Digital Stewardship:
An Introductory White Paper

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(July 28, 2020)
Version 1.0

Summary

Nearly half the people on the planet are now digital citizens — connected to each other via the Internet. Collectively consumers own some 3.5 billion smartphones, and have employed in our environment an additional 20-25 billion connected devices (such as smart IoT sensors, connected appliances, and wearables). All these technologies of digital surveillance and data extraction yield an astonishing amount of data every single day — by at least one count, some 2.2 quintillion bytes.[1]

For the most part, however, users and many businesses alike do not sufficiently benefit from the production and use of all that data. Even though users do receive some "free" services in exchange for their personal data, the actual value to users is dwarfed by what they indirectly and often permanently give up in return. Plus, while some businesses directly benefit from all those data flows, most companies remain shut out of any meaningful opportunity to utilize personal data, especially in human-empowering ways.

The Web platforms — and their supporting ecosystem of data aggregators and brokers and advertisers and marketers — have prime opportunities to analyze and share and sell all that information. Often, these companies use insights gleaned from data sets based on our online behaviors to create profiles of us as users, and then try to manipulate or influence our actions, such as making us more likely to want certain products, buy services, support viewpoints, or vote for political candidates, based on what is best for their bottom line. The status quo is not in users' best interests, as individual human beings or the collective interests of our communities and society at large.

Under the economics sketched out above, those who access and use personal data often lack any deep, ongoing relationship with users. It's therefore unsurprising that their actions evidence no sense of care, of loyalty, of stewardship owed to people as actual clients. In too many ways, as a function of this habitual "flattening" of who users are as a data object, the person that we are when online has less autonomy and agency — freedom of thought and action — than the person we are when we are offline. Users often lack any legitimate standing with online companies — the opportunity to question or challenge or oppose their actions regarding the collection and uses of personal data. Nor do these companies embrace the fiduciary obligations of loyalty and care that

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[1] https://www.domo.com/learn/data-never-sleeps-5?aid=ogsm072517_1&sf100871281=1.

people experience on a daily basis -- with lawyers, doctors, librarians, and many more professionals.[2] Users online also lack the ability to remain anonymous, as is possible in many everyday retail settings. In essence, people have fewer "digital" rights than they have "analog" rights.

In real life, people can be customers, and clients, and patrons to trusted businesses. On the Web, though, people are mostly just "users," often lacking legitimate relationships to online entities, especially third-party data brokers. One's data seemingly is everywhere, available to anyone, through platform companies, third-party brokers, or hacks and breaches. In everyday life, people can rely on basic human trust and accountability to bolster their relationships; in websites and apps, however, people are merely part of someone else's transaction, or a step on the path between fungible value exchanges.

The time is ripe to challenge, and reverse course on, this growing inequality.   Modern technologies should actually empower human beings, not reduce them. This means that **users should have fundamental rights to control access to their personal data — no less than what people typically can control in their everyday life**. All of us deserve an Internet where our digital rights on the Web are no less than our analog rights in the rest of life. Or, put another way:

<div align="center">Digital rights >= Analog rights</div>

The proposal here is to adopt a new kind of stewardship ethos for the Web. Technology systems can and should be grounded in human priorities – starting first with the actual person.   There are three specific elements that together create this new model of stewardship.

The computational systems amount to Tech, the ecosystem of stakeholders is the Players, and the ethos of stewardship is the Rules.

<div align="center">

Tech (digital) + Players (ecosystems) + Rules (stewardship)

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- ***Digital***: The countless computational systems being built and deployed throughout society.   These systems combine data, plus algorithms, plus interfaces.

- ***Ecosystems***: The mix of technologies, networks, platforms, communities, and related social/political/market systems – and the human beings behind all of it.

- ***Stewardship***: An ethics-informed stance, premised on fostering a certain caring, respectful, and beneficent attitude, towards the ordinary people affected by digital ecosystems.

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[2] For further background, please see the Author's [recent article on Medium](#).

A holistic, systemic perspective encompasses all three elements.

This paper explores the opportunity to create and inhabit a new world of digital stewardship. The inspiration comes from environmental stewardship, where people willingly take on obligations to protect the health, resilience, and diversity of the flora and fauna that comprise the natural world.

