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RESISTANCE AND LIBERATION IN BIOETHICS: SYNTHETIC BIOLOGY AS A NEW CHANCE FOR AN ECUMENICAL APPROACH

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Abstract

The Reformation argued for a God humiliating himself and for the intercommunication of divine and human nature in Christ as the true God and the true Man. Today Synthetic biology opens up a new discussion about the interconnectedness of natural and artificial life. It questions whether the human desire to break our limits makes us playing God. The article argues for an understanding of a link between the given life of created humans and the reconstructed life of co-created artefacts for two reasons. Firstly the Christian image of God is far away from a person competing with scientists. Secondly we can understand the *communicatio idiomatum* as a figure picturing the inseparability of human and divine nature. The history of this figure shows that the bioethical question is an ecumenical one. Churches need to address the issues of synthetic biology mentioning that it is neither a redemptive nor a demonic practice as such.

Keywords: Anthropocentrism, Artificial Life, Biotechnology, Ethics of Synthetic Biology, Intercultural Theology, Playing God, Science and Technology

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1. Reformation, Biotechnology and the Churches in Asia

During apostolic age it was affirmed that the Son was of the same being (*homoousios*) as the Father. The Nicene Creed in 325 declared the full divinity and full humanity of Jesus. Later the Council of Chalcedon promulgated the hypostatic union, stating that the divine and the human natures of Christ to coexist, yet each is distinct and complete. However, the social praxis of Christianity in the 15th century did not reflect this union. People were longing to experience the divine nature of Christ but instead of this the Church sermonized the deep rift between men and God. So the idea of the doctrine of the two natures of Christ was reformulated during Reformation. Now the true God was the God humiliating himself and the true Man was the exalted Crucified. In this way the characteristics of the divine nature and the human nature intercommunicate in the Person of Jesus Christ (*communicatio idiomatum*).

Today we face many controversies about the divine creation and human artefacts. Within the Christian community the common issue is, how to understand the making of life on the one side and the given life on the other. The new opportunities of biology lead us to reformulate the meaning of the doctrine due to faith-based reasons. Today this is an ecumenical task as every church is on the way to become an integral part of the techno-culture. The question is whether we speak about an interconnectedness of the religious coverage and the technological accomplishment of our world (*Welterschliessung*) or about a separate development. Before 1968 Asian theology was preaching the kingdom of Christ within the great changes. God was ruling in the industrial revolution. Theologians such as M.M. Thomas and D.T. Niles welcomed the vision of Jawaharlal Nehru to make India an industrialized country. M.M. Thomas' study on 'The Christian in the World Struggle' was the first ecumenical response to the "Asian Revolution" resulting from the national independence movements and the programs of modernization. Later he contributed much to the wider ecumenical approach through the Christian Institute of Studies in Religion and Society (CISRS). At the Christian Conference on "Rapid Social Change" in Greece in 1959, he together with John Bennett chaired the session on "Christian Responsibility in Political Action." Its report became a guide for worldwide Christian reflection on modernity. In 1961 the World Council of Churches (WCC) presented the findings of "Rapid Social Change" at the New Delhi Assembly. The World Conference on Church and Society in 1966, organized by the Church and Society department of WCC and held in Geneva, became the

starting point of the change. M.M. Thomas spoke about "Modernization and the Struggle for a New Cultural Ethos" and said "that the spiritual dimensions of the contemporary awakening of the people of Asia and Africa [leads them to] building of indigenous cultural formulations for modernization." His message acknowledged that "as Christians, we are committed to working for the transformation of society." [1] The meaning of society and revolution was widely discussed in the churches. Later M.M. Thomas together with Paul Devanandan organized a series of study conferences in India, contributing to 'Christian Participation in Nation Building.' According to Paulos Mar Gregorios, M.M. Thomas never absolutized any Revolution, but what he stood for was humanization of the human race through development of the awareness of dignity, freedom and responsibility.[2]

In the German Theology of 20th century the idea of a liaison between scientific progress and religious thought has never been a dominant position.[3] The leading paradigm was the paradigm of separation. A comparison of the dominant theologies in Asia and other parts of the world with the German history of theology shows that this separation is a significant feature of a common history of Christian theology. The discussions of the East Asia Christian Conference (EACC) in 1968[4] mark a paradigm shift in Christology as well as in the understanding of modernization and industrialization. After 1968 the conciliar churches more and more became influenced by the negative impact of urbanization, industrialization and globalization. Especially the Urban Industrial Mission of the EACC focused on the marginalizing aspects of development. This led the churches into an antagonistic understanding of technological and

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[1]M.M. Thomas, "Message of the World Conference on Church and Society (1966)," in Madathilparampil M. Thomas, Paul Abrecht, ed., Christians in the Technical and Social Revolutions of our Time. Official report, with a description of the conference by M. M. Thomas and Paul Abrecht. World Conference on Church and Society, Geneva, July 12-26, 1966, WCC, Geneva 1967, 255-261.

