Jacques Ellul and the Ethics of Economic Growth, Especially with Reference to Data Creation

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Backdrop: The Myth/Theory of a Non-Extractive Capitalist Ethic, and Why Christians Might Be Attracted to It

"If only those people could understand that one person's gain doesn't necessarily mean another's loss," said a relative of mine, now deceased, a few decades ago, bemoaning the extractive industries prevalent in a part of the world whose unrest had reached the headlines. My relative was a fervent believer in capitalism and spent a significant amount of his free time researching investments. However, he cautioned against what he called the "bigger fool theory": investing in a non-productive item (such as a precious metal or an artwork) hoping that someone later would pay more for it. And he believed that a family friend who was a commodities futures trader was doing something immoral: "It's a zero-sum game," he said. "Somebody has to win and somebody has to lose." He believed that investing in stocks and bonds, as opposed to rare items or commodities futures, funded economic activity that allowed multiple parties to benefit. Ideally, in his view, this economic activity would allow people to focus less on extracting finite amounts of resources that could not be used – or hoarded – by more than one person at the same time, and more on innovations that would

improve the quality of life, showing people that indeed, one person's gain didn't have to be another's loss.

In this paper I am less interested in discussing capitalism *per se* as in looking at how an apparently non-extractive industry – data creation – takes on the characteristics of an extractive industry when looked at through the lens of certain of Jacques Ellul's beliefs about abstractions and power. But I start with my relative's investment ethics because their hope is not confined to the laissez-faire capitalist part of the political spectrum, and their belief in the existence of non-zero-sum transactions has an affinity with Christian theology.

So let's look at zero-sum and positive-sum relationships. In its purest form, a zero-sum relationship is a situation where, if one party gains, another party loses. My cat and I cannot consume the same exact drop of water at the same time, even if, with contortions of my posture, I drink from the same vessel my cat is drinking from. So that's a zero-sum relationship. On the other hand, when I am petting my cat, and she is purring, we are both – or at least as far as I can tell! – more contented than if we'd stay apart. Another term for a positive-sum relationship is "win-win": both parties can "win," and it's not necessary for there to be an opponent for either to gain. The contrast between water and love shows that not all growth – whether it might come under economic measurement or not – is equal. Some things can't be shared without being subdivided. Other things do not diminish in quality – in fact, may increase in quality – if they are shared.

A related phenomenon is the difference between growth that solves a problem and growth that increases demand. Growth in the supply of vaccines that have a near-universal uptake is an example of the first kind, with the potential to eliminate a disease. An example of

the second kind is road construction. If driving becomes easier, the use of cars tends to increase, making even newer roads crowded, leading to demand for even more road construction.[1]

It's possible to have mixed-sum or negative-sum relationships. My cat does not like being picked up and held in front of the camera for too long. I might delight in showing off her beauty, but if I hold her there for too long, she will be unhappy. If I persist long enough for her to scramble out of my arms, she might scratch me, and I will have to wash and bandage my wounds. It would have been better if I had contented myself with taking a picture of her on the floor. That is a "lose-lose" situation, because I am scratched up, and my cat is not happy.

More complicated situations may arise. Two groups in different places may each produce something that benefits the other when they trade, but if the production processes in either area are environmentally harmful, the ecosystem loses. Such "externalities," as they are known in economics, whether they be environmental or social, are a common critique of industries that concentrate on extracting a natural resource that can be found or grown only in limited areas and export it for more universal use. Anglican bishop David Walker, a member of a task force to monitor the mining industry, has summed them up in five categories: human rights, as in the displacement of indigenous communities; health and safety, both for the workers and those who live nearby; governmental corruption or inequitable taxation if cooperation with them is required as the price of doing business; ecological damage; and

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[1]   Adam Mann, "What's Up with That: Building Bigger Roads Actually Makes Traffic Worse," *Wired* website, June 17, 2014, accessed March 11, 2022, https://www.wired.com/2014/06/wuwt-traffic-induced-demand/.

broader social and economic effects, sometimes called the "resource curse," that skew the healthy development of the community and society.[2]

Now let's go back to my pro-capitalist relative's beliefs. He thought that the proportion of the economy devoted to extractive industries should decrease, and the proportion devoted to innovative or renewable activities should increase, because he had an intuition that the former was a zero-sum game, whereas the latter was not. I'll call this the myth or theory of a non-extractive capitalist ethic: "myth" because based on a kind of providence, as in Adam Smith's "invisible hand"[3] (although plenty of people hold variants of this belief who do not claim to believe in supernatural beings), and "theory" because it claims to have characteristics that can be tested: that economies with less of a concentration on extractive activities should enable more people to participate in prosperity.