Here, we issue a call for end users — individuals, companies, non-profits, policymakers — to endorse the concept of digital stewardship, and work together to create a more human-empowering online ecosystem. In particular:

Individuals: demand more autonomy and agency from the companies who handle your data.
Companies: establish clear guidelines for promoting the best interests of ordinary users.
Technologists: develop technologies that give ordinary users greater control over their data.
Entrepreneurs: launch products and services that give greater control over data to ordinary users.
Policymakers: ask tough questions about why today's Internet lacks human autonomy and agency, and what we can do to change the situation.

Oasis Foundation commits to facilitating dialogue with those interested in helping to unpack these agential concepts, and make them operational in everyday life. For more information, please visit oasisprotocol.org.

I.   Background and Overview

It seems that the Internet may have lost its way. Or, perhaps instead many of us have managed to lose the Internet somewhere along the way.

Actually, the "network of networks" is running just fine, operating more or less as intended. As is the World Wide Web, sitting right on top of it. Rather, some of us who have been utilizing these platforms have strayed away from their foundational values of openness, their functional attributes of edge-based power, their inclusive decision-making processes. The standards and protocols of the "Net/Web" were intended to preference – and empower — the many people at the ends of the network connections, rather than those relatively few entities operating at the center. To date, the reality has been otherwise. One even can argue that the current ethos of the Net/Web has been co-opted in ways that have served to entrench certain asymmetries of power.

At the same time, much of the individual and social and economic value inherent in the Net/Web is locked away in separate silos and fiefdoms, subject to the limited incentive structures of Web platform companies. As individuals, and as collectives, the vast

potential of our human autonomy and agency in the digital space remains largely untapped. Opportunities for enhancing human well-being and flourishing continue to be wasted, each and every day.

Together, the Internet and the World Wide Web no longer provide an adequate foundation for empowering ordinary people. Increasingly, as we become digital beings, our technologies are shaping us as much as we shape them. Those of us planetary "digital citizens" need to envision and hold much-needed societal conversations about issues such as control, trust, and accountability.

We need new technology overlays to the Net/Web which embody core human values. This is especially the case even as the world struggles to cope with challenges such as a lethal pandemic, economic distress, and systemic racial injustice. And of course, the looming specter of environmental catastrophe.

This short paper introduces a new way of thinking about our digital selves, and our ecosystems. The fundamental concept is to ground our technology systems in human priorities – starting first with the actual person, and then working our way out to the technologies. The approach suggested is a form of stewardship of our digital ecosystems. Specifically, the paper addresses a combination of three interrelated elements:

the digital + the ecosystems + the stewardship

This new concept of the digital ecosystems stewardship seeks to return to the human-centric roots of technologies and markets, and the social systems that create them.

As we will see, the concept embraces three interrelated components.

- ***Digital***: The countless computational systems being built and deployed throughout society. These computational systems combine personal and environmental data, advanced algorithms, and mediating interfaces. The digital is an encapsulation and an extension of human capabilities. What it means to be a "digital being" in the 21st Century, in all its complexity and challenges, is a deep inquiry unto itself.

- ***Ecosystems***: A systems-based perspective on the mix of technologies, networks, platforms, communities, and related social/political/market systems – and of course the human beings behind all of it. Together, these nested systems make up the backdrop against which the "digital" interplays in myriad ways.

- ***Stewardship*** – An ethics-informed stance, premised on fostering a certain caring, respectful, and beneficent attitude, towards the ordinary people affected by digital ecosystems. Stewardship holds the potential of supporting the healthy

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flourishing of all humans and their systems. One example from the analog world is the duty of care and loyalty that common law fiduciaries, such as physicians, attorneys, librarians, and others, embrace as part of their respective roles with their clients and patrons. Similar obligations and mindsets can be adopted by entities operating in the digital world.

This initial paper in a series is intended to open the door to exploring the need for a new paradigm of digital stewardship, and sketching out some initial concepts. Later papers will broaden and deepen the thinking, and propose a detailed research agenda. Overall, this project should be considered an invitation to those interested in helping to unpack these concepts, and make them operational in everyday life.