[2] Paulos Mar Gregorius, "M.M. Thomas. A Tribute on His 70th Birthday," http://jtmmt.blogspot.de/2008/08/m-m-thomas-tribute-by-paulose-mar.html (April11, 2017)

[3]Helmut Thielicke, "Ist die Technik teuflisch?" in Helmut Thielicke, ed., *Der Einzelne und der Apparat. Die Freiheit des Menschen im technischen Zeitalter,* Hamburg, 1964, 81-92. Paul Tillich, "The Logos and Mythos of Technology (1927)," in J. Mark Thomas, ed., *The Spiritual Situation in Our Technical Society*, Macon, Ga: Mercer Univ. Press 1988, 139-143.

[4]East Asia Christian Conference (EACC), *"In Christ all Things Hold Together":* Statements and findings from the Fourth Assembly of the East Asia Chritian (sic) Conference, EACC, Bangkok, 1968, n.p.

human development. Since the 1970s, public sensitivity for controversial development has been extensively increased. When industrialization came to independent East Asian countries similar discussions aroused.

The antagonism intensified through the debates on genetic engineering for agriculture in the 1990s. In these debates the risk associated with agricultural biotechnology possesses many of the negative characteristics in the public sphere. The results of risk assessment together with the alarmingly public risk perception of biotechnology seems to be as much a social as it is a psychological phenomenon.[5] The dramatic portrayal of technological risks in the mass media,[6] the confidence crisis of orientating institutions such as democratic parties, churches and unions and the association of biotechnology with commercial interests[7] are important factors that contribute to explaining the sceptical public attitudes towards biotechnology. Additionally public debates on biotechnology in Europe have a highly moralist component. This is related to the potential of this technology to improve the conditions of the poor in developing countries. Everyone will agree that people in developing countries cannot be left behind. There is a will to improve the livelihoods, but biotechnology is not accepted as a means to do so. That´s why it is important to examine the meaning and the perception of biotechnology not just in industrialized but also in developing countries. The potential benefits from new technologies may eventually outweigh the potential risks whereas in other contexts it may be the other way around. Provided that political efforts are made on the national and international levels to ensure fair access to the newly created artefacts and that the use of the technology will be sustainable we have to gain for a contextual risk assessment for different places.

There is a variety of debates on biotechnology going back to Asian agriculture in the 1960s. One of the major targets of criticism was the Philippines-based International Rice Research Institute (IRRI), which developed the first high yielding rice varieties in the 1960s and 1970s.

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[5]Joseph R. Fiksel and Vincent T. Covello, "The Suitability and Applicability of Risk Assessment Methods for Environmental Applications of Biotechnology," in Joseph R. Fiksel and Vincent T. Covello, ed., *Biotechnology Risk Assessment: Issues and Methods for Environmental Introductions*, Oxford: Elsevier, 2013, 1-34.

[6]Martin W. Bauer, John Durant and George Gaskell, ed., *Biotechnology in the Public Sphere: A European Sourcebook*, London: NMSI Trading Ltd, 1998.

[7] Philipp Aerni, "Stakeholder Attitudes toward the Risks and Benefits of Agricultural Biotechnology in Developing Countries: A Comparison between Mexico and the Philippines," *Risk Analysis* 22, 6 (2002) 1123-1137.

