Testing Knowledge

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The Many Lives of Testing

My wager is that Huntington’s disease provides an opportunity to push thinking further.
– Alice Rivières

Following my encounter with Alice Rivières, and in learning of her experience with the genetic test for Huntington’s disease, I felt the pressing need to work towards an ecological understanding of diagnosis. “We weren’t designed to know our destiny before it happens [...] but when you have got the option to know anyway, you automatically become a bit different, as a human being,” writes Rivières in the “Dingdingdong Manifesto.” Some years ago, she “succumbed” to the force of attraction of predictive genetic testing. “The simple fact the test existed,” she writes “made it utterly irresistible to me. [...] Because there was a test, I could not do without it when erecting even the slightest of solid foundations for my future.” The test promised, or at least appeared to promise, to help her know her future. Yielding to its seductive power, she decided to submit (or to subject herself) to the process of medical, psychological, psychiatric, and social

1 Alice Rivières, “The Dingdingdong Manifesto,” this volume, 37.
2 Ibid., 23–24.
3 Ibid., 28.
evaluations that precedes the actual test, and then to undertake the genetic test itself.

Predictive testing for Huntington’s disease (HD) takes on singular meaning because of the fact that, to this day, the disease remains incurable. Making sense of the many difficulties testing raises in such circumstances requires a definition of the condition itself. Yet this task raises a veritable avalanche of questions for a project like Dingdongdong, a collective project committed to thinking, inventing, and instantiating counteragents or antidotes to ostensibly hopeless representations of the disease. How do we introduce Huntington’s disease when the stated purpose of our collective labor is to actively transform it through sophisticated forms of “knowledge coproduction”? Dingdingdong adopts a critical stance toward the reigning definitions, discourses, and practices of Huntington’s disease, given that we aspire to iterate and institute interesting forms of contact and life with it. Under such circumstances, are we able to appeal to biomedical knowledge or to genetic and neurological explanations, and if so how? Conversely, if our task is to make novel and less hopeless versions of HD become true – which means making them truly real – had we better not, for now, reserve an answer to the question of what this sickness verily is?

I fear, however, that postponing definition in the name of precision would risk jeopardizing the perspicacity of Dingdingdong’s enterprise, whose very force derives from drawing contrasts with established and official versions of HD. Yet it would be incorrect to assume we aim at challenging the accuracy of biomedical knowledge of the disease. Rather, we stand against the assumption that life with this particular condition, and with disease in general, can be wholly or largely distilled within scientific and medical knowledge thereof.

When it comes to diagnosis, Huntington’s is something of an exception to the extent that it can be de-
ected “predictively,” in other words, before the onset of any symptoms. By way of a “simple” blood test, at-risk persons can receive a practically conclusive prediction of whether they will or will not experience the many symptoms of this “neurodegenerative” disorder. In this same way, it is possible to determine whether such persons’ children or grandchildren also carry a risk. For if a person does not carry the mutation, they cannot transmit it – the genetic legacy ends with them. This is because HD is autosomal dominant, monogenic, and shows complete penetrance. The first characteristic, in the rules of genetics, indicates that any person having one parent who is a carrier is at a 50/50 risk of inheriting the defective gene. The second means that the disease develops in the presence of a single modified gene. The third implies that any person carrying the relevant genetic mutation not only bears a higher than average risk of falling ill but that they will inevitably develop symptoms sooner or later – unless they happen to die of other causes beforehand.

The American physician George Huntington provided the hitherto most complete description of HD’s nosology in 1872, and for quite some time the disease was known as Huntington’s chorea. It is difficult to find comparisons for the condition in light of its symptomatology. This includes multiple motor, neural, and behavioral changes that manifest over the years, with unpredictable highs and lows. People typically present symptoms between

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4 The first long-term studies subsequent to the test’s uptake have shown that something of a “genetic gray area” exists, albeit a very slim one. See Nayana Lahiri, “The Genetic ‘Gray Area’ of Huntington’s Disease: What Does It All Mean?” HD Buzz, April 22, 2011, http://en.hdbuzz.net/027, and Regine Kollek and Thomas Lemke, Der medizinische Blick in die Zukunft. Gesellschaftliche Implikationen prädiktiver Gentests (New York: Campus Verlag, 2008). In addition, “neurodegenerative” is placed in scare quotes because, after interviews with persons with the disease as well as their loved ones and caregivers, Dingdingdong holds that patients do not experience a strictly linear decline but rather a zigzagging progression.
the ages of thirty and fifty. Involuntary and sporadic muscular spasms termed chorea (from choreia, the Greek word for dance) along with psychological disturbances and various changes in personality tend to signal the insidious onset of a sickness that only death brings to halt. While psychoactive medication such as antipsychotics and speech and physical therapy offer partial relief for individual symptoms, to this day there is no cure nor stabilizing treatment.

Loss of balance, altered and impaired cognition, marked difficulties with vocal expression and agglutination, as well as various psychological challenges from depression to psychosis – this harrowing and extensive combination of symptoms mean that HD is often regarded as the “most horrible,” the “most monstrous” and “the most cruel” of diseases. It was long known as “Saint Vitus’s Dance” and thereby associated with a state of possession.