A recent variant of this theory occurs in Daron Acemoglu and James Robinson's book *Why Nations Fail*. They use the word "extractive" in a more general sense, not just in the sense of extracting natural resources from the earth but in the sense of people in power extracting labor-power, material resources, and de facto consent to be governed from those under them. They contrast the extractive with the "inclusive," where those in power risk the creation of alternative centers of power that enable independent innovation to occur and include more people in power and prosperity. Within the horizons of that book, economic growth is an undifferentiated good – for a nation to "fail" is for it to lag behind others in economic growth. In their more recent work, *The Narrow Corridor*, they argue that for these more inclusive societies to arise, both state and civil society need to be strong and sometimes

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[2] David Walker, "Extractive Industries – A Case Study on Investor Engagement," *Crucible*, January 2022, 27-30.
[3] Adam Smith, *The Wealth of Nations* [1776] (New York: Modern Library, 2000), 485.

compete against each other. Although I intend precisely to question whether economic growth can be considered an undifferentiated good, Acemoglu and Robinson's work is an example of how this ethic can arise without an obvious doctrine of providence – the "narrow corridor" is not given but has to be fought for – and without a doctrine of laissez-faire capitalism.[4] Another example of a hope for a capitalism that empowers a wide range of social strata is given in Robert Reich's work, exemplified in the book title *Saving Capitalism: For the Many, Not the Few*. He has argued in favor of government investment in its citizens, such as through education, and believes that the difference in economic performance between U.S. states that spend more on education and those that spend less can show the superior economic performance of the former.

Why might Christians be interested in this ethic? I would argue that Christianity has a bias toward positive-sum relationships, tempered by the recognition of and appreciation of finitude. Although the phrase arose originally in a passage about the beatific vision,[5] Irenaeus of Lyons's saying, "the glory of God is a human being fully alive" is often quoted to express the compatibility of God's glory and human flourishing.[6] God willed to create something other than God out of love, not out of necessity. Relationships of mutual love, while they involve self-sacrifice, are more than the sum of their parts. Belief in the potential of positive-sum relationships should also serve as a tonic against the kind of nationalism that fears replacement by the other. And, while there are other variables to be measured – relative

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[4] Daron Acemoglu and James A. Robinson, *Why Nations Fail: The Origins of Power, Prosperity, and Poverty* (New York: Crown Publishers, 2012); Acemoglu and Robinson, *The Narrow Corridor: States, Societies, and the Fate of Liberty* (New York: Penguin Press, 2019).

[5] Keith Starkenburg, "Being Fully Alive," *Reformed Journal Blog*, April 22, 2020, accessed March 11, 2022, https://blog.reformedjournal.com/2020/04/22/being-fully-alive/.

[6] E.g., cited in Elizabeth A. Johnson, *She Who Is: The Mystery of God in Feminist Theological Discourse* (New York: Crossroad, 1996), 14.

poverty, environmental damage, and effects on community life come to mind – apologists for

capitalism can point to a decrease in absolute material poverty when their preferred system

has prevailed.[7]

Just how God and human beings are related in providence and in the process of

salvation has been the subject of much theological dispute, and I do not intend to propose a

new theory here, simply to describe how Ellul's theology fits into it – and how Ellul's beliefs

about abstractions and power show how an apparently non-extractive process can take on

the characteristics of an extractive one.

God and Human Beings, Positive-Sum Relationships, and Jacques Ellul's Theology

It is risky to relate quantitatively-oriented phrases to theology. Neither God nor human

beings can be reduced to a quantity. However, for a given doctrine of God or theological

anthropology, we can ask whether it implies that God's glory is competitive with human

flourishing or not. In other words: if God gets God's way, will human beings be enslaved to an

arbitrary will or freed for a life whose richness we cannot fathom in our fallen state? The

Christian tradition has generally affirmed the latter: that God is not diminished by creation,

and that human beings are not tyrannized by following God.[8] It is idols who tyrannize, not the

true God. That is not to say that there will not be suffering under the conditions of a fallen

world, whether for God or for people trying to follow this God instead of rebellious

principalities and powers.

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[7]   E.g., Ricardo Hausmann, "Does Capitalism Cause Poverty?" World Economic Forum website, August 21,
        2015, accessed March 11, 2022, https://www.weforum.org/agenda/2015/08/does-capitalism-cause-poverty/.
[8]   Kathryn Tanner, *God and Creation in Christian Theology: Tyranny or Empowerment?* (Minneapolis: Fortress,
        2005).

Ellul's theology contains a version of this affirmation, played out in time. It is set forth in *The Meaning of the City*. God set human beings in the garden, but they rebelled and wanted to build an environment of their own making, symbolized by the city, on which they pin their aspirations, but it becomes their prison. Yet God does not give up on human beings. Through God's activity, cities also come to have another meaning, first as cities of refuge in the Old Testament, and then as the site of Jesus Christ's crucifixion and resurrection. In the end, God gives people not a garden but a city, the New Jerusalem.[9] Any particular works of human beings may or may not be brought into the New Jerusalem – they will be tested by the fire of the Last Judgment. But the human beings themselves will be saved.[10]

Ellul was not a systematic theologian, and it would be too blithe to describe his theology of the God-human relationship as "positive-sum" without reservation. God suffers through all of this. Besides the obvious locus of Jesus Christ's passion, Ellul affirms that God suffers when human beings suffer, even in violence that God permits.[11] Human beings do not necessarily get what they want, whether in the durability of their works or, perhaps, in wanting to be annihilated or have eternal union with some rebellious power. But the idea that the glory of God does not conflict with a human being fully alive is reflected in his theology.

