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Digital Preservation Success Metrics

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“The lyf so short, the craft so long to lerne ...”

- (Very) brief introduction to concepts and framework for comprehensive digital preservation evaluation
 - For more background and detail:
 - S. Abrams (2025), "Multivalent evaluation of digital preservation success," *Journal of Documentation*, [doi:10.1108/JD-12-2024-0313](https://doi.org/10.1108/JD-12-2024-0313)
 - In order to put ideas across quickly, I'm going to willfully exaggerate and be deliberately provocative
- Leaving lots of time for discussion



Not an implementable solution; rather, a conceptual frame for thinking about a solution

Why measure the DP enterprise?

- Parochially
 - Use of centrally-supported Harvard DP is discretionary and operates on a cost-recovery basis, charged back to individual curatorial units
 - Need to emphasize the value proposition
- Generally
 - Promote adoption and retention
 - Advocacy for commitment and resources
 - Target finite resources most productively
 - Transparency and accountability to stakeholders

Are we measuring the right thing?

- Busyness
 - Basically, how many widgets?
 - Exemplified by ALA [Preservation Statistics](#)
 - (Sort of) useful; but above all, easy
- Trustworthiness
 - Basically, is claimed capability believable?
 - Exemplified by [CTS](#) and [ISO 16363](#)
 - (More) useful, but with an important caveat

What does trustworthiness say about the future?

- Assurance that “*digital holdings **will** continue to be useable and understandable into the future*” [emphasis added]

– D. Giaretta (2011), [doi:10.1007/978-3-642-16809-3](https://doi.org/10.1007/978-3-642-16809-3)

- ✓ Assessment that a repository “***can** preserve, manage, and provide access*”

– D. Donaldson (2020), [doi:10.1371/journal.pone.0242525](https://doi.org/10.1371/journal.pone.0242525)

- Trustworthiness is putative, indicating what is *more likely* to happen, but not what *will* or *did* happen

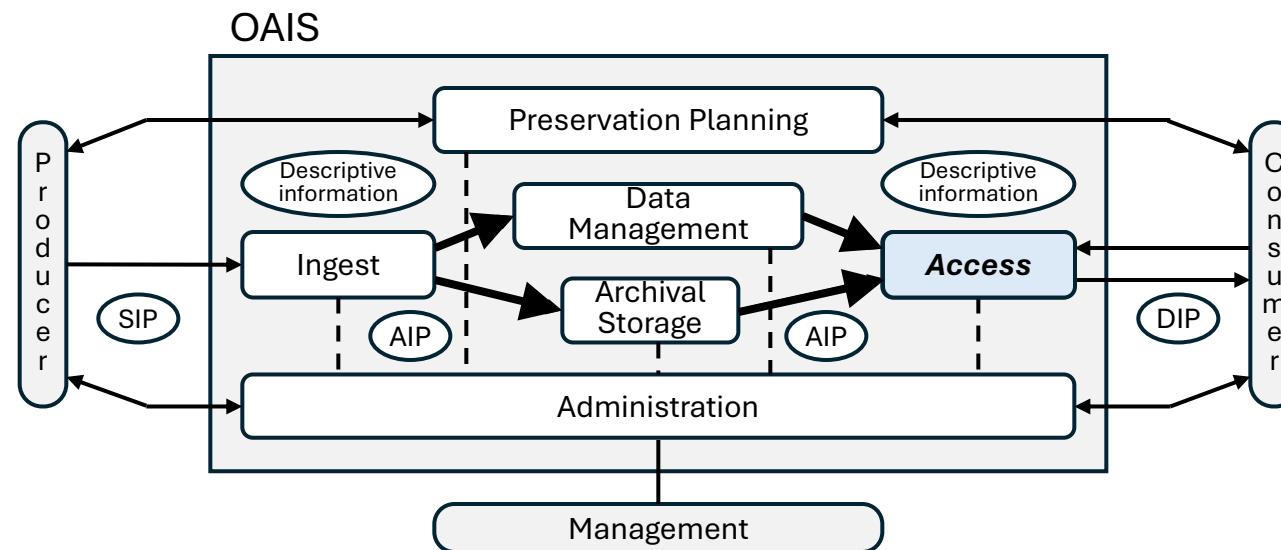
Are we measuring the right thing?