The hereditary nature of the disease helps to explain this tendency towards demonization, which medical practitioners have been known to relay. In point of fact, potential HD carriers – so-called “at-risk persons” – can observe among family members what they inevitably perceive to be heralds or omens of what, for them, is coming. Such is how most persons at risk of developing Huntington’s disease live: well before undertaking their own diagnostic or therapeutic treatment, they already live with the sickness in various guises through one or more loved ones. They live with medicine’s varying degree of powerlessness towards them. They regard themselves as witnesses of their own future, of their own suffering and death, well before they themselves fall ill. Huntington’s disease accompanies entire families across generations and often leaves the impression – from within as well as without – that these families are truly cursed. This disease therefore plays a significant part in forging the identity of afflicted families, often taking the form of a taboo
with sinister and insistent powers that incontrovertibly reveal themselves in the symptoms of parents and grandparents, brothers and sisters, aunts, uncles, and cousins. All too often, Huntington’s disease is a well-kept family secret: it is unspeakable and must go untouched yet it relentlessly pushes its way to the surface and stakes a claim to the realm of the visible and the perceptible. It should now be apparent that the predictive diagnosis of HD runs the risk, because of what it is and what it does, of replicating an existing curse. For this very reason, it requires truly careful consideration.

A New Kind of Foreknowledge

Beyond the confines of the molecular biology laboratory where facts are made, genetic testing’s technical simplicity meets with a correspondingly complex and troubling situation. The very possibility of knowing the future calls forth a cascade of questions, which have bearing for those directly concerned as well as the physicians, social workers, psychotherapists, ethicists, and other actors involved in some capacity with the process leading up to the test. One set of questions relates to conditions of access. Another concerns how to appropriately handle the announcement of a diagnosis, namely the moment in which laboratory information becomes subject to translation within the clinical relationship that binds patient to practitioner. HD’s particular genetic and clinical configuration lends a heightened sensitivity to questions over the manifold possible and feared effects of such translation. Indeed, because of the radical ways in which HD brings ethics, morality, family, politics, and the law into question, physicians and geneticists along with so-

5 Huntington’s disease is one of the only late-onset diseases for which early detection is available, although this does not constitute a form of “screening,” strictly speaking, given the ongoing lack of curative
ciologists, psychologists, bioethicists, and public health experts have long pointed and no doubt will continue to point to the condition as an exemplary case.

The exact identification of the gene responsible for Huntington’s inaugurated the possibility of a direct genetic test for the monogenic disease in 1993, thanks to the work of an international consortium of scientists who located the gene on the fourth chromosome’s short arm. They discovered that greater than thirty-six repeats of the CAG triplet that encodes the amino acid glutamine is an indication of the mutation’s presence and thus HD’s future expression at the level of the organism. As its name implies, an indirect genetic test came before the “direct” one. Preceding the latter by a decade, the former followed from the discovery of a marker “coupled with the Huntington’s gene.” This allowed genetics to “determine the status of at-risk persons with a high degree of probability.” However, conducting this indirect form of predictive genetic testing required genetic material beyond that of the individual at-risk person querying their genetic status. Until the gene’s precise location in 1993, this earlier form of linkage-testing was only possible when cross-generational analysis and comparison within the same family could establish whether a person inherited the allele acting as bearer of the genetic marker from one parent or another.

As such, the indirect genetic test was only practicable in a limited number of cases because its subject’s family treatment. The condition remains a source of significant social stigma; following their doctors’ advice, persons who learn of their “positive” status adopt strategies of secrecy, if only to protect themselves and their families against the haunting administrative and financial consequences of disclosure.

6 Thomas Lemke, Veranlagung und Verantwortung. Genetische Diagnostik zwischen Selbstbestimmung und Schicksal (Bielefeld: Transcript Verlag, 2004), 31.
7 Ibid.
needed to be large enough to furnish the necessary genetic material. Hence, the task’s complexity came to be directly correlated with its effects upon and among the families it came to involve. This prior form of testing accordingly highlights the critical function played by family in Huntington’s disease, so much so that the condition is often fundamental to the identity of those involved – albeit negatively – and distinctively connects them to the rest of their kin. It should come as no surprise, therefore, that family also played a crucial role within medicine in distinguishing HD from other diseases. At the age of twenty-one George Huntington wrote “On Chorea,” an article distinguishing HD from other forms of developmental and infectious chorea, referring to it as “hereditary chorea.” It was only possible for him to do so, however, because he was in possession of reliable data drawn from across multiple generations of sick people in his town. In fact, both his grandfather Abel Huntington and then his father George Lee Huntington had served as the local doctor before him. It can be assumed that their experiences fed into George’s careful study and analysis of the symptoms and modalities of transmission linked to what was then known as “Saint Vitus’s Dance” or simply “that disorder.” Because he was able to access medical histories that had been meticulously maintained for the same families across multiple generations, the young Huntington was in a position to articulate one of the central biological rules of heredity for the disease – unaware that he was doing so at almost exactly the same time that Mendel was undertaking his landmark study of heredity on pea plants. The rule would come to be known as “the dominant mode”:

But if by any chance these children go through life without it, the thread is broken and the grandchildren and great-grandchildren of the original shakers may rest assured that they are free from the disease.  

In 1872, Huntington worried that his description of hereditary chorea would not hold “any practical importance” for his colleagues and so offered it “merely as a medical curiosity, and as such it may have some interest.”10 A century later, however, the disease’s heritability would play an essential role in genetic research.