Ellul's doctrine of the God-human relationship has repercussions on his beliefs about interpersonal relations. He believes that the commandment "Thou shalt not kill" separates human beings from the rest of the animals,[12] and that in relationship with the biblical God, one

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9   Jacques Ellul, *The Meaning of the City*, trans. Dennis Pardee (Grand Rapids: Eerdmans, 1970).

10   Ellul, *What I Believe*, trans. Geoffrey W. Bromiley (Grand Rapids: Eerdmans, 1989), 210-213.

11   Ellul, *The Politics of God and the Politics of Man*, trans. Geoffrey W. Bromiley (Grand Rapids: Eerdmans, 1972), 175-176.

12   Ellul, *Violence: Reflections from a Christian Perspective*, trans. Cecelia Gaul Kings (New York: Seabury, 1969), 146.

does not have to kill.[13] Human relations that are consonant with what God wants for people are nonviolent ones. But as these relationships work out in time, they do not have to have outcomes where everyone gets what they wanted originally, or everybody is alike. Near the end of *The Political Illusion* – a sociological work – Ellul says that societies which are resilient enough to meet the challenges they face need to be able to receive information from outside. Without this capacity, they will undergo a vicious circle of entropy and fail to have the imagination they need. For a society to have this capacity, there must be both tensions between groups in the society and the recognition of a common measure between members of different groups.[14] Again, there is the prospect that human relations do not have to be zero-sum games, even if not everyone gets what they want, or especially what they wanted in the first place.

Abstractions and Power Relations in Ellul's Theology and Sociology

In Ellul's thought, abstractions complicate aspirations for positive-sum relations. Ellul sees, in the fallen world, a separation between the orders of truth and reality. These are not simply two domains of subject matter but two ways of relating to the world. The order of truth has to with possible answers to questions of value or the ultimate destiny of human beings. The order of reality has to do with things that can be seen and grasped in space. Questions or statements about truth are communicated by the word of a committed person and take time to ponder or respond to. Questions or statements about reality can be visually depicted, immediately grasped, and manipulated by unilateral force. Love involves hearing out and

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13   Ellul, *The Humiliation of the Word*, trans. Joyce Main Hanks (Grand Rapids: Eerdmans, 1985), 61.
14   Ellul, *The Political Illusion*, trans. Konrad Kellen (New York: Knopf, 1967), 206-223.

waiting for the other and thus belongs to the order of truth. Power which does not wait to hear the other but crushes them belongs to the order of reality. The difference between the orders is such that even an incorrect response to a question of truth or reality belongs to a different domain. An incorrect claim to truth is falsehood; an incorrect claim about reality is inaccuracy. [15]

Data abstracted from individuals is, by its very nature, part of the order of reality. Even if it is not tactile and therefore cannot be grasped in a physical way, it can be visualized. Ellul believes that fallen human beings have in our minds a picture of us grasping at visual reality, like the forbidden fruit in the Fall. Yet even as we desire and perhaps actually grasp at this control, Ellul thinks, the reality turns on us and controls us. It does not speak; we are not waiting for it to respond; we are bedazzled and paralyzed by it at once.[16] Abstractions, Ellul thinks, tempt us to similarly grasp the ones whose data has been abstracted. I do not have to listen to or wait for that other human being, because they belong to (some category that is evil). I recognize that other person only as (some category that is useful), rather than seeing them in all their individuality and contextualization.

Another characteristic of abstractions that Ellul points out is their lack of limits. Money, Ellul says, has no limit, because it is purely quantitative.[17] If one combines the limitlessness of abstractions with desire to possess reality, it is easy to see how abstractions can be an occasion for greed and manipulation. A paradigmatic example for Ellul is the buying-selling relationship, mediated by money. Nothing is exempt from the power of Mammon, including

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[15] Ellul, *The Humiliation of the Word*, 5-37.
[16] Ellul, *The Humiliation of the Word*, 5-12.
[17] Ellul, *Reason for Being: A Meditation on Ecclesiastes*, trans. Joyce Main Hanks (Grand Rapids: Eerdmans, 1990), 88.

human lives, both in body and in spirit. He thinks that monetary relations always involve

putting onself in a position of power over another.[18]

Ellul contrasts God's interactions with the world with that of rebellious powers that

crush by brute force, sensory spectacle, or – relevant here – abstractions. God already loves

us, speaks by the Word, waits for us to respond, and does not need to relate to us by means

that deny our agency.[19] Ellul implies that human beings who relate to the world solely by

abstractions and not by love will be tempted to manipulate and crush others. They may fail to

recognize a common measure in people who differ from them and try to eliminate the

tensions necessary for societal resilience by suppression rather than dialogue.