It played a crucial role in the Green Revolution also. IRRI is aiming to the genetic improvement of rice. Therefore, it is interested in investigating the potential of genetic engineering to address nutritional, environmental and economic problems in rice cultivation. Opponents question whether the high yielding rice varieties have been designed for the local conditions of the farmers or for the world market. They argue that the efforts of Green Revolution caused many environmental and socioeconomic problems.[8] In this perspective, the use of biotechnology to improve rice crops would not take into account the real needs of resource-poor people. However, a domestically developed participatory approach in rice breeding and pest management, does not abandon the technical paradigm of agriculture.[9] We can understand the debate on genetic engineering as a programmatic debate under the condition that we have already accepted the potential of technology to address the problems of poor people, poor eating quality and malnutrition. Even if we do not believe in the efforts of transgenic research, we search for different ways to manipulate the natural growth technically. This finding indicates that an increase as well as a decrease of the present kind of biotechnology is expected to intensify the debates on the interpretation of our techno-culture.

2. The Genesis of Synthetic Biology

Synthetic biology is a new field of endeavour that has strong parallels with the development of the synthetic chemistry revolution of the 19th century in Europe and with the Green revolution of the 20th century in Asia. The 19th century chemistry revolution became the foundation of the industrial development in Europe.[10] The main focus is on the synthesis of compounds that had previously existed in nature only. In 1828 Friedrich Wöhler was the first scientist to synthesize an organic compound—urea—from purely nonorganic components. Until this historic mark it was

[8]Philipp Aerni, *Potential Impact on Rice Markets in Southeast Asian Countries.* Zurich, PhD dissertation, Zurich: Swiss Federal Institute of Technology, https://www.researchgate.net/publication/34922269_Public_Acceptance_of_Transgenic_Rice_and_its_Potential_Impact_on_Future_Rice_Markets_in_Southeast_Asian_Countries?el=1_x_8&enrichId=rgreq-89eb5d009208ba6a86a06627ce7caf82-XXX&enrichSource=Y292ZXJQYWdlOzEwOTQ3NzMxO0FTOjIwODY5MzMwNTA1NzI5MEAxNDI2NzY3NzY5OTk4 (April 5, 2017)

[9]Cfr Joel Rocamora, *Breaking through: The Struggle within the Communist Party of the Philippines*, Manila: Anvil Pub., 1994.

[10]Church and Society Council of the Church of Scotland, ed., *Synthetic Biology*, 2010, http://www.churchofscotland.org.uk/_data/assets/pdf_file/0004/3793/synthetic_ zbiology_report.pdf (June 27, 2017).

thought that there was something special and irreducible about living things. Life was purely divine. In 1858 the production of synthetic quinine from benzene followed and led to the production of a new synthetic purple dye (mauve), and in 1897 the German based Bayer Company produced the Aspirin as the first synthetic drug. In this way the development of synthetic chemistry was followed by pharmaceutical industry, a new scope in the food industry, detergents, plastics and a significant change in agriculture. Also, electronic industry including the production of computers and integrated circuits would not have developed without synthetic chemistry.

After Watson and Crick have discovered the double-helix-structure of DNA in 1953 the molecular revolution intensified. This led to the effort to sequence the entire human genome, a ten year project which was completed in 2001. The increasing understanding of biological mechanisms and the new ability to deploy computing power to analyse large amounts of information have contributed to this development. High-speed computers and telecommunication networks have been essential to the development of synthetic biology. One of the main innovations of synthetic biology is the linkage between biology as a natural science and engineering as a technology based praxis. This shift is essential for the redesigning and reassembly of biological systems, because through this the scientific method of engineering—trial and error—now is related to the natural sciences. In this way biology has become engineering. Biology is to develop new forms of life rather than just to explore the existing.[11] Main discussions about synthetic biology have reference to the modifying aspect of present life forms. Synthetic biology is a further development of "genetic engineering" which has provided genetically modified crops and human insulin. But the application to biology of techniques which are used in engineering design and development makes a great difference. The biologists identify the bio-parts of living organisms, the engineer standardizes the same and fits them onto a common 'chassis,' usually a bacterium such as *E. coli*, where they perform the expected function. At this point the classic engineering is adopted in seeking to optimize the performance of the novel systems.

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[11] Ronald S. Cole-Turner, "Synthetic Biology: Theological Questions about Biological Engineering," in David Albertson and Cabell King, ed., *Without Nature?: A New Condition for Theology*, New York: Fordham University Press, 2010; Ronald S. Cole-Turner, "Is Genetic Engineering Co-creation?" *Theology Today* 44, 3 (1987) 338-349, DOI: 10.5422/fso/9780823230693.003.0007.