II. The Why: Bringing Power and Trust (Back) to the Edge

A. The Perpetual Challenges

1. *Power and Trust*

The history of humankind inevitably is a history of power gained, and utilized, in various situations. More recently, scholars have studied the entrustment of power in certain societal institutions and practices.[3] First, power came to us "naturally," as human beings became the predominant species on the planet, with the ability to reshape, even destroy, natural ecosystems. Power also arose "socially," as our religious and political and market institutions instantiated human wants and needs in more enduring, and shaping, forms.

Now, at the cusp of the digital era, power is coming to reside as well within the technologies we create and deploy. These digital technologies are reflective of the underlying natural and social power relationships, and asymmetries, as well as reflecting back on those same relationships.

In parallel with complex issues of power and legitimacy come questions regarding basic human trust. It is a truism that trust is the social glue, the foundational principle that binds together all relationships.[4] Challenges with trust are not unique to the online world; this lack has become increasingly noticeable as well across other major institutions.[5]

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[3] Steven Lukes, <u>Power: A Radical View</u> (2005) (three forms of power); John Gaventa, *Finding Spaces for Change* (2009), https://www.powercube.net/wp-content/uploads/2009/12/finding_spaces_for_change.pdf (power cube of levels/forms/ spaces).

[4] Stephen Covey, <u>The Moment of Choice</u>, at 243.

[5] *See, e.g.*, Eric M. Uslaner, "The Study of Trust," in <u>The Oxford Handbook of Social and Political Trust</u> (ed. Eric M. Uslaner) 3 (2018), at 12 (levels of trust in other people and institutions seems lower today than in the past); 2020 Edelman Trust Barometer (none of the four societal institutions of government, business, NGOs, and media is trusted). https://www.edelman.com/trustbarometer.

According to noted expert Rachel Botsman, there are three basic kinds of trust which have developed over human history.[6]

- **_Local trust_** is the original form, typically between members of small, local communities. This kind of interpersonal trust is in someone specific, and familiar.

- **_Institutional trust_** flows upwards to leaders, experts, and brands, which traditionally have included large entities such as churches, governments, media, and corporations. To some, institutional trust has been declining due to an increasing number of (or simply more revelations about) scandals and breaches of faith involving these entities.

- **_Distributed trust_** flows laterally between individuals, enabled by systems, platforms, and networks. Botsman believes this version to be in its infancy, and a source of both potential upside and downside for users.

Interestingly, distributed trust is based largely on reputation – what someone thinks about you. Botsman considers this to be "trust's closest sibling."[7]

These observations are not intended to be normative statements, the "what should be." Human power exists, and always will exist, and can be used across a continuum of socially beneficial and harmful scenarios. Power asymmetries, between haves and have nots, also have been an enduring aspect of humanity. Challenges with legitimacy and trust will be with us in perpetuity.

At the same time, technologies offer opportunities to bridge at least some of these durable gaps in power, legitimacy, and trust. In particular, the Net/Web's distributed architecture, and end-to-end principle,[8] has played an enormous role in facilitating opportunities for the relatively new form of distributed trust to emerge.

2. Human Freedom

When it comes to technologies, an important consideration is to what extent human beings are enabled, or constrained, from exercising their autonomy (freedom of thought) and agency (freedom of action). Autonomy is one's ability to self-direct,

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[6] Rachel Botsman, <u>Who Can You Trust? How Technology Brought Us Together, and Why It Might Drive Us Apart</u> (2017), at 7-9, 40-41, 262-263.

[7] Botsman, <u>Who Can You Trust?</u>, at 148.

[8] Richard Whitt, *A Deference to Protocol: Fashioning a Three-Dimensional Public Policy Framework for the Internet Age,* Cardozo ARts and Entertainment Law Journal, 31:3, 689, at 709-711 (2013).

self-determine, while agency is behavior, and the ability to act in the world.[9] Constraints and limitations on the human spirit are inevitable. The point is whether, and how, we can fashion a new ethos of technology that operates from within those constraints.

Mark Taylor reminds us that a perennial misplaced promise of technology visionaries is that in the future, all will be possible.

> *Possibilities are inevitably limited by constraints that can never be overcome. The only viable freedom is not freedom **from** constraints but the freedom to operate effectively **within** them…. [Nonetheless, constraints] are not merely negative but can be productive; indeed, there are no creative possibilities without significant constraints. Constraints provide the parameters within which thinking and acting must occur."[10]*

One person's constraint is another's way to leverage real change.