Data Creation as Paradoxically Extractive

In the first part of this paper, when I was discussing the myth and theory of

non-extractive capitalism, I mentioned that the "extractive" quality of economic or political

relations could be thought of in a narrower or broader sense. In its narrowest sense, it refers

to mining resources from the ground. A slightly more expansive sense would involve

producing a renewable resources that the local producers do not consume but export

elsewhere, such as a cash crop. The even more expansive sense of Acemoglu and Robinson

refers to extracting resources and power, of whatever type, from others. In all of these

scenarios, there is a sense that a zero-sum relationship is involved, at least partially. There is

only so much of the resource in the ground. Even though the cash crop can be planted anew,

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[18]   Ellul, *Money & Power*, trans. LaVonne Neff (Downers Grove, Ill.; Inter-Varsity Press, 1984), 77-82.
[19]   Ellul, *The Humiliation of the Word*, 48-71.

there is only a limited amount of land. A political regime that views its citizens as rivals does not want to share power.

Data creation, on the other hand, seems potentially to be a positive-sum game, because it seems to leave individuals and resources where they were, creating another set on the side. On one hand, data is not a finite natural resource. All sorts of things can be represented as data, and those things still exist alongside the data set. Apologists for capitalism such as Jay Richards tout intangible representations that depend on abstraction, such as titles to property, as surer bases for economic growth than "natural capital" which is tangible.[20] On the other hand, data storage and maintenance have an environmental footprint, both in terms of the energy required to keep them cool and the chemicals used in the process of their construction and operation.[21] And the phrase "data mining" has not arisen without reason. Although we can physically walk away from data sets created about us, people may be using those data sets to build power over the subjects of that data, with or without their knowledge or permission. This part of the paper will show how data creation can become paradoxically extractive, exhibiting all the moral hazards of the mining industry that Bishop Walker named in his article (although there is not room in this paper to cover them all in depth). Ellul's thought will be shown to be prescient in that regard. I will use three types of data sets as examples: aesthetic experience, metadata, and data about people.

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[20]   Jay W. Richards, *Money, Greed, and God: Why Capitalism Is the Solution and Not the Problem* (New York: HarperOne, 2009), 92-104, 211-213.

[21]   Charlotte Trueman, "Why Data Centres Are the New Frontier in the Fight Against Climate Change," *Computerworld* website, August 9, 2019, accessed March 11, 2022, https://www.computerworld.com/article/3431148/why-data-centres-are-the-new-frontier-in-the-fight-against-climate-change.html; and for a different set of measurements, Eric Masanet and Nuoa Lei, "How Much Energy Do Data Centers Really Use?" Energy Innovation Policy & Technology LLC blog, March 17, 2020, accessed March 11, 2022, https://energyinnovation.org/2020/03/17/how-much-energy-do-data-centers-really-use/.

Data Set 1: Aesthetic Experience

People who buy recorded music may be familiar with the site Bandcamp.com. This is a website where musicians can offer digital and physical recordings and other merchandise for sale. Bandcamp takes a published percentage of the price, another small percentage goes to electronic transaction fees, and most of the money goes to the artists and the labels. I focus on Bandcamp because among music industry players, they have a reputation of providing a high percentage of their income to the labels or musicians, rather than paying such a low royalty rate that non-mainstream musicians find the income from that source negligible, as is reputed to be the case with some music streaming services.[22]

Creating art seems like a clear example of a positive-sum game. The piece of music didn't exist, or existed only in my head, before I picked up the instrument or started to sing; now it exists in sound, and if someone notates or records it, it can exist for someone else, no matter what I happen to be doing at the time.

On the other hand, supposing for the moment that money is no object, eventually people run into limits of time and attention. The Bandcamp homepage features various links that easily connect to at least fifty albums. The process of finding and sampling music is so easy, and the site so teeming with multiple genres of music, that one would have to have very specific tastes to find it impossible to locate anything appealing. Bandcamp makes it easy to buy more music than one has time to absorb. As a line quoted at the beginning of their Bandcamp Weekly radio show asserts: "There's an infinite amount of music to find in those

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22   Damon Krukowski, "A Tale of Two Ecosystems: On Bandcamp, Spotify and the Wide-Open Future," National Public Radio website, August 19, 2020, accessed March 11, 2022, https://www.npr.org/2020/08/19/903547253/a-tale-of-two-ecosystems-on-bandcamp-spotify-and-the-wide-open-future.

genres that I love."[23] Fifty albums is probably more than twenty-four hours' worth of music, and a new set of features comes up every few days. And that's only the home page, not the fan pages that are perhaps more valuable for finding music one is interested in, because the starting point can be an album one already likes and its fellow appreciators, not what the Bandcamp editors happen to like.