At a 1972 conference held in Ohio to mark the centenary of George Huntington’s article, psychiatrist Ramón Ávila-Girón showed a short black-and-white film that his colleague Americo Negrette had made in a small village situated on the banks of Venezuela’s Lake Maracaibo, attesting to the high local incidence of HD. Attending this session was Nancy Wexler, a young psychologist from a family impacted by HD who would later play a decisive role in advancing genetic research on the disease. The film’s content and dramatic imagery were striking and affecting, but so too was the fact that the high concentration of HD in this one area made for an almost natural laboratory in which to acquire the breadth of material needed to understand its functional mechanisms. Inspired by research using homozygotes (persons receiving a given gene from both parents11) to study family anemia resulting from inherited high cholesterol, Nancy Wexler and her colleagues launched a research project at Lake Maracaibo in 1979 in the hope of finding homozygote carriers of the HD gene with and through whom to advance

9 Ibid., 111.
10 Ibid., 112.
11 The history of genetic research is filled with homozygotes; they feature so heavily because of their precisely calculable risk for hereditary diseases.
scientific discovery.\textsuperscript{12} Thanks to the meticulous collection of genetic and clinical material at the site, the extended group of researchers was able to identify the genetic marker for HD in the years that followed – the initial hypothesis, it turned out, was a generative one.\textsuperscript{13}

It should be said, however, that although the new indirect test became available for use, it tended to produce inaccurate and even more frequently “uninformative” results – meaning that they were too inconclusive and therefore unreliable or uncertain to reveal to at-risk persons. Nancy Wexler, Michael Conneally, David Housman, and James Gusella, all members of the team that discovered the marker, insisted this was only the beginning. It was to be the beginning of a long journey towards the complete understanding of Huntington’s disease, an understanding they manifestly hoped would play an important role in the fight against it. Looking back, Carlos Novas offers a penetrating analysis of the implications of this “journey”:

The journey which they speak about involves the search for a potential treatment or cure, a journey which may hopefully not only alleviate the suffering caused by this disease, but also transform predictive genetic testing into a gateway for access to therapeutic regimes, and not, as it is at present, a complex technol-

\textsuperscript{12} The idea for the Venezuelan project came up in the context of the Congressional Commission for the Control of Huntington’s and its Consequences, which Nancy Wexler continues to lead. She is also the president of the Huntington’s Disease Foundation, established by her father Milton Wexler.

\textsuperscript{13} I am weaving this story from the extraordinary retelling provided by Alice Wexler, a historian and Nancy’s sister. See Alice Wexler, \textit{Mapping Fate: A Memoir of Family, Risk, and Genetic Research} (Berkeley: University of California Press, 1996). I would also like to warmly thank Alice for her precious comments on the manuscript, as well as for her generous foreword.
ogy for the management of genetic fate by those who are at risk.\textsuperscript{14}

Despite locating the gene for Huntington’s disease in 1993, the journey was far from over. This was because the discovery itself did not bring about any preventative or therapeutic solutions.

The genetic research boom of the 1980s and 1990s gave new hope to geneticists, physicians, patients, and their loved ones. They hoped to take effective control of biologically predetermined fate, a fate whose unfolding could now be foretold. Yet these hopes remain largely unrealized to this day, in the case of Huntington’s disease and many other quarries of the genetic sciences.\textsuperscript{15} Genetic knowledge provided and provides but a rudimentary starting point for developing effective therapeutic practices. What’s more, even in these early days there was hardly a scientific consensus on wishful thinking. Consider how, as early as in 1992, Nancy Wexler describes the dramatic consequences of the asymmetry between genetic knowledge and its inability to produce clinical advances:

The natural trajectory of human genome research is toward the identification of genes, genes that control normal biological functions and genes that create genetic disease or interact with other genes to precipitate hereditary disorders. Genes are being localized far more rapidly than treatments are being developed for the afflictions they cause, and the human genome project will accelerate this trend. The acquisition of

\begin{itemize}
\item \textsuperscript{14} Carlos Novas, \textit{Governing “Risky” Genes: Predictive Genetics, Counselling Expertise, and the Care of the Self} (Boston Spa: British Library Document Supply Centre, 2003), 200.
\item \textsuperscript{15} Even though today more and more promising fundamental-research projects as well as clinical trials, experimenting on the possibilities of gene-therapy, are on their way.
\end{itemize}
genetic knowledge is, in short, outpacing the accumulation of therapeutic power – a condition that poses special difficulties for genetic knowing.\textsuperscript{16}

To be sure, the detection of disease continues to achieve greater breadth, speed, and accuracy. Yet in most cases such knowledge hardly ever comes with power, whether preventative or therapeutic, directly or indirectly. Wexler’s penetrating insights draw attention to this asymmetry, which she considers foundational to genetics as a field; with the completion of the Human Genome Project in 2003, this asymmetry became dramatically obvious to the public at large.

