinions are, and then repeat the process until there is a clear pattern of agreement, including if necessary a clear definition of what is in disagreement. In the Occupy (and Quaker) model, any participant has the option to block (or “stand in the way” in Quaker terms), and the group will need to decide when and how to deal with this maximally egalitarian decentralization of power, but “majority rule” is not the basic expectation or even a necessary option; rather, having everyone in unity with what is clearly the best decision is the objective.

All of this is built into the blockchain software and becomes thereby automatic and in a sense depersonalized (although not impersonal), so cliques, office politics and personal animus and other interpersonal interfering and undermining elements do not have means or opportunity to create or exacerbate group tensions that can arise from factors outside the domain of the discussion. The process is instead structured institutionally to be fair, respectful, consensual, safe and effective, as well as being efficient. People who do not like that will prefer not to participate. Many, possibly most, participants will need to be trained or supported to understand and use the novel processes effectively as they gain experience, which will require an ongoing commitment of the organization to attend to its own dynamics and interactions with more self-awareness than most corporate or even non-profit groups usually exhibit.

### **How does it get started? What do people actually have to do?**

Intermedia Projects, Inc. (ImP) is initiating the process of creating this blockchain-based DAO, as a non-profit arts organization. There are three overlapping elements of the start-up structure: first, the physical computers with **digital** network technology, second, the **human** network of knowledge and expertise and third, an initial set of operating **processes** (rules, requirements, procedures, options, actions) that must be defined. A central requirement of the overall design is the ability to function as a complex adaptive system, self-organizing with scale-free expandability and emergent properties. (10) In addition, these three will need to work in a contemporary context with emerging **social analysis** that provides a basis for group interactions which considers both the personal and the systemic as ultimately political. Also, “**Web3**” represents an emerging online context of significance to the project that emphasizes decentralization and autonomous technology, and “**AI**” (so called artificial intelligence, or machine learning) is an emerging and significant very new technological capability that presents great opportunities to support the project, but requires considerable caution to avoid its currently endemic corporate abuses.



**Digital:** To acquire suitable technology resources we are soliciting for an academic institutional partner with access to enterprise-class computing resources and staff, that enables credibility of the physical computing competence and capability. Most universities have computing centers of sufficient scale, and already have stable arrangements to support various faculty and departmental initiatives. We expect to find a partner within the art-science collaborative world to provide ongoing hosting and some initial software development support, as well as being actively interested in using the project as an ongoing testing, research and education resource, beneficial to and suitable for faculty and students to be actively engaged.

The software implementing the system will be entirely “FLOSS” (free/libre open source software) licensed within the standards of the Free Software Foundation (11), ensuring that there will be no software acquisition costs, and indeed most or all of any additional software developed in the course of the project will be FLOSS licensed for non-commercial public use as well.

ImP already has software development and computer systems management expertise, and expects to be integrally involved in the setting up of the technical platform, but we believe that an ongoing institutional arrangement better ensures long term stability. We expect that the system will grow, and that multiple institutional technology partners will come to collaboratively participate, making the system stronger and more resilient. One important aspect of blockchain technology is its capacity to be networked, utilizing many distinct nodes or servers, providing redundancy and non-centralized distributed access and control. (12)

**Human:** The design and implementation of an interacting group of people that is a self-organizing scale-free complex adaptive system capable of manifesting new emergent properties, requires establishing suitable initial conditions and enabling necessary collaborative processes, endowing the system with, as well as embedding the group within, a data collection system adequate to continuously capture the data generated by its participants’ own behaviors and activity, analyzed as feedback for continual collective self-awareness and collective ongoing decision-making agency. This self-management capacity is enabled by the digital technology’s ability to capture, analyze, and present this information in close to real time. The group is continually guided by this open feedback shared self-awareness as its participants engage with the external environment and with each other within the group.

That engagement is initially two-fold: growing the membership by curating the inclusion of new participants and producing new content to add to the blockchain. As it proceeds, the engagement expands to include adding, removing and changing its own processes.