B. Why Now?

1. Reversing the downside

The digital world is reaching an inflection point, as seen in the rise of institutional (corporate and governmental) *computational systems*.[11] These systems are now a pervasive presence, in every interfacial device screen, local scene, and bureaucratic "unseen" in our lives. These systems constantly render and facilitate consequential decisions that impact every aspect of our lives. Often they operate inscrutably, behind the opacity of "black boxes," silently surveilling us, evolving the environments that shape our perception and decision making and collecting more and more data about us. That data then is utilized to influence our choices and behaviors.

As online technologies become more pervasive, consequential, and opaque, a leading cause of distrust among ordinary people is the existing mismatch in motivations between the purveyors of computational systems, and the rest of us. Too many online entities, operating as multisided platforms, treat those using their services as mere "users," rather than bona fide customers, clients, patrons, or constituents.[12] In essence, these companies occupy a role of uninvited intermediary, between the "user" and the rest of the Net/Web.

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[9] For more on these concepts, see generally Richard Whitt, *Hacking the SEAMS: Elevating Digital Autonomy and Agency for Humans,* 19:1 Colorado Technology Law Journal (2020) (forthcoming) (manuscript draft, at 15-18). *See also* Richard Whitt, *Old School Goes Online: Exploring Fiduciary Obligations of Loyalty and Care in the Digital Platforms Era*, Santa Clara High Technology Law Journal, Vol. 36, Issue 1 (February 2020), at 103-104.

[10] Mark Taylor, <u>The Moment of Complexity</u> (2001), at 224.

[11] Whitt, *Hacking the SEAMS,* at 6-7.

[12] Whitt, *Old School Goes Online,* at 102-103.

This objectification of users carries over to these platform entities' commercial practices, which rely heavily on what can be thought of as the "SEAM" feedback cycle. This looping process uses digital technologies to *Surveil* users, *Extract* and A*nalyze* their data, and find ways to influence or even *Manipulate* their actions.[13] The chief purpose of all this daunting technology is straightforward: control, and money.

With the rise of the SEAMs paradigm, the downside of the Web has become increasingly apparent. Multsided online platforms now act as the new intermediaries, with humans at the edge becoming fodder for data extraction machines. Those relatively few platforms capture most of the financial benefit, shutting out other potential market players with different business models and value propositions to offer. Shadowy data brokers and aggregators, with whom users have no actual relationship, develop and apply data profiles to shape the ways we perceive and interact in the world — for their benefit. Ordinary people lose out on vastly different ways to tap into the value of their personal and communal data.

The result is declining trust in the Web. Too often, these computational systems, and their SEAM cycles operate from beyond the purview of the ordinary human being. They display no obvious grounding in fundamental human ethics. They provide little opportunity for end users to have meaningful involvement in their operation. In short, many of today's systems have become unmoored from their human foundations. All of which inevitably leads to a more trust-deficient Net/Web — and lost opportunities to create lasting value for humans and companies alike.

2. *Capturing the upside*

At the same time, the potential inherent in these advanced technologies is enormous. All human beings can benefit from significant improvements in their day-to-day well-being and their flourishing. This ranges from greater competitive choices in the digital market, to access to more advanced technology tools that to this point largely are owned and controlled by the large platform companies.

Most companies too can gain enormously from adopting more trustworthy, human-empowering ways to serve end users. Because the current SEAMs paradigm has created a "winners take most" market reality, few alternatives to date have managed to surface. More competition means more opportunities for companies — both those who supply advanced tech tools, as well as those eager to benefit from digital advances.

This upside is especially essential to address our current world of global pandemics, and social and economic upheaval. Technology tools able to effectively address issues such as protecting health data, and promoting social justice, can and should be made available under secure, inclusive, privacy-enhancing conditions. Other tools to improve our respective situations should be developed as well. Applying the power of

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[13] Whitt, *Hacking the SEAMS,* at 4-5.

computational systems to present day challenges, such as the COVID-19 pandemic, can open up enormous societal benefits. When human beings are able to exercise their autonomy and agency via computational systems, the world benefits in immeasurable ways.[14]

Even the platforms themselves could benefit from more human-centric approaches. As policymakers continue to develop regulatory tools to protect users, and competition, the platform companies will come under increasing unwelcome scrutiny. Basing business practices on trustworthiness, rather than the surreptitious SEAMs paradigm, could help minimize the risks of future regulatory compliance burdens.