Regardless, it is no longer possible to think Huntington’s disease outside of a world in which such forms of knowledge are available and whose mere existence influences the sickness and those it touches. No sooner was the gene located than everything changed. Thereafter, any and all at-risk persons have no choice but to take a position when it comes to the possibility of prediction, even if they oppose the test and decide they do not want to know. By making such a decision they become a moral actor – whether they like it or not.\textsuperscript{17} Hence, not only does the test’s mere existence refashion medicine’s relationship to HD. It also dis- and reorganizes practices of knowledge sharing around risk that families had developed over generations. While often oblique, gestural, and uncertain, such practices gave rise to careful ways of


\textsuperscript{17} The work of Lotte Huniche explores this question in depth. See, for instance, her “Moral Landscapes and Everyday Life in Families with Huntington’s Disease: Aligning Ethnographic Description and Bioethics,” Social Science & Medicine 72, no. 11 (2011): 1810–16.
experimenting with half-truths about one’s status – and even outwitting it. In light of this test, important questions abound about the right to know and not to know and the anonymity of those involved.

In her book *Mapping Fate: A Memoir of Family, Risk, and Genetic Research*, published in 1996, Alice Wexler, historian and sister of Nancy, offers a simultaneously fascinating and sensitive account of the many upheavals accompanying this new form of knowledge and its attendant personal and ethical dilemmas. Like her sister, Alice Wexler has first-hand experience of the emotional ordeal (*épreuve*) and the anguish that comes with the status of being a person at risk of developing Huntington’s disease. Alice and Nancy’s mother began presenting symptoms in the 1950s and died from the disease in 1978. Hence, like her sister, Alice is not writing from a position of neutrality or indifference. Instead, she deploys her involvement with her subject matter as a convincing method for conducting historiographical and genealogical research.

Particular passages taken from her journals of the time, like those chronicling the period in 1983 when the indirect test was being developed, as well as the ensuing confusion, are particularly relevant to our current concerns. These passages reveal the extent to which both sisters had awaited this moment with impatience and even hope, one at the vanguard of medical research and the other from the vantage of historical inquiry. Yet in no less striking fashion, they also convey the veritable panic that takes hold as soon as such knowledge is at hand: “The immensity of it scares me shitless. The idea of really knowing – and what if it is ‘positive’? Or if Nancy is? Once we know, there is no going back.”

So long as the existence of testing remained hypothetical, both sisters were convinced they would want to undergo it forthwith. Put directly, they were convinced

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they wanted to know. However, the situation was entirely
different from the moment abstract hope became real op-
tion. Especially as it was now obvious that far, from ad-
ressing the test subject as an isolated individual, such a
form of knowledge would strike their entire community,
an inherently violent proposition:

Dad says he’s quite happy with things as they are, he
could live the rest of his life very content, feeling con-
fident we don’t have the illness. He told Diane (a 60
Minutes journalist) “What I have now is joyousness. If
I knew they were free of the disease, I’d feel ecstasy. It’s
not that great a gain. But there’s an immense differ-
ence between joy and discovering one of them carried
the gene. It’s not worth the gamble.” Diane kept asking
about the value of certainty, the importance of knowl-
edge for its own sake. Nancy says, “Yes, I’ve always be-
lieved in knowledge for its own sake. And it is ironic
that after working for precisely that, I’m now finding
it much more complex than I ever thought it would
be.” Diane: “Did you think you’d take the test when
the linkage was discovered?” Nancy: “Absolutely. Yes. I
never doubted it. And now I’m not sure.”

For the Wexlers and other members of the Huntington’s
community, it turned out that a gulf stretched between
the abstract idea of a person having the power to know
some aspect of their future and the concrete possibility
of accessing this knowledge. In fact, when the test did be-
come available to the public, following organizing efforts
by Huntington’s associations themselves, only a small
number of at-risk persons chose to take the opportunity

19 Ibid., 233. Only very recently, in March 2020, Nancy Wexler has
revealed that she has indeed inherited the mutation in an inter-
view published by the New York Times. See Denise Grady, “Haunted
com/2020/03/10/health/huntingtons-disease-wexler.html.
and get tested. This large-scale shift away from enthusiastic advocacy to limited use demonstrates unambiguously that the existence of the predictive test fundamentally transformed Huntington’s disease.

Testing consisted of a new kind of foreknowledge that simultaneously upset existing practices towards HD – whether familiar, medical, or ethical – along with the social relations held by those involved. Put differently, it displaced them. In terms of users’ family relations: more or less explicit ways of bringing up the disease had evolved over generations; with the advent of this new machine for producing foreknowledge, these were turned on their head. From a clinical perspective: the three-act play of “diagnosis, treatment, and prognosis” that normally frames the relationship between patient and doctor cannot hold in this new context. The structure of this play rests upon the assumption that an open-ended narrative exists, tends towards a positive outcome and requires practiced elaboration. There’s the rub. In the script provided by predictive testing, when the result is unfavorable the future comes to stand in for a narrative with no exit. Its outcome is always necessarily negative. Furthermore, by thus compromising the foundations of the doctor/patient relationship, the existence of the indirect and then direct test displaces medical epistemology itself. Finally, in ethical terms, this new kind of medical foreknowledge calls for a radical rethinking. As discussed later in the book, it demands that at least two of bioethics’ core premises be examined anew: autonomy and informed consent.