**Process:** The rules of engagement that govern any human social group are normally not given much overt attention, being embedded in the culture's general expectations of how people should behave, but very often contain situation-specific guides, such as operating under Robert's Rules of Order to contain conflict in a hierarchical decision-making body, or more generally to use majority-rule voting for group decisions. These are explicit political governance rules. Organizational theory studies from sociology and group psychology identify many other hidden group dynamics that shape group behavior implicitly. (13) We will need to bring some of these implicit assumptions into overt consideration to harness the power that the digital technology affords us, to use its continuing feedback to guide our self-control.

The older patterns of political and cultural governance are strained, if not actually failing, in the new techno-tempest of deep fakes, authoritarian social media propagandizing and click-baited social fragmentation. However, there are threads of alternative approaches to group and interpersonal interactions that have emerged in response to the new technology, and offer a critical analysis suggesting ways we can approach the better possible world.

**Advances in radical social theory and practice:** since the 1960's, the civil rights movement, the women's movement, the human potential movement and various advances in political science and social organization analysis have all contributed to a much deeper and richer perspective of the nature and realities of social, economic and political power, embraced as the principle that "the personal is political." This enhanced analysis of cultural dynamics has included adaptations to and deepening of awareness of the effects and implications of personal behavior in groups, leading to increased intentional focus on reducing dysfunctional elements such as racism, inequality of privilege, and aggression. The complexity of modern life is now recognized as including how our personal interactions, group social structures and systemic institutional arrangements are all influenced by political, economic and cultural norms that are often unacknowledged or hotly contested but are becoming ever more important as our society struggles to absorb rapid changes driven by digital technology.

This project itself arises from that turmoil. Our focus places us on the progressive end, drawing more from radical Black intersectional feminist theory than corporate "DEI" (diversity, equity and inclusion) practice. This will require care especially in the start-up phase as we recruit people and need to develop appropriate training and inclusion materials and practices, since we need to ensure that the behavioral norms supporting radical egalitarian decision making and collaboration are clear and agreed upon.

**Web3:** Some of these norms and patterns of practice cluster around the “Web3” concept that posits a distributed approach to websites and the various devices interacting with them, from servers, standalone pcs and laptops to smartphones and Internet-of-things embedded computing, even automobiles. The idea is to free the digital interactions and data processing from the confines of centrally controlled closed-source proprietary commercial services, from the huge (e.g., Google, Apple and Meta) to the latest venture capital startups, which all, by the intrinsic nature of capitalism, must make money for their shareholders, despite any considerations of social consequences for their user-consumers. (14) This recalls the early dot-com era of Napster’s file sharing that was so readily suppressed and tamed by the recorded music industry. We hold scant hope for Web3 by itself saving the Internet from digital exploitation and centralized control, but we appreciate its values of distributed and decentralized computing, with their potential for collaboration outside of the mainstream and capacity to scale rapidly. We expect to use a variety of Web3 style techniques to encourage a sense of autonomy and decentralization, while facilitating rapid growth to global scale.

Specifically, for example, we will experiment with our members providing always-on servers in a distributed database, to spread the load and provide redundancy and facilitate processing speeds, and importantly to facilitate a fully distributed private encrypted VOIP and messaging service, as well as non-corporate collaborative writing and web services, all using established open source software.

**AI:** Overall, with artificial intelligence technology we are in new, uncharted, territory in the midst of a technology explosion that continues to create social changes as the global economy reacts to the shocks of digital technology on communications, financialization, management information flow, and automated pattern recognition within aggregated digital activity (so-called “AI”). The most recent AI applications, the large language models deployed as chat-bots, including Chat-GPT and DeepMind, have been especially provocative, causing pundits to project the extinction of humans at the hands of over the top and off the rails AI generative algorithms. (15) Most of this hoopla is due to a failure to understand how they work, and thus what the actual limits and real dangers are.

