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Taking social and anthropological  
consequences  
of genome editing seriously



Mylène Botbol-Baum, INSERM Ethical Committee,  
Head of the Helesi Center of Ethics / IRSS, UCL, Brussels

# A new deal among society, science and biotechnologies

- Overlapping the same language games.
- Misuse of narratives and story telling in science.
- Raises new issues, calling for a reframing of the ethical debate, around new forms of private eugenism, patentability, unrealistic cure promises, knowledge gap and controversies about what knowledge is in relation to truth as representing reality.

# Metaphors in science of gene editing

- Computer technologies and molecular biology are transforming human lives and what it means to be human.
- Metaphors are displacing meaning from common sense to describe these new technologies and mediate public understanding of innovation.
- They open gene editing to bioethical scrutiny to increase public accountability or compliance. This is not neutral biopolitically.  
It opens an “acclimatizing garden” of new forms of representation.
- Asymmetry of knowledge.

# Anthropology and genetics

- Paul Rabinow calls bio-sociality the geneticization of social life and institutions (1996, 2000, 2015). He rightly underscores the co-constitution of nature and culture, as does Ph. Escola or Marshall Sahlins.
- Biological anthropologists study the interaction with bioinformatics and cultural historical context of producing and altering norms.
- Genetics itself has become an anthropological research domain since it aims to remodel or edit humans in genetic narratives.
- The technical and the ideological are bound together by different forms of conflicting memories.

# Biopolitics of genetics stories and women gaze on science

- **Hilary Rose** analyzed the genetic work on the population of Iceland as an act of national commercialization and commodification of genetic data, questioning the confidentiality of collected information.
- **Donna Haraway** (a biologist) deconstructed the mixture of popular and scientific narratives on genetics subjectivity.
- This discourse is effective on eugenic populism, reappearing today on race and human variation, kinship and identity, translated into technical knowledge... But building narratives is a craft.

# Addressing the fourth industrial revolution

- We are confronted with a conflict of narratives and memories (genetic, neuronal, exosomatic) with the metaphor of genome editing, in the context of a merge of genetic engineering with big data.
- « *Can we edit the genome* » of embryos ? This pertains to a culture of the soul replaced by algorithms.
- In *Scientific American*, Jennifer Doudna declared :  
“*I am not categorically against human germline editing. But I think there should be a reason to do it that would justify the risks.*”
- So why should we, as a society or a species, assume those uncertain risks ? Does it make sense ? Should geneticists alone answer these questions, as Doudna did in her book “*A Crack in creation*” ?

# Anthropology resisting sensational science

- The rapid development of medical technologies cannot be adequately understood without attention to human modes of subjective memory.
- We are not only bodily creatures sharing a genome but also plural social and cultural beings aiming for an irreducible singularity.
- Anthropology is bringing an awry gaze.
- Questioning the commodification of bodies in terms of social justice and intellectual property on human biological material in the name of efficiency or convenience.

# Genetics, commodification and social justice

- The commercialization of biotechnology by transnational pharmaceutical companies relies on genetic engineering.
- The war on intellectual property reveals the anthropological dimension of the quest for power / knowledge involved in their biosocial quest.
- The ideology is not value free and overcomes the responsibility of science for some, while not assuming it totally for others.
- Epigenetic modification beyond the “designer baby” is at stake and worries most social scientists and philosophers, since scientists are only beginning to understand it, while already altering epigenetic mechanisms modulated by DNA expression.
- Scientific discourse and political life are taken over by market rhetoric and “fake news”.



# Biotech market and geopolitics

- EU and UN documents call the human genome a “common heritage” and not a property open to commercial exploitation, but biopatenting laws reflect the priorities of industrialized societies that exclude the poor, since the TRIPS agreement imposes an alien set of concepts of property (CIDSE, 2000).
- Some recommend to exclude all life forms from patenting... to preserve the common good as a social and economic reality. However, this notion is not prominent in the United States ethos of “America first”, and on consumer choice.
- Private industry investments exceed by far the funding provided by governments (see “*Trading the genome, investigating the commodification of bioinformation*” by B.Parry).

# Biotech market and geopolitics (2)

- This situation allows, through the patent mechanism, to sell a biotech invention or innovation.
- It places more control over the development of biotechnology in the hands of countries that can afford investments in scientific research through corporate sponsors. And this creates geopolitical issues.
- The emergence of an international civil society is questioning this rhetoric, as well as organizations like Unesco, promoting solidarity towards groups vulnerable to genetic diseases (Art 19), sharing of benefits, or protection of future generations...

# Contextualizing our epistemology in societal terms

- Epigenetic science is too young to determine social choices. We are not ants (see <https://m.phys.org/news/2017-08-gene-editing-induced-ant-social.html>).
- Who must exercise democratic safeguards on genome heritage or modification, alteration, or “editing” ? They influence public trust, or generate fear, that is biopolitically responsible for the mistrust of democracies nowadays.
- Words matter and the phenomenology of their evolution is following some sociotechnical patterns that we have to explore before we can regulate in terms of ethics.
- What has sociologically and technically changed, since the human genome project regulations, is a serious question.

# Public trust and inclusive narratives

- Are our Western societies equipped to make the moral decisions and subsequent public policies, required to democratize knowledge and gain the public confidence ?
- *“Every answer presupposes some moral theory and social philosophy, and there is no moral system that we can accept as uniquely correct.” (Nagel)*
- However there is a method for determining overlapping consensus towards a responsible public policy aiming at genetic justice, based on reciprocity and mutuality.

# Reciprocity and mutuality in the information age

- Reciprocity underlines the inequality between knowledge held by ordinary people and by practitioners of medical genetics.
- Justice requires that such knowledge be redistributed to the less well informed.
- Redistribution ensures that knowledge is transferred from the genetic engineer to the general practitioner. As this is already a problem, how can we genuinely foster “civic responsibility” and ensure a kind of ecological genome editing involving all interested parties? → By a readjustment of our social norms.

# Can we “edit” future generations against wrongful life ?

- History reminds us that we are responsible for the known and, more importantly, for the uncertain.
- Future generations could coherently claim that governments acted irresponsibly in failing to regulate genome editing advances and their social consequences from a lack of precaution.
- Can a social deal supported by state institutions prevent this situation ?

# Duty to know and recognition of our ignorance

- Recognition of our ignorance is the adverse of the duty to know at the core of the scientific adventure.
- It must govern the evermore necessary policing of our oversized might brought up by information technology.
- It compels us to readdress the metaphor of “genome editing” and its utopian, thus often deceiving, power.

# How opposing Nature and culture is inadequate anthropologically

- The genome as a fixed heritage is a myth, when we know that it undergoes continual alterations as a consequence of natural mutations.
- Does it legitimate man-made genome alteration ? On what grounds ? (see Paul Rabinow)



# Interdependence among humans needs more than regulations

- Biopolitical Ethics is about the responsibility of addressing the abuse of power on human bodies.
- Interdependence is the complement to autonomy and requires to rethink liberalism of science in a neo-capitalist context.
- It is a bioethical and sociobiological question that should be addressed concurrently by inter-disciplinarity.
- To construct a sharable narrative and interwoven genetic, neural and subjective forms of memory that can make History.

***Thank you for your attention  
and questions***