The theoretical basis of the contemporary understanding of synthetic biology has been formulated by Waclaw Szybalski, who proclaimed in 1974:

> Up to now we are working on the descriptive phase of molecular biology. [...] But the real challenge will start when we enter the synthetic biology phase of research in our field. We will then devise new control elements and add these new modules to the existing genomes or build up wholly new genomes. This would be a field with unlimited expansion potential and hardly any limitations to building 'new better control circuits' and [...] other 'synthetic' organisms.[12]

The philosophical and theological aspects seem to stand back as long as we just focus on the rational descriptions and definitions of synthetic biology. In the China Biotechnological Development Report, synthetic biology is described as "a new trend of biotechnological development [...] to form new biological systems and achieve expected industrial application."[13] Synthetic biology is thus commonly understood as the technical application to biology of an engineering approach. It will help to design, or redesign, organisms that are useful for the society. In this way synthetic biology has attracted the attention of Chinese researchers and the government. Chinese government started funding synthetic biology research in 2008, and ever since has given the field more and more support. The development of synthetic biology has increased rapidly and nowadays the country is fully equipped to catch up with countries at the forefront.[14] The Indian Task Force on Synthetic and Systems Biology Resource Network gives a similar definition: "Synthetic biology refers to both: the design and fabrication of biological components and systems that do not already exist in the natural world; and the re-design and fabrication of existing biological systems."[15] But in contrast to China, synthetic biology has gained little attention in India compared to the number of Indian groups working in biotechnology and life sciences at all.

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[12]Waclaw Szybalski, "In Vivo and in Vitro Initiation of Transcription," in A. Kohn and A. Shatkay, ed., *Control of Gene Expression* and *Discussion*, New York: Plenum Press 1974, 23-24 and 404-405.

[13]Department of Science and Technology for Social Development under the Ministry of Science and Technology of China and China National Center for Biotechnology Development, ed., *China Biotechnological Development Report 2008*, Beijing: Science Press, 2009, 128–130.

[14]Virgil Rerimassie *et al.*, "Discourses on Synthetic Biology in Europe, India and China," *Science and Technology Governance and Ethics*, Cham / Heidelberg et al.: Springer International Publishing, 2015, 145-163.

[15]SSBRN Task Force, *Report of the Task Force on Synthetic Biology and Systems Biology Resource Network*, New Delhi: Planning Commission, 2012.

Also, the interest from the Indian government and industry is limited so far.[16]

However, the potential impact of synthetic biology was described as "likely to be as great, or even greater, than that of synthetic chemistry a century ago."[17] So we have to take into account that synthetic biology might have an immense cultural influence for people worldwide in the next decades. But the possible impact and even its potential helpfulness are not the only reasons why synthetic biology is relevant for the churches. The more important issue is the anthropological relationship between being human and the ability to explore and to restructure nature. There is a human desire to go for the limits of what can be done. The *de novo* construction of new biological systems offers "valuable quantitative insight into naturally occurring information processing activities."[18] Additionally the exercise of freedom in rational thinking goes deeper in its philosophical motivation. Synthetic biology is testing the limits of the freedom of research as it has been heralded as "transhumanist" and "Life 2.0."

3. Synthetic Biology and Theology

One of the best known opponents of genetic modification, Vandana Shiva, voiced criticism of synthetic biology, as did certain environmental groups in India.[19] The concerns raised relate to socioeconomic considerations and values such as equity and access. It is about the embedding factors of synthetic biology. Apart from this theological reflection will be about the world-view being constructed through the biological glasses we look through. The theological questions coming up with the genesis of synthetic biology have reference to two aspects. First aspect is about the human desire to break through the limits of current possibilities. That is the meaning of creativity and the meaning of the 'new' in the new life. Second aspect is the relationship between humanity and nature. Does God give us authority to reconstruct natural life in such a fundamental

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[16]Vijai Singh, "Recent Advancements in Synthetic Biology: Current Status and Challenges," *Gene* 535, 1 (2014) 1-11.

[17]The Royal Academy of Engineering, *Synthetic Biology: Scope, Applications and Implications*, 2009: 11, http://www.raeng.org.uk/news/publications/list/reports/Synthetic_biology.pdf (April 6, 2017)

[18] Ryan McDaniel and Ron Weiss, "Advances in Synthetic Biology: On the Path from Prototypes to Applications," *Current Opinion in Biotechnology* 16 (2005) 476–483, http://dx.doi.org/10.1016/j.copbio.2005.07.002; W. Wayt Gibbs, "Synthetic Life," *Scientific American* 290 (2004) 74-81.