- Busyness
- Trustworthiness
- Success
 - Basically, are intentions, expectations, and realized state aligned?
 - Exemplified by ???

- “*A metric that’s defied measuring*” – C. Lynch (2006), <https://jodi-ojs-tdl.tdl.org/jodi/article/view/229>
- “*What are the most appropriate metrics?*” – A. H. Poole (2016), [doi:10.1108/JD-10-2015-0123](https://doi.org/10.1108/JD-10-2015-0123)
- “*Elusive experiences*” – T. N. L. Evans (2021), <https://hdl.handle.net/11353/10.1424951>

How'd we get here?

We don't have the right model; we don't even have the right definition



“Actions required to maintain **access** to digital materials beyond the limits of media failure or technological and organisational change” [emphasis added]

– DPC Handbook (2015), <https://www.dpconline.org/handbook>

How'd we get here?

Metaphoric narrative that preservation is (only) what happens ***inside the box***

OAIS

WE do lots of important stuff here
We measure what ***WE*** do
We assume ***OUR*** satisfaction defines
everyone's success

*Somone, somewhere,
somehow creates / acquires
stuff*

*Somone, somewhere,
somehow does something
with stuff*

*Somone, somewhere,
somehow watches us (but
doesn't really understand)*

Access vs use

- Is something accessible *necessarily* usable?

“ The ability to **get to** archival resources through intellectual, digital, or physical means”

– SAA Dictionary, dictionary.archivists.org/category/access.html

- Possession does not imply an ability for meaningful purposive exploitation



DP as Humanistic Communication with the Future

“Who / Says What / In Which Channel / To Whom / With What Effect?”

– H. D. Lasswell (1948)

Who / **Said** What / In Which Channel / To Whom / **When** / With What Effect?



- Facilitating future use of past informative expression
- Communication, but not conversation

DP as Humanistic Communication with the Future

Proactive assurance of meaningful human communication technically-mediated

across time

***Affirmative** decision-making and activity*

Predictable** and **reliable

*Ameliorating risk from **cultural** as well as **technical distance***

***Contingent** on time, place, person, and purpose*

*People don't **object**, they **experience** objects*

*Behavioral rendering of digital to analog for sensory **perception***

Foundations of digital preservation-enabled communication

Perspective	Managerial				Communicological		
Concern	Information object				Info performance	Information experience	
Scope	Constitutive is-ness		Denotative of-ness			Connotative about-ness	
Abstraction	Carrier	Message			Channel	Environment	Mind
Semiotic	Physics	Empirics	Syntactics	Semantics	Performics	Plaistics	Pragmatics
Role	Reificatory	Representation	Rhetorical	Ontological	Epistemological	Relational	Phenomenological
Purpose	Manifestation	Encoding	Expression	Meaning	Behavior	Context	Understanding
Quality	Integrity	Validity	Accuracy	Reliability	Availability	Relevancy	Efficacy
Imperative	Authenticity				Accessibility	Legitimacy	
Basis	Immanent			Emergent			
Consequence	Requisite outputs			Impactful outcomes			
Warrant	Objective			Intersubjective			
Import	Instrumental means				Teleological ends		
Metric	Enabling trustworthiness				Enabled success		

Complementary foundational perspectives

Perspective	Managerial				Communicological		
Concern	Information object				Info performance	Information experience	
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Complementary foundational concerns

Perspective	Managerial				Communicological		
Concern	Information object				Info performance	Information experience	
Scope	Constitutive is-ness			Denotative of-ness		Connotative about-ness	
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Complementary foundational aspects