Possessing a recording of music that one can play repeatedly is an ambiguous situation. On one hand, it can be a way of broadening one's horizons, of hearing the other, or of learning a piece of music in depth. On the other hand, it can be a symbol of group identity, something to boast about, or a way of shutting out the other. British sociologist Colin Campbell in *The Romantic Ethic and the Spirit of Modern Consumerism* has pointed out that the modern fashion pattern – whereby the forms of basic goods change over time, and some are considered fashionable and some not – is not universal, but arose as a complement to capitalism, with the Cambridge Platonists' romantic ethic taking the place of the Calvinists' work ethic that Max Weber identified. Campbell ties consumerism to a certain image that the individual has of oneself. One imagines oneself enjoying the product and thinks that situation will be superior to one's present condition. The desire to have something different proves superior to actually having that different thing, because the desire is not yet disappointed, but the having always disappoints, because self-with-product can never live up to the image of self-imagined-with-product.[24] A site like Bandcamp has no incentive to limit individuals'

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23 The latest Bandcamp Radio is always one of the features on Bandcamp's home page, bandcamp.com. The quoted line [as of March 2022] is part of the introductory material on the Tuesday Bandcamp Weekly shows usually hosted by Andrew Jervis, not the biweekly hip-hop or metal shows that usually alternate later in the week. As of March 11, 2022, the most recent show with the pertinent introductory material is at https://bandcamp.com/?show=532.

24 Colin Campbell, *The Romantic Ethic and the Spirit of Modern Consumerism* (Oxford: Blackwell, 1987).

personal fashion patterns, whereby they may accumulate music collections they have no time to reflect on because they are imagining themselves hearing the next thing the site has piqued their interest in.

There are reasons for accumulating collections of a size that would be difficult to listen to in its entirety that cannot be reduced to self-image or inattentive consumerism, such as patronage, study, or providing resources to the community. However, even musicians who sell their music on the platform may see the pitfalls of some of the ways Bandcamp facilitates finding music. Consider the keyword tags listed along with recordings. These can be things like musical genres, geographic locations, or anything else the artist or Bandcamp wants to tag the album with. British multi-instrumentalist and radio host Corey Mwamba found that his music was tagged with "black Bandcamp" even though he had not chosen the tag himself. He found this tagging unwelcome, even though he acknowledges that being Black has shaped his music and he raises issues of racial justice in his writing. Bandcamp – who has given its share of income to racial justice organizations on special fundraising days – may have wanted to make it easier for people to support Black artists, but Mwamba thought that the tagging treated his music as a commodity.[25]

The creation of an immense database of aesthetic experience thus has limitations as a representation of a positive-sum game. Being able to access music of tens of thousands of different others does not necessarily mean that the music will help contemplation, listening, or imagination about how life could be better for both self and others. Nor is such abundance necessary for a piece of music to change one's life. Besides the use of energy required to

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[25]   Corey Mwamba, "Branding: Bandcamp and the Agency of Black Artists," Corey Mwamba: Making, Presenting and Researching Music [website], June 19, 2020, accessed March 11, 2022, https://www.coreymwamba.co.uk/rambles/1592546515.

maintain the database, there is no guarantee that the music created will be edifying, that people will not be frenzied in acquiring new music rather than appreciating it, or that the labels used to direct people toward music and artists will not become abstractions that put people into categories rather than enabling people to appreciate the music and musicians in all their individuality.

Data Set 2: Metadata

The tags used by Bandcamp are an example of metadata: data about data. Other examples are the author names, titles, subject headings, and ISBNs in a library catalog. I am a participant observer in metadata, as well as being a consumer of music from Bandcamp, since my job at Atla (the American Theological Library Association, in full) involves assigning subject headings to articles in theological journals.

Ideally, metadata should tame the stream of data. We may be looking for what other people have written on a particular Bible passage or a theologian's thoughts on a particular subject. Some subject headings will communicate the content of the article better than others. If there are too few subject headings, important aspects of the article might be omitted or a vague impression given. If there are too many, people might be directed to the article even though only a small part of it is about that topic.

As metadata accumulates, any particular piece of it will probably become less valuable. Again we run into limits of time and attention. If only five people have written articles on a particular Bible passage, then it will not be difficult to evaluate them all. But if 500 people

have written on it, then one will need to use other criteria to decide which ones to examine and which ones to ignore.

There is a sense in which metadata is supposed to be mute, to stand aside and let its referents speak. But this attribute can also be its pitfall. "Garbage in, garbage out" applies to keyword searches. The search must be broad enough to capture something one does not already know, but narrow enough not to generate unmanageable quantities of irrelevant results. And what if the word that would yield the correct results is the exact word that is missing? "Who wrote the arrangement of *Herzliebster Jesu* that the choir of Nassau Presbyterian Church in Princeton, New Jersey sang around 1985 that has a bass ostinato of the first four notes of the chorale on the second verse?" It's a specific memory, but the one thing needed to find out the answer is the one thing that is missing: the composer's name.