And of course, more human-centric business models, backed up by compliance mechanisms like Techs of conduct and other self-regulatory regimes, should leave regulators with more constructive work to do, including ways of engaging with groups of platforms and influencing their norms and practices, that complement more traditional regulation.

3. *Changing our paradigms*

When confronted with paradigms in need of change, such as the current Net/Web ethos of SEAM cycles, complex systems thinking can guide us. Donna Meadows, the great expert in complexity theory, described various ways to leverage change in existing systems, so they "produce more of what we want and less of that which is undesirable."[15] She charts out a dozen useful leverage points to intervene in floundering systems, such as altering feedback loops, and modifying information flows.[16]

The single most effective approach is to directly challenge the existing paradigm – with its "great big unstated assumptions" – propping up the suboptimal system. We can do so in two ways in parallel: relentlessly pointing out the anomalies and failures of that prevailing paradigm, while working with active change agents from within the foundations of a new paradigm. As Meadows puts it, "we change paradigms by building a model of the system, which takes us outside the system and forces us to see it whole."[17]

As will be discussed in Part III below, digital stewardship is one perspective worth exploring, as an ethos, which can include a substantive stance, inclusive processes, and forms of guidance. Digital stewardship can become the normative "what should/could be," layered on top of the "what is" that constitutes society's current ecosystems, including the Net and the Web. In short, if data, and AI, and interfaces, are the key

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[14] The Author elsewhere refers to this new paradigm as HAACS: human autonomy and agency, via computational systems. Whitt, *Hacking the SEAMS,* at 15.

[15] Donatella Meadows, <u>Thinking in Systems: A Primer</u> (2008), at 145.

[16] Meadows, <u>Thinking in Systems</u>, at 153-157.

[17] Meadows, <u>Thinking in Systems</u>, at 163-164.

constituents of computational systems, they also constitute crucial leverage points to fashioning healthier technology ecosystems for all.

More and more, the digital is shaping the human. Perhaps it is time for the human to begin returning the favor.

III. The WHAT: Rethinking Digital + Ecosystems + Stewardship

The digital world should provide opportunities for new forms of human flourishing, of maximizing human autonomy and agency, in its various individual and collective forms. In particular, introducing various technology overlays to the Net/Web can tap into the enormous potential for empowerment found in its governing architecture. From the perspective of promoting human rights, one way to think about it is:

one's digital rights should at least equal,
if not exceed, one's analog rights

A straightforward way to analyze a particular technology in its environment is to divide it into three components: the Tech of software/hardware, the Players of stakeholders operating within the ecosystem, and the Rules of the governing "rules of the road."[18] In this case, the three elements of the proposed new paradigm are the computational systems (Tech), the ecosystem of stakeholders (Players), and the ethos of stewardship (Rules). This section briefly unpacks these interrelated elements.

A. The Tech: Computational Systems

1. *Technologies in general*

Technologies mediate various forms of human interaction.[19] As such, they instantiate, and inculcate, underlying values, even when such influence is not immediately apparent. They give texture to certain kinds of private relationships, weighing in on the side of one vested interest over another. Importantly, by the same token, technologies are not deterministic or inevitable; they are not a "force" or a "trend." As human creations, they are answerable to their creators, who have infused technologies (wittingly or not) with their own values, and those of the society forming the overall backdrop of the creators..

Technologies can enrich the other modalities of life, including personal, social, economic, and political modalities. Technologies can also inhibit our ability to express ourselves freely and autonomously in these same modalities.[20]

2. *The generative, edge-based Internet*

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[18] Whitt, *A Deference to Protocol*, at 732-756.
[19] Whitt, *A Deference to Protocol*, at 705.
[20] Whitt, *A Deference to Protocol*, at 705.

One notable example is the Internet's architecture. Over time its inventors made deliberate design choices that led to particular functional attributes, such as modularity, interoperability, the end-to-end principle, and agnostic bearer protocols.[21] As IETF, its standards-making body, put it: "[t]he Internet isn't value-neutral, and neither is the IETF…. We embrace technical concepts such as decentralized control, edge-user empowerment, and sharing of resources, because those concepts resonate with the core values of the IETF community."[22]

These design choices in turn have become embedded within the Internet's standards and protocols. At the macro level, this combination of attributes means the Internet is several things at once to its users — a general platform technology, a complex adaptive system, and a common pool resource.[23] The key commonality to all of these micro and macro interactions is the countless ways the Internet (and later the Web) empowers ordinary end users at the edge of the network.