[19]Vandana Shiva, "Biopiracy: The Theft of Knowledge and Resources," *Redesigning Life: The Worldwide Challenge to Genetic Engineering,* New York: Zed Books 2001.

way which synthetic biology seems to show us or make the messianic promises of sciences us to act as God?

3.1. Creativity, Reduction and the New Life

Some traditional cultures picture the movement of life and of the world process in terms of a never changing situation. This idea follows the verses from Ecclesiastes 1:9 (NIV), saying "What has been will be again, what has been done will be done again; there is nothing new under the sun." In a similar way the *'gulong ng palad'* from the Philippine tradition as well as the metaphoric wheel of fortune in Hinduism and the *'Bhava-cakra'* as the representation of *'saṃsāra'* express this approach to the world. Distinctive traditions describe people "spending their time doing nothing but talking about and listening to the latest ideas" (Acts 17:21).

The concept of changes and novelties is deeply linked to the existing model of a world in progress. The events of our life and of history do not happen with a fateful inevitability. We describe the past as the deposit of former experiences which have gone and will never come back and the future as bringing something new which is different from past and present. It doesn't matter whether this future will be better or worse, it will be different. If a synthetic virus can be created in a scientific laboratory under the precondition of a changing world, does this mean that biology has proved that the change of life is nothing more than a series of biochemical reactions? Synthetic biology claims to bring something new, but the method to realize this is reduction. Reduction is the process by which an object or a theory is shown to be explicable in terms of a lower level, object or theory. Such a method is necessary because it promotes conceptual and theoretical economy. Some scientists appear to confess that synthetic biology proves the superiority of reductionism over other philosophies. Others in the scientific community have pointed out that "scientific definitions of life are working hypotheses—tools—used in the process of research that do not necessarily cover what counts as life from the everyday-life experience, or other perspectives."[20]

The public perception of advance can be critical, especially if suspicion arises that there is a potential for harm. Technical disasters (Fukushima, Bhopal) have led to a suspicion of new initiatives. Raising awareness is difficult because of the complexity of synthetic biology. But as this new type of technology aims to new forms of life, the civil society has to question the status of these forms. Has this life

[20]Joachim Boldt and Oliver Müller, "Newton of the Leaves of Grass," *Nature Biotechnology,* 26 (2008) 337-339.

the same moral status as the life we already know? Has the fact to be "new" any ethical impact? Does it make a difference whether an entity came into existence or was produced to exist? This field of questions targets the meaning of the work of scientists and the value of sciences. What does it mean to respect engineered life and what will be the relation to the respect of the engineer?

If synthetic biology will offer useful solutions to ecological and energetic problems and if appropriate legislation and effective control could make sure that the potential risks were eliminated, or at least avoided, is there any fundamental reason to define the relation between biological artefacts and their producers different to other artefacts? As long as there is no compelling reason to stop or ban synthetic biology we have to think about the consequences of this situation. Especially Christians could welcome scientific innovations if they help to protect the environment or to eliminate human suffering. But even if we confess that our responsibility is to use the divine gift of creativity for the benefit of humanity and of nature, we have to remind ourselves that the responsibility will not stop after the production process.

The task to extend our responsibility to the relation between bio artefacts and other processes of our world and to refer our ethical understanding to the assessment of biologically engineered life means to withdraw the reductionism of biology. The reductionist approach of synthetic biology claims that mental and spiritual phenomena can be reduced to biophysical and chemical processes. However, reductive theories are unable to fully explain events such as beliefs and emotions, including creativity itself. As the concept of a changing world is strongly linked to the idea of a free will one cannot claim to create new life without accepting this life to be an option instead of an obligatory consequence of research.

Christian holism claims that life is an interrelation of spirit and matter, and is able to account for physical as well as mental and spiritual phenomena. The interconnectedness of the human and divine nature in Christ leads us to understand that all forms of new life are "sired not made." In this way we must accept that a technical description of a technical process cannot provide the whole picture. Reductionism as a methodological approach is very useful for scientific research as it allows us to break down a complex system and focus on the small part which is most interesting for the moment. As an ontological theory this method is neither the only one nor the most comprehensive. A holistic theory has strong philosophical and theological foundations and encompasses all aspects of human and

non-human life. When attempting to transfer any scientific discoveries into the area of ontology and metaphysics, biologists need to collaborate and engage in open dialogue with philosophers and theologians.