Metadata is also not the committed speech, the "word," which Ellul says can communicate truth. Often the controlled vocabularies used for subject heading classify a quality with its opposite. Take the (United States) Library of Congress subject heading "Equality."[26] One of its cross-references is "Inequality." That means that an article extolling the equality present in a certain social system and an article complaining about the inequality in the same system will bear the same subject heading. This attribute of metadata could enable people to encounter differing opinions on the same subject, but they will have to take the effort to listen to them, not expect metadata to do the job.

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[26] Library of Congress Authorities [website], "Equality," LC subject heading control no. sh 85044503, accessed March 11, 2022, https://authorities.loc.gov/cgi-bin/Pwebrecon.cgi?AuthRecID=4696341&v1=1&HC=6&SEQ=20220311053241&PID=tg3iM1yNdiUeZ84KvdHiXUUHEtak.

Therefore, like databases of aesthetic experience, databases of metadata have limits as positive-sum games. They may enable communication to happen, or they can add to the torrent of data if the pressures on our attention are too much.

Data Set 3: Data about People

The third type of data here, data about people, is what most people think of as "big data." Data about purchasing patterns has led to targeted marketing that implicitly identified at least one woman as pregnant before she had revealed this fact to her family.[27] Here is an example of a something Ellul would have predicted: a party with power (to read purchasing data, to send marketing circulars) using abstractions to put another person in a vulnerable position (being identified as pregnant). Observers have also noted that anonymous algorithms have been used to classify people and affect their life choices prior to their doing anything that would deserve this categorization.[28]

I will use genetic genealogy as a case study, because I am also a participant observer in it – I have been a genealogist since 1996, and I sent in my DNA and that of a few family members to some testing services several years ago – and it illustrates some ambiguities and distinctive characteristics of this kind of database that are not present in repositories of aesthetic experience or metadata.

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[27] Kashmir Hill, "How Target Figured Out a Teen Girl Was Pregnant before Her Father Did," *Forbes* website, February 16, 2012, accessed March 11, 2022, https://www.forbes.com/sites/kashmirhill/2012/02/16/how-target-figured-out-a-teen-girl-was-pregnant-before-her-father-did/?sh=2bb930df6668.

[28] Viktor Mayer-Schönberger and Kenneth Cukier, *Big Data: A Revolution That Will Transform How We Live, Work, and Think* (New York: Houghton Mifflin Harcourt, 2013); Cathy O'Neil, *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy* (New York: Crown, 2016).

Genetic genealogy is the process of using DNA analysis to figure out how two or more people are biologically related. In France, this practice is currently illegal unless ordered by a court, although some French people want this law changed, saying that people have a right to know who their biological parents are.[29] In the United States and many other countries, the practice is widespread. It is decentralized, in that there is not one central body administering it, but happens as a result of a combination of for-profit companies, non-profit institutions, and volunteer hobbyists whose combined effort sometimes leads to relevant discoveries. The process works because inheritance of genetic material proceeds on predictable lines. The different inheritance patterns of autosomal DNA (the DNA in the nucleus of the cell, minus the sex chromosomes), the X and Y sex chromosomes, and mitochondrial DNA (which is present in the mitochondria of each cell and inherited only from the mother) mean that it is possible to predict how people may be related if their DNA sequences match in certain ways. A skilled genetic genealogist can look at a DNA tester's list of matches and the amounts shared with these people and, if these other people's genealogies are known and family trees can be built connecting the various groups of matches who are related among themselves, figure out who the parents of the DNA tester are likely to be.[30] Unlike metadata, adding additional pieces of DNA evidence does not make the existing pieces less valuable but more valuable, since there is increasing coverage of the species-wide genome. It becomes easier to identify the parents of a DNA tester if they have more close matches, and the more people test, the more likely

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29   Nathalie Jovanovic-Floricourt, "Why France Maintains a Ban on Genetic Genealogy Tests," website of DNA
      PASS association, December 17, 2020, accessed March 11, 2022,
      https://dna-pass.com/en/why-france-maintains-a-ban-on-genetic-genealogy-tests/.
30   A comprehensive introduction to genetic genealogy is Blaine T. Bettinger, *The Family Tree Guide to DNA
      Testing and Genetic Genealogy*, 2nd ed. (Cincinnati, Ohio: Family Tree Books, 2019).

that situation becomes. The need for multiple matches is even greater when the object of genealogical mystery is several generations back.