With the rise of computational systems, we have an opportunity to tap into, and even enhance, those same energizing values and design principles of the Net/Web. Because these newer systems act as overlays, metaphorically sitting on top of the Net/Web, they can channel those same still-radical concepts of edge-based control. The digital revolution can write another chapter in unleashing the considerable potential of the Net.

3.   The rise of advanced computational systems

Today's digital ecosystems begin with data and algorithms. *Computational systems* are comprised of nested physical and virtual components. These combine various overlays (Web portals, social media offerings, mobile applications) and underlays (network infrastructure, cloud resources, personal devices, and environmental sensors). These components are fed by considerable amounts of data, derived from users' fixed and mobile online (and increasingly offline) activities. At the intelligent core of these systems is the computational element itself – AI – while the user-facing element is the interface.[24]

In brief, advanced computational systems are comprised of three basic components:

- *Data*: The digital slices of reality that feed the systems. The very concept of data opens up large questions about the narratives we use to describe ourselves as digital human beings. Deeper understanding is required as well about the economic, legal, and governance framings we employ to deal with data.

[21] Whitt, *A Deference to Protocol*, at 706-716

[22] H. Alvestrand, *A Mission Statement for the IETF* 1 (Network Working Group, Request for Comments (RFC) No. 3935 (October 2004), available at https://www.ietf.org/rfc/rfc3935.txt. Cited in Whitt, *A Deference to Protocol*, at 705-706.

[23] Whitt, *A Deference to Protocol*, at 717-722.

[24] Whitt, *Old School Goes Online,* at 103.

- *Algorithms*: The artificial intelligence, machine learning, and other analytical networks that drive the computations — like an organism's nervous systems.

- *Interfaces*: The mediating sensory organs of the system which include the digital screens, local scenes, and bureaucratic "unseens" with which humans interact on a daily basis.

It is important to consider in their own right each of these elements of computational systems. In differing ways, they raise important questions for further consideration about the nature and extent of human control, autonomy, and agency.[25]

B.   The Stakeholders: An Ecosystem of Layers and Players

As we shift away from the SEAMs paradigm, towards more trustworthy and human-centric approaches, the marketplace will open up to a vast assortment of new stakeholders. No longer dominated by a relatively few large platform companies, the Web can take on the robust characteristics of an actual ecosystem. This means the potential involvement of many more players, operating at different network layers. The prospect of such increased activity, and the material benefits to companies, individuals, and communities, will warrant the introduction of more inclusive and democratic processes of decision making.

During the 20th Century, the notion of a metaphorical "ecosystem" of human activities was utilized in many different contexts.[26] In fact, both the Internet and the Web are considered ecosystems in their own right. In this case, those networks provide the crucial underlying fabric for the rise of the overlay of advanced computational systems. And by this telling, these newer systems necessitate their own separate concept of an ecosystem, to provide grounding for new forms of oversight.

In 1978, the seven-layered OSI stack was introduced to the world.[27] While never formally adopted, that reference model contained much of the functionality that eventually would comprise the Internet, from physical infrastructure (Layer 1) to content (Layer 7). Evi Nemeth, the noted software engineer, famously and somewhat facetiously added two additional layers to the OSI stack: Layer 8 for Finance, and Layer 9 for Politics. Where Layers 1-7 constitute the Code, Layers 8 and 9 constitutes many of the organizations – the groups and individuals — who create, deploy, and ultimately utilize online technologies. Collectively, we can call those who occupy these layers the Players in the digital ecosystem.

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[25] *See generally* Whitt, *Hacking the SEAMS*.
[26] *See* Michael C, Jackson, Critical Systems Thinking and the Management of Complexity (2019), at 37-40; Meadows, Thinking in Systems, at 25-34.
[27] Whitt, *A Deference to Protocol*, at 41-42.