While precise statistics remain sorely lacking, it can be said that in the course of their lives at most 20 per cent of at-risk persons decide to undergo the procedures required for conducting the test, and that only a fraction of this group then follows through to complete the test. See Novas, Governing “Risky” Genes, and Nikolas Rose and Carlos Novas, “Genetic Risk and the Birth of the Somatic Individual,” Economy and Society 29, no. 4 (2000): 485–513.
Two fields emerged in the 1950s and ’60s that would unlock a better understanding of Huntington’s disease: neuroscience and molecular biology, following Watson and Crick’s elaboration of the double helix structure of DNA in 1953. Both soon underwent spectacular development. The first center for neurobiology was established at Harvard in 1966, followed by the Society for Neuroscience in 1968. These burgeoning institutions and networks fostered a promising new angle of research into neurotransmitters. Neurotransmitters are chemical substances such as dopamine, serotonin, and endorphins sent from one nerve cell to another. Evidence began to show that, depending on their quantity and quality, they could accelerate or block intercellular electrical messaging.

During this period, research into the neurotransmitters involved in Parkinson’s disease demonstrated that when the condition developed in patients their brains concurrently displayed a fall in dopamine release. Because dopamine is an excitatory neurotransmitter its absence would account for a range of Parkinson’s symptoms including shaking, rigidity, and difficulty initiating movement. Simply replacing patients’ lack of dopamine by way of synthetic dopamine injections proved ineffective. Evidently, the chemical substance was unable to cross the blood-brain barrier. However, an intermediary dopamine substance that would come to be known as L-Dopa proved to be an effective substitute as the body would convert it into dopamine that the brain could then metabolize:

If the L-dopa is administered in high enough doses, it can lead to a dramatic reduction of the symptoms. From a catastrophic illness that is seriously debilitat-
ing and often fatal, Parkinson’s became an illness that can be partially controlled, even if it cannot be cured.21

Neurologists then discovered that when they treated Parkinson’s patients with too high a dose of L-Dopa they tended to present symptoms akin to those experienced by Huntington’s patients.22 Consequently, dopamine inhibitors gave some measure of control over HD’s motor symptoms. As for whether Huntington’s patients produced too much dopamine or were hypersensitive to it, the jury was out. Brain autopsies of deceased patients gave no indication that dopamine levels were higher than those of neurologically healthy individuals. Regardless, the clinical configuration mediating neurologists’ simultaneous encounter with Parkinson’s and Huntington’s diseases gave rise to the idea that the two conditions shared a symmetrical relationship.

This inverse symmetry then prompted the hypothesis that would lead to HD’s very first experimental predictive test (not to be mistaken for the aforementioned and largely forgotten indirect genetic linkage test). Put simply: “administering L-dopa to people at risk for Huntington’s might produce chorea-like symptoms in those who actually carried the gene.”23 At the start of the 1970s, neurologists André Barbeau and Harold L. Klawans investigated this hypothesis in an experiment involving thirty persons at risk of but not yet manifesting HD symptoms and a control group of twenty-four persons who were not at risk. During the experiment, all subjects received high doses of L-Dopa. The result was that a third of at-risk subjects developed transitory symptoms of chorea,

21 Wexler, Mapping Fate, 28.
22 L-Dopa is the same substance that produced effects on patients suffering from “sleeping sickness” in the late 1960s, as Oliver Sacks recounts in the fascinating book Awakenings (New York: Harper Perennial, 1990).
23 Wexler, Mapping Fate, 99
while none of the control group did. Later in the decade, more limited experiments on the effects of L-Dopa were conducted on homozygotes (children with both parents from Huntington’s families).

Barbeau and Klawans’s experiment merits discussion in light of the debate surrounding its results published in the British Journal of Medicine in 1972. This debate was not just integral to the historical milieu in which the indirect genetic test emerged in 1983. In addition, the arguments dominating these discussions, along with the assumptions and value judgments they carry, were able to cast fresh light on the Guidelines for the Molecular Genetics Predictive Test in Huntington’s Disease, whose first version was published in 1990.

By June of 1973, the Hastings Center Report published Michael Hemphill’s response to the published results of Barbeau and Klawans’s experiment in an article titled “Pretesting for Huntington’s Disease: An Overview.” Hemphill began with criticism of perceived inaccuracies in the protocols used to convey experimental results to at-risk persons involved. When the L-Dopa triggered choreic movements “were [patients] told the disease was now inevitable?” And conversely, that they were “off the hook” when it didn’t? The centerpiece of the article is a list of arguments for and against the general availability of an invasive, predictive test derived from L-Dopa. In brief, the three arguments for the test – which he assumes his peers share – are as follows: first, if everyone who tested “positive” did not reproduce or were [“constrained from doing so”], the disease would only occur as the result of a novel and exceedingly rare mutation. Second, at-risk persons should not have to live with either false hope or uncertainty any longer than necessary.

25 Ibid., 13.
And third, “for ethicists” he remarks, placing himself at a remove from what is to come, “such knowledge would be regarded as good *per se* because it increases the carrier’s humanity. An analogy to the state of lost innocence could be made – where one could previously act without full knowledge of the consequences and thus avoid responsibility, one is now given the necessary knowledge to act responsibly. Thus to some to be fully human is to be responsible in this sense.”

