Citizen Science, the Body of Christ, and Testimonial Epistemology

Toward a Distributed Theology

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Abstract

How *does explicit theological knowledge emerge out of communal practices,* who *is involved in its production, and* what *are its procedures? These are neither neutral nor arbitrary methodological questions; they are themselves deeply theological. Digital innovations and the subsequent transformations of society and academia invite us to redefine the work of theology. Epistemologically drawing on a theology of the cross and centring the communal nature and vulnerable existence of the witnessing community, we develop a model of doing theology that is collaborative and exploratory within the medial transformations of the digital age. Taking cues from participatory research conceptions of "citizen science," we propose going toward and beyond a "citizen theology." We need the courage to conceive of a theology that is ultimately centreless. Therefore, we cannot aspire to testimonially responsible forms of doing theology without striving for epistemic justice and diaconal empowerment at a global level. The "distributed theology" we envision promotes global (catholic), decentral (apostolic), and communal (local) forms of knowledge production by the whole of the body of Christ in ever more distributed ways.*

Keywords

What it means to do theology – *who* is involved, *how* it is done, and *where* it takes place – are questions that are not technologically neutral.[1] Conversely, new social forms and technological possibilities are not simply tools that can be used arbitrarily or interchangeably; they are rather themselves epistemologically relevant and generative of theology. Today's digital embeddedness invites us to redefine the task of theology theologically, that is, through a theological account of the dynamics inherent in technological transformations. Recent approaches that address the relevance of digital developments for theological practice such as "digital theology"[2] or the methodological use of "digital humanities"[3] do not go far enough if they simply expand an existing methodological canon or appropriate a new medium of communication.

In this article, we first analyze ways in which digital transformations already affect scientific inquiry, and then propose strategies that constructively harness the potential of these changes for theological practice. Drawing on an epistemological approach that builds on a theology of the cross and is centred on the communal nature and vulnerable existence of the witnessing community, we subsequently develop a model of doing theology that places in the foreground the intrinsic connections between subjects and methods, as well as between the agents of theology and their attitudes. These connections pave the way for a more collaborative, participatory, and exploratory scientific practice within the medial transformations of the digital age. In calling such an approach "citizen theology," we take cues from emergent models of "citizen science" – a transdisciplinary movement that, motivated by the vision of a stronger democratization of the scientific establishment, develops new possibilities for the participation of non-professionals[4] in the collaborative production of knowledge through media innovation.

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[1]   A version of this paper is available on the distributed web under the following links: dat://paper2020-distributed theology.hashbase.io and https://paper2020-distributedtheology.hashbase.io. This paper is a modified and expanded version of our earlier article, Benedikt Friedrich, Hanna Reichel, and Thomas Renkert, "Citizen Theology: Eine Exploration zwischen Digitalisierung und theologischer Epistemologie," in *Digitaler Strukturwandel der Gesellschaft*, ed. Florian Höhne and Jonas Bedford-Strohm (Baden-Baden: Nomos, 2019), 175–92.

[2]   Johanna Haberer, *Digitale Theologie: Gott und die Medienrevolution der Gegenwart* (München: Kösel, 2015).

[3]   Clifford A. Anderson, "Digital Humanities and the Future of Theology," *Cursor_ Zeitschrift für explorative Theologie* 1 (2018), https://doi.org/10/gft923.

[4]   Professionals, in contrast to non-professionals, here refers to certified, professionalized, and institutionalized participation in the scientific system; see Peter Finke and Ervin Laszlo, *Citizen Science: Das unterschätzte Wissen der Laien* (München: Oekom, 2014), 36–55. We do not want to use the often-employed terminology of "layperson" versus "experts," since this, especially in the theological context, associatively mixes the questions of ordained office with the questions of credentialed academia and erects problematic hierarchies in both cases.

Digital Structural Change and the Social Conditions of Knowledge Production

Due to constraints in infrastructure and technology, academic inquiry habitually takes place within the paradigm of "big science," that is, in the form of large-scale projects based on institutions and supported by state or economic actors. This paradigm is accompanied by a tendency to ignore social discourse, which in turn often leads scientists to struggle with questions of legitimacy and public perception. Scientific inquiry therefore always faces pressure to communicate its outcomes and self-reflection in a way that demonstrates its relevance; it also finds itself under the obligation to prevent public misrepresentation (such as through anti-vaccination claims or populist propaganda).