Using systems thinking, we can appreciate the potential leverage points for enacting change within an ecosystem. These include the significant role for amplifying and stabilizing feedback loops, and feed-forward loops, of energy and information flows.[28] Altering the Tech (the nature and treatment of data, the operating principles of AI, the design of interfaces) can change the ways that the Players interact, and the larger ecosystem functions, in both macro and micro ways. Similarly, making more or less inclusive the processes for Players to engage with each other can directly affect the Tech.

Labelling Players as the stakeholders includes all people who might be affected by the practices and activities of computational systems — which is pretty much everyone. Making a point of emphasizing the role of Players is one way to recognize and acknowledge all voices. These can include the obvious – entrepreneurs, technologists, policymakers, academics, activists – but also the less obvious – ordinary human beings.

It is especially important to recognize those who are or may become disproportionally impacted by digital technologies. These can include the traditionally disaffected, disempowered, or ignored.[29] Much as endangered species in a natural ecosystem, these human beings require heightened attention, on their own terms. A truly robust and healthy ecosystem takes care of its own.

C.   The Rules: An Ethos of Stewardship

The final element of the proposed paradigm is the "Rules." These constitute the organized human behaviors and practices around a particular set of activities.[30] Also referred to in some quarters as "governance," these are the countless formal ways we manage ourselves, from the "hard" power of constitutions and laws and regulations, to the "softer power" of codes of conduct, best practices, standards, and norms.

While defining the "Tech" of computational systems and the "Players" of ecosystem stakeholders should be relatively straightforward, establishing the "Rules" for our proposed new human-centered paradigm is more challenging. Many different governance regimes intersect and interact across different geographic and political zones. The suggestion here is to take a broad governance approach that can welcome many of these regimes under one encompassing conceptualization.

Selecting "stewardship" as that conceptual umbrella likely requires some initial explanation. Why should we consider being a digital steward as a way to help inform and unify this proposed new paradigm? In brief, because stewardship can give us a compelling perspective, a strong sense of direction, and some actionable paths forward.

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[28] Taylor, <u>The Moment of Complexity</u>, at 164-171.

[29] For one compelling perspective, see Catherine D'Ignazio and Lauren F, Klein, <u>Data Feminism</u> (2020) (challenges the ways that power differentials are instantiated in digital technologies).

[30] Richard Whitt, *Adaptive Policymaking: Evolving and Applying Emergent Solutions for U.S. Communications Policy*, Federal Communications Law Journal, Vol. 61:3, 483, 512-526 (2009).

1. *Stewarding Ourselves*

Inspiration for digital ecosystem stewardship is drawn in some measure from modern-day environmentalism.[31] The stewardship concept also emanates from religious practice.[32] Respecting and caring for the integrity of the natural world is the cornerstone of being an environmental steward. This stance recognizes how humans have the power, and often the incentives, to harm or even destroy natural ecosystems. With the right incentives, they also have the power to coexist, and even encourage a flourishing of human beings with other beings in the natural environment.

What makes for a healthy ecosystem? One generic definition is the balanced flows of matter and energy and information between and among the many players in the environment, in ways that provide mutual long-term benefit. If we think of the world at large of computational systems – the Tech, the Players, the Rules — as its own ecosystem in similar holistic fashion, we can open up new perspectives.

If for example that digital ecosystem has intrinsic worth, then the goal is the health and well-being of the ecosystem itself. The ecosystem is the beneficiary, in whole as well as in its many constituent parts. In the environmental context, that is where stewards typically have come into the picture.

It may be said then that one mission of a digital steward is to foster the success of the human and virtual infrastructures of the evolving digital world. Her aim is to respect and care for the integrity, resilience, and overall health of the digital world, as an extension of core human values. In this way, stewardship can be seen as honoring in principled fashion the relational, contextual, and mediating aspects of digital life. An allied approach currently being explored by various stakeholders is developing fiduciary and trust-based governance models for the digital world.[33]

2. *Achieving an Ethos*

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[31] *See, e.g.,* Ricardo Rozzi et al, Earth Stewardship: Linking Ecology and Ethics in Theory and Practice (2015), at 10-13 (integrating ecology and ethics forms the foundation for earth stewardship action); F. Stuart Chapin, III, Gary P. Kofinas, and Carl Folke, ed., Principles of Ecosystem Stewardship: Resilience-Based Natural Resource Management in a Changing World (2009) (goals of stewardship include encouraging the ecosystem's resilience, sustainability, and diversity, and recognizing and managing the uncertainty from multiple feedback loops and tipping points).