These latest AI programs are made of digital simulations of the physical neural nets of which brains are made. ImP board member Dave Britton is both a neuroscientist and a computer technologist who while in graduate school replicated a study done in 1991 by one of the recent critics of AI, Geoffrey Hinton (16), who quit his job at Google’s Deep Mind in 2023 to be able to speak freely about his misgivings. Britton’s 2006 project used open source neural net software to replicate Hinton’s study demonstrating how a “lesion” in a digitally simulated neural net could cause the same kind of language dysfunction as an actual cardiovascular temporal lobe stroke-induced brain lesion,

illustrating a sort of artificial dyslexia or aphasia. The research question was whether such a simulation could help us understand the complex language disordering caused by this form of brain damage. The point was not to make a mechanical brain to pretend to be as good as a human, but to show both the limitations and the advantages of this neural network algorithmic model at providing insight into the information dynamics (in this case the complexity science concept of “attractor states”) to suggest plausible reasons for human language dysfunction resulting from damage of the human biological neural net, helping to figure out how the real brain works. Now, though, rather than searching for scientific knowledge, Meta and Google use their vast commercial resources to engineer software derived from scientific work such as Hinton’s, creating applications that pretend to be dangerously closing in on artificial general intelligence, a claim that is readily debunked. (17)

Perhaps even back in 1991 Dr. Hinton worried about what could happen if there were bugs in the AI code. Today, however, the big corporate neural net based AI systems do seem to be getting evil, but the bugs are in the people in charge, who gin up public anxiety as their AI apps sleekly produce convincing fake news and fake art while systematically replicating the original human biases and prejudice baked in their training data, and harvesting users’ online activity and invading users’ privacy without informed consent, as the corporate leaders make apocalyptic pronouncements about how AI needs to be regulated but only by them. How does this happen?

A review of what “AI” actually consists of helps explain the problem and helps clarify the technology’s capacity for actually being useful for our purposes.

AI systems are essentially statistical processing of huge volumes of data about many individuals (or instances) to find combinations of attributes connected to one another by statistical probability. Causal connections are not a concern, just “if there’s attribute A, then there is X percent likelihood there will be attribute B.” Finding the statistically significant connections among zillions of attributes in zillions of cases is called “pattern recognition.” Once you have the statistical patterns in the raw data identified, you can run new data through and ask the question “which of these patterns are statistically likely to be in each of these new individual data sets?” Now, if you’re the NSA you can weed out the terrorists from the tourists by facial attributes or whatever. If you’re Google you can find which of the advertisements that you are being paid to send to web pages is likely to get the best user interaction response from this particular user, whose digital data footprint is in your vast database.

Your brain doesn’t use statistics, it uses neurons. But it turns out that neurons are very good at pattern recognition, which is why we evolved them, so Google developed

software that simulates neural nets, but under the hood, it's still statistics. In the brain, each neuron itself is a pattern recognizer: when the neuron fires, it is saying to the rest of the brain, that whatever it is that it recognizes, it just found it.

Neurons are brain and nerve cells that have many receptors at one end (the dendrites) which allow neurotransmitter chemicals exuded from another nearby neuron's opposite end (the synapse) to induce an electrochemical response that causes the neuron to build up, or suppress building up, a small electrical charge. If enough dendrites get stimulated in a brief enough time and the charge gets big enough, it will travel down the body of the neuron (an event called an "action potential") and cause its other end (the singular axon) to exude neurotransmitters into the synapse that will in turn stimulate all the nearby dendrites of other neurons.

On the face of it, this sounds like a neat binary on-off system that should be able to be readily imitated in computer circuits, and in the 1990's as personal computers proliferated, it became possible for an average academic researcher to have a computer on their desktop powerful enough to run software that did this. However, there is a very important difference between the "logic" of a neural network and that of a computer program: a computer program is built on the Aristotelian binary logic of true-false, and, or, and not. A neural net is built for the resolution of uncertainty: from many ongoing inputs, is there enough yet?

Each neuron is in effect a pattern detector. The pattern it detects is typically "learned" by the simple expedient that each of its synapses (the connections where its dendrites receive other neurons' axon-emitted neurotransmitters), becomes slightly more sensitive (lets in more electrons in response to neurotransmitters), each time that synapse contributes to the neuron firing an action potential that triggers its axon to release neurotransmitters that pass along the message "whatever it is I detect, I got one!"

Got one of what? That's the unknowable question. One way to think of it is that the neuron is an embodied metaphor, whose action potential when it fires, triggers release of neurotransmitter, which in that position in the neural net at that moment, has meaning for the other neurons whose dendrites receive the neurotransmitter.