Hemphill then lists counterarguments. First, diagnosis can be justified in cases where effective therapy or prophylaxis is available – which is not the case for Huntington’s disease. In such a view, knowing or not knowing makes no difference to reality. Second, the test is questionable in that it provides patients with premature knowledge of their symptoms at the level of *inner* experience. Third, confusion surrounds the psychological motivations of those opting for the test. Finally, test results may prompt obstacles for obtaining medical insurance as well as access to education and employment. Hemphill ends by calling for careful scrutiny of the implications of predictive testing for Huntington’s prior to making it generally available. In his view, it is reasonable to worry that people will ask for the test in order to learn they have been spared and will be unable to cope with the opposite outcome: “ultimately, the question is one of minimizing suffering in a situation with very few alternatives to suffering. Our responsibility for the ethical issues at hand is to ensure that all the parameters for decision-making are explored and that human sensitivity is not blunted by our concern to assimilate data or diagnose disease.”

A few months later, in the September issue of the *Hastings Center Report*, Frank R. Freemon published a reply to Hemphill. Evidently appalled, he says: “It seems to me

26 Ibid.
27 Ibid.
[Hemphill’s] rejection of early diagnosis and prognosis damns much of modern medicine.”  

Freemon contends that rejecting Barbeau & Klawans’s experiment because of the ethical and psychological issues it brings to light is a case of throwing the baby out with the bathwater. By extension, entire areas of modern medical practice would be null and void for walking the very same ethical tightrope. This he simply cannot abide. Furthermore, he argues, Hemphill takes a widely held but mistaken view of medicine that overemphasizes its therapeutic role. He counters with the following: “[A]ctually the doctor’s role as a counselor is just as important as his role as pharmacologist or surgeon. Accurate and early diagnosis is important because then we can give accurate prognosis.”  

The reader quickly learns, however, that in Freemon’s view such a “counseling” capacity does not refer to a mutually beneficial exchange of insights among doctor and patient, but rather to a one-way street in which the doctor lectures the patient on what’s what. According to him, unwitting patients and their loved ones, ill-informed by rumor and word of mouth, are “sometimes so terrified of the unknowns of the illness as to be virtually paralyzed with hysteria” and so need to be reassured if not hushed by doctors bearing prognoses that neither minimize nor dramatize the situation but offer up its objective assessment. According to Freemon, the doctor achieves this by, among other things, “always holding out a ray of hope, usually based on future research.”  

Staking your hopes on an uncertain future sits in stark contrast to ideas about self-determination or today’s notions of “empowerment,” wherein patients are capable of activity and activation through forms of collective commitment.

29 Ibid.
30 Ibid.
to building strategies and tactics for living as well as possible with a diagnosed disease.

In effect, hope such as this sets up a strict separation between ignorant patients and knowledgeable doctors who can heal them, at least in theory. In so doing, the author perpetuates understandings of medicine and research as the only way of knowing disease. He never considers the possibility that sickness could be the result of a co-constructed and experimental exploration, forged from tips and techniques shared by doctors and patients alike, an exploration that can itself bring relief to the sick person. Far from it, the doctor’s first responsibility according to Freemon is protecting their patients from the dangers of a “naïve” attitude: “an understanding and frank discussion allows the patient and his family to prepare for the future, to stop the endless rounds of specialist after specialist, and to minimize the patient’s natural tendency to squander his resources on faith healers and charlatans.”31 Real hope should be placed in true science, even if its results don’t quite yet exist. Only true science is authorized to heal for the “right reasons.” The second part of this book will turn to the substantive genealogy of this proposition.

Well before 1983, debate over the possibility of a predictive test for Huntington’s was underway. It presents two other striking features: enduring and ongoing depictions of the disease as a horror story, and frequently explicit recourse to eugenic arguments. Hemphill, for instance, writes that “in the late stages of dementia the patient presents the pitiful picture of the complete ruin of a human being.”32 While painting the horror in subtler hues, S. Thomas channels eugenicist ideology to even more devastating results in a 1982 article published in the British Medical Journal. He writes:

31 Ibid.
32 Hemphill, “Pretesting for Huntington’s Disease,” 12.
The distress and inefficiency of those counseled in the first stages of their illness make some of them incapable of using effective measures of birth control. On this view, as on the view that the urge and determination to procreate in the face of the possibility of the disease is almost a prodromal symptom of the disease itself, any reduction in family size as a result of counseling is likely to come preferentially from those who do not have the mutant gene.33

Not content to depict persons with HD as deeply irrational and lacking judgment, he charges them with a pathological urge to reproduce. He pinpoints this urge within a liminal phase of the condition lying between presymptomatic status and symptomatic onset. During this “prodromal” phase, patients are typically considered quite capable of good judgment. And of course, this argument only holds to the extent that “reduction in family size” – a sophisticated turn of phrase that obfuscates a fundamentally eugenic position – has been agreed upon as a moral norm. To be sure, the need for such a reduction comes across as especially convincing when Huntington’s disease is simply, simultaneously, and unequivocally demonized. At the time such views, albeit implicitly eugenic for all intents and purposes, were evidently acceptable, at least when it came to HD, as reflected in these recommendations from Husquinet, Franck, and Vranckx concerning L-Dopa experiments on monozygotic twins published in 1973:

We would add that a prediction test is useful only for those who have to choose between marriage and celibacy, procreation or interruption of the line of descendants, since no preventive medical treatment can

yet be recommended to potential choreic individuals. Bearing this in mind, application of the test to a 50 year old woman seems useless.  