Perspective	Managerial				Communicological		
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Role	<i>Reificatory</i>	<i>Representation</i>	<i>Rhetorical</i>	<i>Ontological</i>	<i>Epistemological</i>	<i>Relational</i>	<i>Phenomenological</i>
Purpose	<i>Manifestation</i>	<i>Encoding</i>	<i>Expression</i>	<i>Meaning</i>	<i>Behavior</i>	<i>Context</i>	<i>Understanding</i>
Quality	<i>Integrity</i>	<i>Validity</i>	<i>Accuracy</i>	<i>Reliability</i>	<i>Availability</i>	<i>Relevancy</i>	<i>Efficacy</i>
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Coalescing into three preservation imperatives ...

- Assuring authentic information objects
- Provisioning accessible information performances
- Enabling legitimate information experiences

Coalescing into three preservation imperatives ...

- Assuring authentic information objects
- Provisioning accessible information performances
- Enabling legitimate information experiences

Active
commitment

Qualifying
criteria

Nominal
focus

Objective

Guarantee

Universal

Material

Expectation

Categorical

Action

Intention

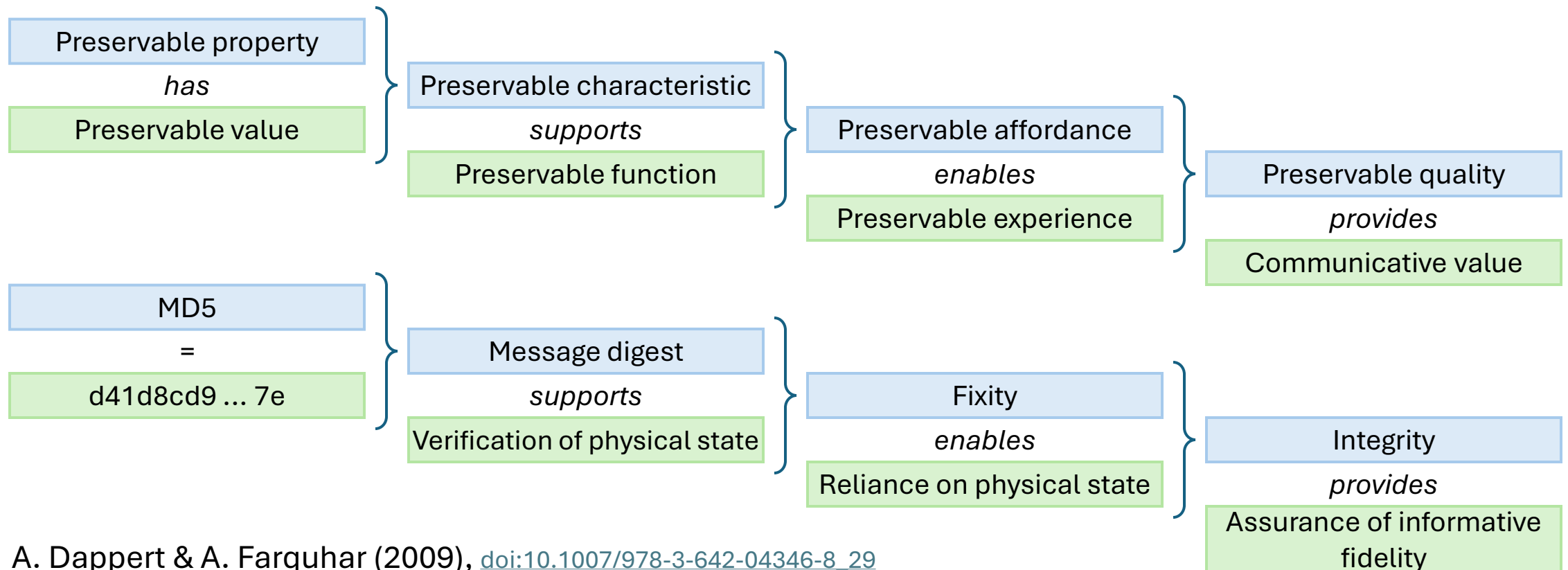
Individual

Effect

Intersubjective

Hierarchy of measurable preservable attributes

The performance and experience of an object are dependent on that object's attributes, each associated with some conceptual weight of significance