The neural network's "logic" doesn't have a single specific trigger; any combination of a neuron's many dendrites collectively getting enough neurotransmitter stimulation in a brief enough time period triggers an action potential of the neuron firing and releasing its axon's neurotransmitters to pass along the "eureka" of the action potential. The physical sensitivity of the receiving dendrite is increased, at least temporarily, when it contributes to its neuron firing, which is the physiological basis for learning (18). When

a neuron fires, all of the incoming synapses contributing to that action potential are sensitized, to become a teeny bit easier to activate. As the saying goes, “what fires together wires together.” Simulating this process is what a neural AI system does. It needs to be trained by processing a training data set first, to correctly set the sensitivities of the appropriate digital synapses.

Importantly, **any** of the very many possible sufficient combinations of stimulated dendrites can trigger a neuron’s action potential. Because of this it is impossible to determine after the fact which specific incoming dendrites caused the firing. This is important because it creates a sort of neural equivalent to quantum physics’ Heisenberg Uncertainty Principle, specifically that the proximal cause of a neuron’s firing cannot be known, since it could have been from any sufficient combination of its many dendrites being stimulated in a sufficiently brief time. We can’t ever know exactly why a given action potential (neuron firing) was triggered or which of the many incoming synapses that could have contributed actually did, at least not with today’s technology.

Over time, with repeated use (i.e., practice) the meaning of the neuron’s embodied metaphor becomes clearer or crisper as it contributes to the large patterns emerging in the overall neural net of the brain, as incoming sensory data becomes integrated with memories and semantic knowledge and trained muscle movements and hormonal responses and proprioceptive self-awareness, all embodied by the collective history of each neuron’s past activity.

In the AI digital simulation version, this results in the literal inability of Facebook (for example) to be able to identify specifically which items of training data contributed to its AI algorithm determining which specific advertisement or inner link to the content it sends to a user. The data set that was used to “train” the AI neural net is long gone, disconnected from any way to trace back the causes of the network’s output behavior in response to new real-world inputs. The computer’s digital logic of on-off certainty is reduced to a statistically calculated probability range. Was the answer right or wrong? Why did it give that answer? These questions become formally unknowable.

(Note: this doesn’t have to be the case with computer software AI neurons, but it would require lots of additional code, much more memory and extra processing, so the current software does not have this option, since it would cost more to run and is not something the corporate users care about, with no added shareholder value down that tunnel.)

This doesn’t have to be terrible or frightening though, and it might even be useful to our project. Let’s see why.

The neural net-based process is an uncertainty absorber. The brain constantly takes in the complexity of an ongoing set of dendritic stimulations and absorbs the uncertainty of whether there is enough stimulation to trigger an action potential, in effect answering the question, “is there enough yet?” Uncertainty absorption is a term coined by early organizational theorist Herbert Simon (19) to describe corporate behavior: companies have uncertainties to deal with both from their inner technical production processes and their outer-facing environments, and management must “absorb” this uncertainty to process its many factors into single specific decisions or choices guiding action. Just like people, one presumes. In the Internet environment, AI is mainly used for pattern recognition, to find user activity patterns that differentiate users into groups appropriate for targeting with particular advertising (absorbing the environmental uncertainty of which group each user belongs to), or, for each user, absorbing the uncertainty of what action possibilities to present to the user to keep them engaged with the content as long as possible (absorbing the technical uncertainty of choosing the best content to maximize the revenue value of advertising to this user).

This results in probabilistic outcomes based on “machine learning” achieved by processing training data that sets the sensitivities of the digital simulated neurons. Pragmatically, individual user experience can then to be rewarded by more desired content in response to more continued interaction, automatically establishing a user-training regimen of behavioral control through operant conditioning reinforcement to keep users interacting with the system, while harvesting the user’s interaction data to determine which group characteristics and attributes the user exhibits that collectively associate with effectiveness in getting a response to the many possible ads from which the system can choose to present next.

This is the current pattern of use of much of the AI on the Internet, clearly invasive and exploitative, and potentially harmful by automatically clustering unwitting users into de-contextualized statistical similarity groups, without their knowing or understanding, then reinforcing the people in each group with the same content, thus automatically creating unacknowledged groupthink silos. This manipulation is justified as giving users what they like best, in return for access to selling their attention to advertisers. The addictive danger of the conditioned reinforcement is never acknowledged.