Guidelines

*But prophetic speech announces an impossible future, or makes the future it announces, because it announces it, something impossible, a future one would not know how to live and that must upset all the sure givens of existence. When speech becomes prophetic, it is not the future that is given, it is the present that is taken away, and with it any possibility of a firm, stable, lasting presence.*

– Maurice Blanchot

In 1983, before completion of the first phase of research into the genetic marker for Huntington’s disease, debate surrounded the possible risks and consequences flowing from wider availability of a predictive test for the condition. The advent of indirect genetic testing as a real possibility launched a phase of more or less (un)controlled use in the shape of clinical studies aimed at assessing the test’s reliability. The resulting situation soon led doctors and representatives of the Huntington’s community to the conclusion that recommendations for the use of testing were needed. The initial version of these collectively designed recommendations appeared in 1990, published in quick succession in the *Journal of Medical Genetics* and *Neurology*. They were re-edited with minor revisions in

1994, in response to the arrival of the direct test.\textsuperscript{37} The decision to formalize such recommendations was made during conferences of the International Huntington Association and the World Federation of Neurology in the French city of Lille in 1985; the first version was tabled four years later in Vancouver in July 1989. The “Guidelines for the Molecular Genetics Predictive Test in Huntington’s Disease” were intended to provide “recommendations concerning the use of a predictive test for the early detection of Huntington’s disease”\textsuperscript{38} As signaled in the introduction in 1990, they aimed at establishing “realistic, ethical principles based on current knowledge and techniques in molecular genetics” in order to “govern the application of the predictive test” and “protect at risk subjects.”\textsuperscript{39} The first revision in 1994 added a new item: “the guidelines are also intended to assist clinicians, geneticists, and ethics committees as well as lay organizations [i.e., user groups] to resolve difficulties arising from the application of the test.”\textsuperscript{40} Considering that the L-Dopa testing debate had set the stage, it follows that, above all, the guidelines also endeavored to limit the damage caused by a discursive milieu dominated by eugenic ideology.

The “Guidelines” are divided into nine sections each containing their own sub-sections, with the document split into two columns, recommendations on the left and related comments on the right. Aside from adjustments


\textsuperscript{38} “Ethical Issues Policy Statement on Huntington’s Disease Molecular Genetics Predictive Test,” \textit{Journal of Medical Genetics}, 34.

\textsuperscript{39} Ibid.

\textsuperscript{40} “Guidelines for the Molecular Genetics Predictive Test in Huntington’s Disease,” \textit{Journal of Medical Genetics}, 555.
to the order of the text and new data regarding the discovery of the exact location of the Huntington’s gene, the language remains more or less consistent in all versions.41 In particular, the guidelines give a precise definition of who testing is available for, and when and under what conditions. They also suggest a set of roles and functions that should arise in the overall course of testing, in other words, before, during, and after the genetic test itself. The first recommendation is short: “All persons who may wish to take the test should be given up to date, relevant information so that they can make an informed, voluntary decision” (555). The second one stipulates that “[t]he decision to take the test is the sole choice of the person concerned” (ibid.) and that only those having reached the age of majority have the right to take the test – with the exception of prenatal testing. Hence, from the outset the authors draw upon the principles of patient autonomy, the right to know (or not to know), and informed consent, all fundamental to the ethics of medicine as it emerged in the United States during the 1960s and 1970s. They also elevate another principle: “Persons should not be discriminated against in any way as a result of genetic testing for Huntington’s disease” (556). A further recommendation calls for specially trained “counselors” to accompany persons throughout the testing process. They are to be fully-fledged members of multidisciplinary teams that include geneticists, neurologists, social workers, psychiatrists, and specialists in medical ethics. In addition to these roles, at-risk persons have the option of nominating a “companion” to accompany them throughout all stages of the process. Sections three and four describe the counselor’s role within this constellation of actors. “The counselling unit should plan with

41 Hereafter, I will refer to the 1994 version, which is used to this day, as printed in the *Journal of Medical Genetics*. Page references are given between parentheses in the main text.
the participant a follow up protocol which provides for support during the pre- and post-test stages, whether or not a person chooses a companion” (ibid.). Moreover, the counselor is responsible for recommending the participant touch base with a local Huntington’s association and for explaining, in concert with the medical team, the technical aspects of the test as well as the ongoing lack of either prevention or cure for the disease. There is explicit language indicating that this discussion must include “information on alternatives the applicant can adopt,” such as the possibility “[n]ot to take the test for the time being” (558). Sections six and seven are less relevant to the present analysis; they cover the possible need for preliminary neurological testing along with pre-natal diagnosis. Section eight, however, is significant. Under the heading “The Test and Delivery of Results” (559) it stipulates that prospective test participants must heed a minimum waiting period of one month between initial consultation and the decision to take the test. It also insists that once participants undertake the test, they must receive the results as soon as possible at a time set up in advance: “The manner in which the results will be delivered should be discussed between the counselling team and the person” (559). Finally, the ninth section states that in the post-testing period, the counselor should keep in regular contact with the test participant for a minimum of one month. During this time, lay organizations should also expect to play an important role.

Hence, the “Guidelines” are a response to the many psychological, generational, ethical, economic, and public health questions brought about by the existence of predictive testing for HD. To this day, at least in the United States and in Europe, they continue to provide a common orientation for the clinical organization of testing procedures. Nonetheless, exactly how they are applied in concrete terms, within a variety of institutions and across different health systems, depends on a whole
set of parameters. The most decisive of these is the question of who takes on which of the roles designated in the guidelines – particularly that of the counselor – not simply at the level of the individual but also at the level of their disciplinary affiliation. Much like the staging of a play, interpretation therefore varies from country to country and institution to institution.