This process has been used to find unknown parents in cases of adoption, gamete donation, and hospital errors,[31] reunite families who lost many members in the Holocaust,[32] and solve other genealogical mysteries where the paper trail was insufficient. In so doing, it has achieved some amount of equity for adoptees in terms of knowing their biological situatedness in the human family and enabled some to have rewarding relationships with their biological parents, whereas these disclosures have been painful and difficult for others, whether because their relationship with biological family turned out not to be what they had hoped for or because their biological parentage was not what they had been told.[33] However, the differences in rate of use of DNA testing among different population groups and the diverse genealogical challenges that these groups face mean that the equity for adoptees mentioned above is not equal across all population groups. African Americans, for instance,

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[31]   "Who Was She? A DNA Test Only Opened New Mysteries: How Alice Collins Plebuch's Foray into 'Recreational Genomics' Upended a Family Tree," *The Washington Post* website, July 27, 2017, accessed March 11, 2022, https://www.washingtonpost.com/graphics/2017/lifestyle/she-thought-she-was-irish-until-a-dna-test-opened-a-100-year-old-mystery/.

[32]   Bridie Pearson-Jones, "British Daughter of a Holocaust Survivor Who Was Born in a Concentration Camp and Taken from Her Mother Surprises Her Aunts in the US after Matching on a DNA Website – and Learns Her Grandmother Spent Her Life Searching for Her Lost Baby," *Daily Mail* website, December 28, 2021, accessed March 11, 2022, https://www.dailymail.co.uk/femail/article-10347537/Incredible-moment-family-separated-Auschwitz-reunite-70-years.html

[33]   Libby Copeland, "DNA Testing Is Radically Reshaping the Definition of Family: They [sic] Can Create Upheavals in Our Lives and Rewrite Personal Histories," *The Washington Post* website, May 15, 2020, accessed March 11, 2022, https://www.washingtonpost.com/outlook/dna-testing-is-radically-reshaping-the-definition-of-family/2020/05/14/2d7a746e-5e6c-11ea-b29b-9db42f7803a7_story.html.

have generally tested at lower levels and have challenges in documentation related to slavery. [34]

Genetic genealogy has also been used to identify the remains of deceased people and to find suspects in violent crimes. In these cases, a DNA kit from the victim or crime scene is uploaded to a database that permits such use and then compared with the DNA of the users of the database. If a living suspect is identified, that person must then be verified to have DNA consistent with a sample left at the crime scene, and, if so, subjected to the processes of the criminal justice system. This use is controversial among genetic genealogists. Some are happy that their DNA can be used to identify criminals or victims of crimes. Their view is that violent criminals should not be at large unless they have been rehabilitated, especially if they are from their family and potentially putting their family at risk. Others see this use as a violation of privacy, because the other people who are identified as potential suspects did not upload their own DNA to the databases.[35] The use of genetic genealogy for criminal justice can only be as equitable as the criminal justice system itself, and this is not guaranteed. The Chinese government has been reputed to be collecting the DNA of the Uighur people, whom they have been persecuting, without their consent.[36]

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[34] Jacob Stern and Sarah Zhang, "The Victims Left Behind by Genetic Genealogy," *The Atlantic* website, January 27, 2021, accessed March 11, 2021, https://www.theatlantic.com/science/archive/2021/01/genetic-genealogy-race/616171/?utm_source=newsletter&utm_medium=email&utm_campaign=atlantic-daily-newsletter&utm_content=20210127&silverid-ref=MzEwMTU3MjU0MzQyS0.

[35] Roberta Estes, "The Golden State Killer and DNA," *DNAeXplained – Genetic Genealogy* [blog], April 30, 2018, accessed March 11, 2022, https://dna-explained.com/2018/04/30/the-golden-state-killer-and-dna/; Teneille R. Brown, "Why We Fear Genetic Informants: Using Genetic Genealogy to Catch Serial Killers," *Columbia Science and Technology Law Review* 21 no. 1 (Fall 2019): 114-181, accessed online on March 11, 2022, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7946161/.

[36] Sui-Lee Wee, "China Uses DNA to Track Its People, with the Help of American Expertise," *The New York Times* website, February 21, 2019, accessed on March 11, 2022, https://www.nytimes.com/2019/02/21/business/china-xinjiang-uighur-dna-thermo-fisher.html?searchResultPosition=4; Sui-Lee Wee, "Two Scientific Journals Retract Articles Involving Chinese DNA Research," *The New*

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In a development that Ellul might have seen as indicative of technical autonomy with respect to morality,[37] the companies that have permitted the use of their databases by law enforcement have had trouble staying within the bounds of their previous statements to customers when a new, apparently pressing, situation has arisen. GEDMatch, for instance, a site where users can upload their DNA data from other companies, first said that it would allow law enforcement to upload kits taken at crime scenes only in cases of murder or rape – but then agreed to let their site be used in the case of a violent assault which was not a rape where it was believed that the suspect was still at large and dangerous.[38] This inability to stay within the precise terms of a statement to customers has further eroded the credibility of the companies in question among genetic genealogists who are concerned about law enforcement's use of the databases as a violation of informed consent.[39]

For the purposes of this paper I will leave aside the question of medical uses of DNA collected by home testing companies, not because it is not important, but because the ambiguities of the use for medical reporting and research parallel the ambiguities of the use for genetic identification: increase in knowledge and equity from some angles, and increase in the power to manipulate from other angles.