Multivalent evaluation of digital preservation success

Preserved objects have ... [one or more]
Users situated in ... [one or more]
Contexts dependent on ... [one or more]
Qualities enabled by ... [one or more]
Affordances supported by ... [one or more]
Characteristic properties
Independently weightable and evaluable

$$\mathbb{S} = \sum_{o \in O} \sum_{u \in U_o} \sum_{x \in X_{o,u}} \sum_{q \in Q_{o,u,x}} \sum_{a \in A_{o,u,x,q}} \sum_{p \in P_{o,u,x,q,a}} \frac{\omega_{o,u,x,q,a,p} \cdot S_{o,u,x,q,a,p}}{k_{o,u,x,q,a}}$$

Caveat lector

- **NO** suggestion that DP evaluation is amenable to precise numeric quantification (yet)
- A conceptual model for *thinking* about qualitative assessment



Multivalency in action

Consider a still image reproduction consumable in two contexts: as a surrogate, and as a facsimile



L. Feininger (1926), *Bird Cloud*, Harvard Art Museum, [BR50.414](#)

Multivalency in action

Consider a still image reproduction consumable in two contexts: as a surrogate, and as a facsimile

<i>Preservable attributes</i>					<i>Conceptual weights</i>	
<i>Quality</i>	<i>Affordance</i>	<i>Characteristic</i>	<i>Property</i>	<i>Value</i>	<i>Surrogate</i>	<i>Facsimile</i>
Accuracy	Colorimetric fidelity	Colorspace	Color profile	opRGB	Nominal	Critical
	Spatial fidelity	Sampling plane	Plane	Source	Minor	Critical
		Sampling frequency	Unit	PPI	Minor	Critical
			X	\underline{x}	Minor	Critical
			Y	\underline{y}	Minor	Critical
		Image size	Height	\underline{h}	Nominal	Critical
	Width		\underline{w}	Nominal	Critical	

Multivalency in action

- Successful preservation as a surrogate may be a failure for the facsimile use case
- Success for the facsimile is implicitly successful for the surrogate, but potentially at a higher programmatic cost
- Multivalency allows you to “dial-in” the proper (or expedient) balance of effort and impact

Take-aways

- Digital preservation is fundamentally a communicative enterprise, ultimately concerned with enabling future experience of past informative expression
- Experience is inherently intersubjective, so evaluation of that experience must be multivalent
- Low-level artifactual characteristics are best derived top-down from informational qualities
- Significance (of properties) and designation (of communities) are best viewed as relative degrees rather than absolute binaries

Thank you!

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S. Abrams (2021), “Tacit attitudinal principles for evaluating digital preservation success,” *Archive Science* 21(3): 295-315. [doi:10.1007/s10502-021-09360-5](https://doi.org/10.1007/s10502-021-09360-5)

S. Abrams (2023), *A Communicological Critique of Evaluative Norms for Digital Preservation Success*, PhD dissertation, Queensland University of Technology. [doi:10.5204/thesis.eprints.238194](https://doi.org/10.5204/thesis.eprints.238194)

S. Abrams (2023), “Rethinking digital preservation: Conceptual foundations,” *19th International Conference on Digital Preservation*, University of Illinois Urbana-Champaign. <https://hdl.handle.net/2142/121094>

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Discussion

- Is the argument for repositioning DP as a communicative enterprise plausible and compelling?
- Is the complementarity of the managerial/artifactual/accessible and communicative/experiential/usable perspectives clear?
- How do you define the boundaries for the scope of DP responsibility?
- How do you express the success of your DP activities?
- Does the idea of multivalency address the nuance and complexity of your DP environment?