This call for dialogue has special meaning for the churches and the theologians. Regarding biotechnology today the impression is given that the main purpose of the Christian ethics is to stand in the way of progress. But a dialogue means to raise important questions without demonizing the chances. Is artificial life worthy of protection in the same way that 'natural' life is believed to be? This might be the most important question and the answer to this will depend on the promises synthetic biology is giving and the possibilities it can fulfil in reality.

3.2. Nature and Norms

Synthetic biology seeks to treat biological systems as analogous to mechanical and electronic ones, so that bio-components can be removed and replaced at the will of men. Technological progress allows us the addition of numerous genes to a biological system. Synthetic biology seeks to take this a step further, by developing the ability to add and to subtract biological pathways in a single unit. In this way for example Genome editing softens the frontiers between genetically modified and non-modified entities. At the moment we are in the process of clarification whether this method is to be counted as part of genetic engineering or not and this decision will have immense impact on the further development, not only concerning the food industry.[21] So the fundamental question of synthetic biology is the deliberate blurring of the border between nature and culture.[22] It is the question about an interconnectedness of the divine and the human nature.

Cole-Turner says, that in synthetic biology "nature may still be the matrix […] but it is hardly the norm."[23] At this point we have to think carefully about the ethical meaning of nature and we have to respect

[21]Sheila Jasanoff, J. Benjamin Hurlbut and Krishanu Saha, "CRISPR Democracy: Gene Editing and the Need for Inclusive Deliberation," *Issues in Science and Technology* 32, 1 (2015) 37; Christiane Burmeister and Robert Ranisch, "Jahrestagung des Deutschen Ethikrats 2016: Zugriff auf das menschliche Erbgut. Neue Möglichkeiten und ihre ethische Beurteilung," *Ethik in der Medizin*, 29, 2 (2017) 167–172, doi: 10.1007/s00481-016-0420-x.

[22]Peter M. Scott, *Anti-Human Theology: Nature, Technology and the Post-Natural,* London: SCM, 2010.

[23]Ronald S. Cole-Turner, "Is Genetic Engineering Co-Creation?" *Theology Today* 44, 3 (1987) 338-349, DOI: 10.5422/fso/9780823230693.003.0007.

that there is a different understanding of the normative character of nature in Christian ethics. Thomas Menamparampil points out the model character of nature:

> Nature gives us models of several patterns of inter-relationships and integrated systems: atoms, molecules, organs, body; individuals, families, tribes, societies, and nations. As the material world is made up of an inseparable network of linkages, and as the human body and nature itself are self-regulating systems, in the same way we belong to each other in an intimate fashion within the human family.[24]

With this he follows the Catholic understanding of the natural law and makes nature to become a system of examples for humanity. Thus, even human creativity is meant to follow the patterns given through nature.

Indigenous Theologian Wati Longchar agrees to the normative function of nature. He makes the land to become a normative entity for human behaviour in the perspective of indigenous people: According to the indigenous people's concept,

> it is the land that creates time and history. [...]Rocks and boulders, trees and rivers are not just empty objects, but religious objects; the voices and songs of animals speak of a religious language; the eclipse of the sun and of the moon are not simply a silent phenomenon of nature, it speaks to the community that observes it [...] Thus, the concept of history and time is inseparably interlinked and rooted in the soil.[25]

The approach of Longchar is to overcome the anthropocentric ethics and substitute it by an earth centred theology on the foundation of indigenous spirituality.[26]

The Korean Anselm Min offers a different perspective. His suggestion is to retrieve human solidarity as the solidarity of human nature. Therefore, he tries to combine the concept of intrinsic values of nature with historicity and subjectivity.[27] In this way the blurring of the border between natural and artificial is not a sign of technology but a *locus theologicus* itself. Going back to Erich Fromm Min mentions: "Human nature is a given fact, insofar as these capacities,

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[24]Thomas Menamparampil, "Becoming Bridge-Builders in Periods of Transition: Towards a Communion of Civilizations in our Times," *Prajna Vihara* 13, 1-2 (2012) 1-38, 19.