What is new here in contrast to, say, television advertising, is the scale and the enormous complexity of the huge number of variables being processed. Huge volumes of user behavior is individually collected and processed in real time for pattern-matching the users to the best, most action-effective, content from a huge set of possibilities. This technology is powerful, proving to be effective, and readily available to our project, for our collective, intentional, consensual, collaborative and conscious purposes.

We will have lots of data and lots of uncertainty to absorb. We'll want to avoid the subliminal operant conditioning and the latent auto-formation of silos. But that is readily achieved. What the current "AI is dangerous to humanity" debates get wrong is that AI is not a "thing" with agency of its own, it's a set of statistical and data processing techniques, it's a tool. It isn't AI that's dangerous to society, it's the people and corporations using it in dangerous, harmful and exploitative ways that have agency and intentionality.

We could, for example, use our own carefully validated assessments collected in our blockchain to train our own AI neural net to assess new art works, enabling us to then amplify the reach of our collective expertise by offering an online AI art critic, trained by us. Does this possibility horrify or intrigue? Possibly it depends on how it's done: does it exploit people or support them? Recall though, that the training data is static, the model won't automatically learn to appreciate new features or styles, and we can't know what specifically caused it to give any particular response. Since beauty is in the eye of the beholder, the AI's critique is intrinsically meaningless, just a composite of statistical probabilities framed in the language of art critics. But we shouldn't put it past Google to use it to determine which version of an advertisement would be most effective. Maybe it would be helpful as an art student's personal coach, offering critique that reflects the prevailing taste or opinions of our community. Likely, though, it would fail to recognize originality and individual flair, taking points off for coloring outside the normative lines. Even trained, it couldn't recognize truly new art.

Instead, we expect to use our AI to watch what we're doing as an organization, mapping our network of nested connections and interactions with each other, finding the patterns to be able to provide detailed feedback to us on what's working or not working, to help us keep track of everything administratively, lessening our collective workload and keeping it focused. It should collect our digital data, not to track or surveil us, but to be able to fully inform us about ourselves, including about trends we individually could not have noticed, providing very high-resolution feedback information. It's a tool, we'll get better at it with practice, and we'll find more uses for it with imagination and experience, but we have to stay collaborative and open. Our AI will be self-sensing, an organizational self-management proprioceptive system distributed throughout the organization, learning along with us as it keeps track of everything for us, with collectively shared detail, so we can make the best decisions, based on trust-free blockchain secured information.

**To recap:**



Let's build a collaborative blockchain filled with expert knowledge, collective wisdom, helpful opinions and rigorous evaluations of the artistic value of the NFTs in its blocks.

Let's do it with volunteer member-contributors who derive personal satisfaction and interesting experience as well as visibility and influence in the art world from their participation, who work together to build consensus in their contributions.

Let's build a community of art world people who reshape how art is understood in today's emerging digital future, as we create digital networks and digital resources independent of commercial tech giants.

Let's find out if we can put advanced neural AI tech to work keeping track of what's up and what's down and genuinely assisting us to have a common organizational self-awareness of everything we are doing, instead of manipulating and exploiting us.

We think it will be more than worthwhile! We invite you to let us know you'd like to get involved.

**Dave Britton**  
**president of the Board of Directors**  
**Intermedia Projects, Inc.**  
**<https://www.intermediaprojects.org/ImPlicit>**

**8/23/2023**

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Abstract: Whereas social dominance theory has historically been used to understand the dynamics of group-based hierarchy and oppression, it has seldom been used to understand the

dynamics of social change toward greater equality. We review a growing body of research that takes seriously the psychology of individuals who are interested in group-based equality and hierarchy challenge – those lower (versus higher) in social dominance orientation (SDO). This emerging research documents that lower SDO individuals are more likely to support hierarchy-attenuating policies and collective action, and identifies underlying mechanisms (e.g. perceptions of injustice). Moreover, this research suggests that egalitarian ideology can help account for efforts to change the hierarchical status quo, even among high status group members who materially benefit from the extant hierarchy.

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