In a French clinic in the mid-2000s, Alice Rivières found herself exposed to a performance of the guidelines that was truly devastating, as clearly rendered in her *Manifesto*. It was as if the whole process was stuck in a routine. Among the multidisciplinary team, the psychologist appointed to the role of the counselor appeared to be there not to offer support but provide an assessment based on strict criteria of whether Alice would be able to receive a potentially adverse test result:42 “[the psychologist responds] that I appear quite unemotional, that I should let my feelings out.”43 Along with the rest of the multidisciplinary team, Alice ends up dealing with throughout the process, the psychologist conveys the following sense to her:

> It feels like a driving test: I have to prove who I am, they have to think I’m strong enough to quell their fears that I’ll kill myself because of them, yet I also have to appear upset enough not to come across as emotionally shut down. It’s a tricky line to walk, but I end up pulling it off and they allow me to get my results two months after the start of the testing process, the hallmark of a successful applicant. They draw two

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42 This kind of assessment largely serves to allow medicine to insure itself against its own transformative power. In such circumstances, the object of assessment is above all the likelihood that the person seeking to know their genetic status could commit suicide.

vials of blood, because the results have to be double-checked by two different labs.44

On the day she learns of the result, she does not go alone but rather, as advised, accompanied by her two closest friends. Her account of this day speaks volumes: the neurologist delivers the sentence as my CAG number (CAG stands for Cytosine-Adenine-Guanine. More than 36 repeats of this glutamine on the 4th chromosome indicate the presence of the gene responsible for Huntington's disease): 44. No need for a second opinion. [...] She then turns to [Alice’s friend] Emmanuelle and tells her how dreadful it will be for family and friends, and that she needs to quickly start getting help herself. Not content with cursing me, she dunks my friends in her pox as well.45

What emerges from Alice’s retelling is that the real injury does not stem from the sole reference to a CAG count of 44, and thus the unequivocal fact that she bears the mutation, inherited from her mother, herself at an advanced stage of the disease, which she inherited from her father, who inherited it from his mother, and so on. Rather, the violence prominently resides in the gestures and sentences surrounding this information. The doctor turns away from her to turn toward the friend accompanying her, in order to inform her of the unbearable nature of the coming situation, for Alice along with all of her loved ones. The veritable curse is not – or at least not exclusively – to be found in the fact that Alice inherited the “bad” gene, but rather in the fact that next to this definitive prognosis lies another one entirely, one that would

44 Ibid.
define or prescribe in equally absolute terms exactly how this legacy will come to pass. The future has already happened. The gene’s effects will simply be destructive and catastrophic. They will diminish her little by little. There is nothing that can be done about this because at the end of the day, at least for now, there is no treatment available for Huntington’s patients. The radical and ravaging violence of this situation of diagnostic and predictive prophesying is contained in the utterance of a total inability to act: “The test is a destiny-making machine. Going through with it means witnessing the radical and immediate transformation of your inner truth, that constantly quivering kaleidoscope, into the simple truth of a medical definition.”

Diagnostic situations like this one, at least when they are conducted in this way, effectively give those involved the idea that when the result is “positive,” there’s only one thing left to do: wait for the beginning of the end. Instead of uncertainty or a puzzle needing to be worked through together, the only thing on the table is acceptance in the face of certain disaster. Well before the first signs of any symptoms emerge, the person now tested becomes a patient in a literal sense, a suffering person who can only wait in patience.

To be sure, this particular story of diagnosis and its fateful character cannot be generalized. It does, however, highlight the danger of transforming international recommendations into institutionally reified routines, which is to say, into processes that are neither up for discussion nor negotiation by their very participants. What is in danger, properly speaking, is the truth of a disease and its diagnosis alongside the ability of people to function psychosocially, the very same people said to enjoy autonomy, informed consent and the right to know. The tragedy of the process, as Alice Rivières recounts it and which culminates in the disclosure of the result, lies in

46 Ibid., 28.
how, once endless, the many forms a life can get winnowed down to a single one. Moreover, the form that life then takes is a cruel and hopeless one; it becomes binding and nobody can influence it in any way – not the doctor, not the tested person and not their loved ones. This kind of medical truth, bearing no therapeutic knowledge and yet presenting itself as the sole legitimate authority over disease, is freighted with a particular kind of violence. This violence, says Alice, stems from the fact that, in spite of its own inability to act, medicine claims the authority to crush any and all other possible truths.

Alice’s story places us before a distinctly problematic situation. While inviting rigorous and in-depth analysis, this situation throws up an initial temptation to rush to judgment and unreservedly denounce the medical establishment, its associated disciplines, and their practitioners. The real challenge this situation and others like it raise is, I submit, to go one step further and interrogate the propositional potential of conceptual, historical, and empirical research itself. To put things somewhat more modestly: can we interrogate the resources such research provides for moving past a standstill, for learning not to complain about difficult and unbearable situations but to take them as a starting point for constructing well-articulated problems? If so, what does a “well-articulated problem” look like, and what kind of problematization might be tailored to welcoming this new kind of foreknowledge?