[25]Wati Longchar, "Traditions and Cultures of Indigenous People: Continuity of Indigenous People in Asia," working paper on the Indigenous People-Spirituality and Peace Forum 2007:3, http://www.asiapacificymca.org/joomla/index.php?option=com_rubberdoc&view=doc&id=67&format=raw, 18 August 2017

[26]Wati Longchar, *Returning to Mother Earth: Theology, Christian Witness and Theological Education. An Indigenous Perspective,* Kolkata: PTCA/SCEPTRE, 2013.

[27]Anselm Kyongsuk Min, *The Solidarity of Others in a Divided World: A Postmodern Theology after Postmodernism,* London: A&C Black, 2004, 77.

needs, and sociohistorical interdependence are already there prior to our conscious recognition and action; [...]"[28] With regard to Jürgen Moltmann he wants to unify nature, history and religion: "The task of a new, holistic theology of nature, then, is to find a way of dynamizing the three terms of nature, history, and the new creation in the kingdom in a manner that is also integrating and unifying."[29]

Following Min's perspective we can understand the perfection of nature through sciences as part of the human nature. Christian ethics cannot overcome the anthropocentric perspective, for methodological and for biblical reasons, but Christian anthropocentrism is different from any secular individualistic concept: the logos became human and on this basis all Christian churches will develop their ethical conception. However, especially in an ecumenical answer to the questions of biology we have to distinguish between the messianic orientation of creation and history on the one side and the eschatological hope in the final liberation of creation and men on the other side. If people today are longing to experience nature but instead of this the sciences promote a deep rift between humans and nature, then the idea of the doctrine of the two natures of Christ may lead us from God humiliating himself to an understanding of a divine life within artificial entities. The distinction between the religious hope and the realization of immanent wishes through technical progress does not mean that there is no intercommunication between the divine and the human nature within our daily life. This is why Mathew Illathuparampil suggests to understand technology as a "human creation" and to place it

> within the larger scheme of God's creation. Humanity has been mandated by God to perfect God's creation through work. [...] One may also ask the question whether technologies take the place of nature. Have they got integrated into nature, becoming a functional and indispensable part of it? [...] The crucial issue is to place such technologies within the plan of creation which originally did not have these kinds of sophisticated, self-moving, even thinking machines.[30]

3.3. Do Messianic Promises Make us Playing God?

Popular criticism on biotechnology often is related to the 'playing God'-motive.

> Regarding the often unreflective use of the traditionally religious formula, there is a need for establishing a constructive and critical distance to this

[28]Anselm K. Min, *The Solidarity of Others in a Divided World*, 78.

[29]Anselm K. Min, *The Solidarity of Others in a Divided World*, 202.

[30]Mathew Illathuparampil, "A Theology of Technology: Prospective Sketches," *Asian Horizons* 10, 1 (2016) 7-19, 17.

> phrase and its (mis-)use. For this purpose, the compatibility of the phrase within Christian tradition, ecclesiastical procedures and sources must be examined. The results will help to decide on the usefulness of the formula in public debates.[31]

Does synthetic biology challenge the distinction between the Creator and creatures? Pat Mooney has commented on the work which created the first synthetic bacterium and claimed that "for the first time, God has competition. Venter and his colleagues have breached a societal boundary, and the public hasn't even had a chance to debate the far-reaching social, ethical and environmental implications of synthetic life."[32] However, the history of humans shows that the presumption to compete with God has a much longer history than biology itself. But the feeling of people that scientists play God has to be taken seriously. The undermining of cultural structures through sciences does not only lead to changes in the image of man, but also the image of God. Men and animals have been picturing the divine in every culture. This is why, whenever the confidence about the so given image of God is shaken, the playing-God-metaphor will be used to defend the old image.

Theologically this is an inadequate image of a 'God of the Gaps.' In this way the metaphor 'playing God' does not defend God but marginalizes him. If there would be a real foe to substitute God as man through modern technology, this God would have been associated to cultural norms. In this way the theological questions are related to the image production of sciences. Does synthetic biology bring a significant change to the images we have about God and man? Is it really introducing a step over borders which have an important function in the global society? If synthetic biology would soften the borders between organic and non-organic food, this might have an immense effect on people's habits of eating as well as the world market. In this way the relation between our image of God and our human self-conception is affected through the interference of sciences into life.