In sum: From the three types of data sets analyzed above, I cannot conclude that building up databases is an unalloyed win-win situation. Repositories of aesthetic experience and metadata take energy to maintain and run into limits of human time and attention. Data

York Times website, September 9, 2021, accessed on March 11, 2022, https://www.nytimes.com/2021/09/09/business/china-dna-retraction-uyghurs.html?searchResultPosition=1.

37 Ellul, *The Technological Society*, trans. John Wilkinson (New York: Knopf, 1964), 99, 134.

38 Peter Aldhous, "The Arrest of a Teen on Assault Charges Has Sparked New Privacy Fears about DNA Sleuthing," *Buzzfeed News* [website], May 14, 2019, accessed March 11, 2022, https://www.buzzfeednews.com/article/peteraldhous/genetic-genealogy-parabon-gedmatch-assault.

39 Leah Larkin, "The Slippery Slope," *The DNA Geek* [blog], May 15, 2019, accessed March 11, 2022, https://thednageek.com/the-slippery-slope/.

about people can be used to increase knowledge but also to increase the potential for manipulation. If one looks at the five areas of ethical concern that Bishop Walker had about the mining industry, they can all apply to the data industry and make it look "extractive," although I have not been able to go into detail about each one here. Human rights violations? There are concerns about privacy, consent, and agency. Health and safety? To take just one example, internet distraction may be qualitatively worse than offline distraction, if Nicholas Carr's analysis in *The Shallows* is accurate.[40] Corruption and taxation? How to tax internet commerce so that it pulls its weight in paying for the infrastructure it uses is an ongoing challenge.[41] Ecological concerns? Data farms may be invisible to us but they have an environmental cost. General social and economic concerns? To go back to Ellul's belief about the conditions for social resilience, we can't expect relations based solely on data to build up the respect, listening, and contemplation we need.

Dialectical Life in the Data-City

Given these realities, some thinkers advocate making protecting one's privacy a priority, even when it is inconvenient and counter-cultural. Eric Santanen has proposed that we should think of ourselves as having a "privacy wallet" and protect it as we would protect cash. We should avoid having a smartphone, or if we need one, we should avoid enabling it to collect data unless we have a specific reason for using that data. We should avoid practices that spread our data around, such as answering social media quizzes, linking our

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[40] Nicholas Carr, *The Shallows: What the Internet Is Doing to Our Brains* (New York: Norton, 2010).
[41] Manoj Kumar Singh, "Taxing E-Commerce on the Basis of Permanent Establishment: Critical Evaluation" [abstract], *Intertax* 42, no. 5 (2014), Kluwer Online website, accessed March 11, 2022, https://kluwerlawonline.com/journalarticle/Intertax/42.5/TAXI2014034.

various internet activities under a single account, or, yes, sending our DNA to be included in genetic genealogy databases.[42] It may be easier or harder to undo data sharing depending on the laws of one's jurisdiction. The European Union's General Data Protection Regulation gives citizens of member countries a "right to be forgotten": that one can have one's data removed from certain repositories.[43]

However, it is likely that any of us will be motivated to create data, whether to pursue excellence in an activity that requires it, such as certain genealogical investigations, or to make life easier for other people in our life, such as turning on the location services in our smartphone so as not to make someone meeting us do extra work. What might we do to counteract the possible use of that data for dehumanization?

One possible approach is suggested by Ellul's approach to living in the city. Although Ellul thought that the city epitomized human rebellion against God, he did not flee it but built relationships in it, whether by teaching students at the University of Bordeaux, leading a house church,[44] or working with youth in street gangs to pursue outdoor activities or repair senior citizens' windows, showing how they could be maladapted to city in a positive, not a negative, way.[45] He lived a dialectical process of disengagement and re-engagement: disengagement from uncritical approval of societal trends, and re-engagement in the concerns of his neighbors.

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[42] Eric Santanen, "Weaponizing Personal Data to Undermine Democracy," *Cross Currents* 70, no. 2 (June 2020):107, 125-130.

[43] Ben Wolford, "Everything You Need to Know about the 'Right to Be Forgotten,'" GDPR.eu [website], accessed March 11, 2022, https://gdpr.eu/right-to-be-forgotten/.

[44] Jacques Ellul and Madeleine Garrigou-Lagrange, *In Season, Out of Season: An Introduction to the Thought of Jacques Ellul*, trans. Lani K. Niles (San Francisco: Harper & Row, 1982), 98-101.

[45] Yves Charrier and Jacques Ellul, *Jeunesse délinquante: des blousons noirs aux hippies* (Paris : Mercure de France, 1971), 234, 246-251, 268-298.

Similarly, I do not think that we are necessarily called to flee the data-city. But one of the chief characteristics of all these data sets is that they have the potential to make excessive demands on our attention. Therefore we are called to stay alert: alert to God, alert to truth, and alert to the subjectivity of the human beings behind the data that we encounter. A human being fully alive cannot be reduced to a data set, no matter how large.