[32] See R.J. Berry ed., Environmental Stewardship (2006) (Judeo-Christian religious doctrine includes care and stewardship of creation). Some suggest that Buddhism includes "ecodharma," which includes collective responsibility and action to protect the natural world. David R. Loy, Ecodharma: Buddhist Teachings for the Ecological Crisis (2018).

[33] See generally Whitt, *Old School Goes Online*.

As noted above, today's Web is dominated by the SEAMs paradigm, and its logic of extraction and exploitation. As with too many other existing societal systems, this paradigm is rooted in human power. Those with the power to control outcomes — mostly large platform companies and data brokers — use it to maximize their financial gain. Those without such power — ordinary users, other businesses, NGOs, disadvantaged communities, and even many policymakers — seemingly have little choice, and no recourse.

If this is so, this dynamic suggests that to be a good "steward" is not simply to follow blindly the Web's existing power structures and incentives. Nor does stewardship entail engaging in "ethics washing," or viewing ethical conduct as merely a box to be checked in a product's journey to the market. Instead, one role is to test, and even challenge, those power asymmetries, those assumed constraints. To some, this means that stewardship is a vocation grounded in human ethics.[34]

One suggestion here is to describe the practices and end goals of the digital steward as constituting an ethos. The word "ethos" is ancient Greek for "character." It connotes the fundamental ideals, beliefs, or values that characterize and guide a particular community of people.[35] In this instance, that notion of ethos resonates because it captures the various technology and governance implementations that could be utilized to carry out a role of digital stewardship.

In brief, the ethos for a new stewardship of digital ecosystems can include three elements: a stance, the processes, and some guidance. In particular, a practice centered on achieving an ethos can:

- Highlight the desirability of infusing humanistic values and beliefs throughout the ecosystem (stance);

- Engage with an inclusive universe of stakeholders, with an emphasis on the typically underrepresented (processes); and

- Create and advocate for new network design principles — such as the Internet's end-to-end principle — to guide the creation, deployment, and use of digital technologies (guidance).

One hoped-for end result is that ordinary human beings will begin to show greater trust in entities operating via the Web. Per Botsman, this can happen in two ways: enhancing the upward institutional trust flows (between individuals and entities), and introducing lateral distributed trust flows (between individuals and networks).

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[34] Kimberly K. Smith, Exploring Environmental Ethics: An Introduction (2018).
[35] https://en.wikipedia.org/wiki/Ethos.

With the latter, trust could become infused into the data systems themselves. This will be especially germane with new technology overlays that tap into edge-based capabilities – such as distributed computing, federated learning, differential privacy, and trusted execution environments. While much research and engagement remain to be done, such trustful technology enhancements can unlock new, mutually beneficial opportunities for all stakeholders.

IV.   Issuing a Call to Action

On behalf of Oasis Protocol Foundation, consider this a call to explore opportunities to create and inhabit a new world of digital stewards.   We issue a specific invitation for all stakeholders — including of course end users — to endorse the concept of digital stewardship, and work together to create a more human-empowering online ecosystem. In particular:

Individuals: demand more autonomy and agency from the companies who handle your data.

Companies: establish clear guidelines for promoting the best interests of ordinary users.

Technologists: develop technologies that give ordinary users more control over their data.

Entrepreneurs: launch products and services that give more control over personal data to ordinary users.

Policymakers: ask tough questions about why today's Internet lacks human autonomy and agency, and what we can do to change the situation.

The Oasis Protocol Foundation commits to facilitating dialogue with those interested in helping to unpack these agential concepts, and make them operational in everyday life. For more information, please visit oasisprotocol.org.

V.   Conclusion: Returning to the Edge

Can adopting different technology alone change the course of massive and growing power asymmetries in our societies? Probably not. Can particular technologies give each of us tools to increase and improve the existing options for alternative power structures and paradigms to take hold? Perhaps.

The radical human-empowering potential of the Net/Web remains, still largely untapped. One key is to conceive of a new ecosystem of computational systems which can help unleash that potential in countless new ways. If we begin with the autonomous human, and work our way out to agential technologies, we still have a chance to

establish and then build out computational systems that can enrich our lives in myriad ways. Exploring an ethos, and related technologies, of digital stewardship is one way to help get us there.