Just as Christian ethics would hold that religion is more than ritual, and healing more than health, it views life as being more than simply

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[31]Peter Dabrock, "Playing God? Synthetic Biology as a Theological and Ethical Challenge," *Systems and Synthetic Biology* 3 (2009) 47–54, DOI 10.1007/s11693-009-9028-5.

[32]ETC Group Goodbye, *Dolly ... Hello, Synthia! J. Craig Venter Institute Seeks Monopoly Patents on the World's First-Ever Human-Made Life Form,* ETC Press Release, 2007, http://www.etcgroup.org/fr/node/631; Cfr Henk van den Belt, "Playing God in Frankenstein's Footsteps: Synthetic Biology and the Meaning of Life," *Nanoethics* 3 (2009) 257–268, DOI 10.1007/s11569-009-0079-6.

biochemical reactions. But "being more" does not mean being something instead of. Healing will not substitute health, religion is not something apart from ritual. In the same way artificial life and natural life do not substitute but supplement each other. The Human aspiration to progress has a tendency to tame nature as we have to bring the wilderness under control. Otherwise men would not be able to survive. The domestication of animals and plants in the rural setting as well as the current attempts to alleviate the consequences of droughts through the invention of genetically modified crops have been important steps to the progress of human society throughout the ages. The interconnectedness between nature and culture is not a new phenomenon but an integral part of human civilization. Can we understand synthetic biology in this way as another step to express this interconnectedness? The relation between artificial and natural can lead us back to the model of *communicatio idiomatum*. A theological approach which refers to the unity of nature and history can describe that the human becoming and the co-creations of men interfere each other. [33] As artificial life is created by creations it participates in the becoming as well as in the making of life. This is why believers and scientists have a common responsibility:

> Religion and science should march forward hand in hand towards the final goal of realizing the ultimate destiny of humanity and the whole of the Creation, which is groaning with eager expectation for its liberation (Rom 8:19). It is a matter of great joy and pride that technology can open out an exciting path to the humans to become co-creators in the universe.[34]

To come back to the task of the churches: Is synthetic biology a call to resist? Christian faith confesses this world to be a gift from God including men's creativity. The world as a given fact and the perception of ourselves as being created will lead us to an understanding that we do not own ourselves. But a 'given world' has no direct link to any rule, how we are supposed to handle it. The handling of 'given life' is oriented on cultural patterns of interpretation. The common Christian creed combines the naturalness and the cultural aspects of our world in the confession of 'creation.' This means that there is a link between God and us whatever we are doing. The central message of the two natures of Christ is that God is humiliating himself in Christ and that the features of the divine nature and the human nature intercommunicate in Him. The

[33]Philip Hefner, *Technology and Human Becoming*, Minneapolis: Fortress Press, 2003.

[34]Thomas Menamparampill, "Technology Opens out an Exciting Path to the Humans to Become Co-creators in the Universe," *Asian Horizons* 10, 1 (2016) 33-53, 53.

intercommunication in the Person of Jesus Christ is unique and we will not add anything to the redemption coming from Him.

There is a common creed of Catholic and Protestant Christians. We confess our world as being created through the power of the pre-existent Christ. This ecumenical faith leads to an understanding of this world as being as godly as earthly, because it is a world of the true Man and the true God. Otherwise we would not be able to experience the intercommunication. The non-soteriological but nevertheless theological meaning of the figure is that God does not keep himself far from us, from our creative doing and from our sciences. This is why sciences are related to values such as usefulness, efficiency, etc. But these values, the secular nature of artefacts, processes, systems etc. and the secular meaning of creativity cannot be separated from the divine nature of humans, their doing and thinking. It cannot be separated from dignity. The uniqueness of God's self-revelation in Christ and the proclamation of truth in Him leads Christians to respect the dignity of life because Christ proclaims the interconnectedness of humanity and divinity.

An ecumenical faith based shelf mark verifying this interconnectedness is the dignity of humans. This is why all Christian Churches need to insist on the dignity of life including artificial life apart from the creation of values. But we do not need to hesitate about humans to become like God, because the Christian conception of God is far away from a super-scientist competing with us for the Nobel-prize of biology. The constructive aspects of bioengineering and the liberating praxis of Christianity can lead us to an understanding of progress as chance and challenge. It is neither a type of redemption nor a malediction of human development.