Digital structural change profoundly affects scientific research and the conditions under which the production and communication of knowledge take place. Digital media greatly simplify processes of scientific communication to wider, non-academic publics. The mere existence of popular digital channels not only expands and substitutes existing processes of science communication but changes them fundamentally. Scientific communities thus become more structurally permeable. Academic and non-academic publics no longer communicate in separate spheres. Instead, scientific professionals both compete and cooperate with other content providers in the attention economy of digital societies. The functional roles of institutions, certification, and authorship are increasingly substituted by platform and network effects.[5]

Once clearly distinguished, producers of data and information on the one hand and consumers on the other blend increasingly into "prosumers."[6] This process leads to revivals of "small science": that is, the production of knowledge by individuals or smaller groups of non-professionals[7] rather than by large, centrally organized institutions. An increasing number of actors produce and share knowledge, increasingly in real time and in a collaborative manner with very short feedback loops.

The mere possibility of unlimited participation through media and information technology, in and of itself, has however not ushered in the heralded utopias of digital

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[5]   Michael Seemann, *Das neue Spiel: Strategien für die Welt nach dem digitalen Kontrollverlust* (Freiburg/Br.: Orange, 2014), 99, 108.

[6]   Sascha Dickel and Jan-Felix Schrape, "Dezentralisierung, Demokratisierung, Emanzipation. Zur Architektur des digitalen Technikutopismus," *Leviathan* 43:3 (2015), 442–63, https://doi.org/10/gft89f.

[7]   G. Brent Dalrymple, "The Importance of 'Small' Science," *Eos. Transactions American Geophysical Union* 72:1 (1991), 1–4; Oded Nov, Ofer Arazy, and David Anderson, "Scientists@Home: What Drives the Quantity and Quality of Online Citizen Science Participation?" *PLoS ONE* 9:4 (2014), https://doi.org/10/f539zz; Vural Özdemir et al., "Crowd-Funded Micro-Grants for Genomics and 'Big Data': An Actionable Idea Connecting Small (Artisan) Science, Infrastructure Science, and Citizen Philanthropy," *OMICS: A Journal of Integrative Biology* 17:4 (2013), 161–72, https://doi.org/10.1089/omi.2013.0034.

structural change, such as democratized and egalitarian society and science. In many cases, technological barriers have actually reinforced existing social or economic limits, and the theoretical opening up of access to science resources and processes has often produced new discursive closures. Instead of extensive shifts toward the practice of open access and open science, we continue to witness access restrictions all over the place. Such tendencies often exacerbate rather than resolve hierarchical disparities and the threshold between science and the public.[8]

In parallel with such digital structural changes, the subjectivist paradigm often associated with the name René Descartes has increasingly come under attack in the philosophy of science. This paradigm presupposed a subject equipped with rational abilities who, through sensory impressions and mental deduction, becomes the epistemic centre and possessor of knowledge. It systematically masked the extent to which the organizational, institutional, and social aspects of knowledge production themselves have epistemological significance. Even where individuals independently conduct experiments and record their insights, they are always building on knowledge acquired primarily in word of mouth and testimonial learning processes. The networked forms of the digital age make it more apparent than ever that the primary bearers of knowledge are ultimately epistemic communities rather than individuals.[9] Feminist and other social epistemologies point out that within such a collective negotiation of knowledge, the testimony of "outsiders" is epistemologically privileged: groups and individuals discriminated against in (scientific) systems develop a dual perspective with knowledge of the structures "from below" while also gaining competency in the prevailing logic "from

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[8] For an overview of the Open Science Movement, see Christian Heise, *Von Open Access zu Open Science* (Lüneburg: Meson, 2018); Ruban Vicente-Saez and Clara Martinez-Fuentes, "Open Science Now: A Systematic Literature Review for an Integrated Definition," *Journal of Business Research* 88 (2018), 428–36, https://doi.org/10/gc5sjb. On the related concept of "Open Notebook Science" in the context of the natural sciences, see Jean-Claude Bradley, "Drexel CoAS E-Learning: Open Notebook Science," 26 September 2006, http://drexel-coas-elearning. blogspot.com/2006/09/open-notebook-science.html; Jean-Claude Bradley et al., "Collaboration Using Open Notebook Science in Academia," in *Collaborative Computational Technologies for Biomedical Research*, ed. Sean Ekins, Maggie Hupcey, and Anthony J. Williams (Hoboken, N.J.: John Wiley & Sons, 2011), 423–52, https://doi. org/10.1002/9781118026038.ch25; Anne Clinio and Sarita Albagli, "Open Notebook Science as an Emerging Epistemic Culture within the Open Science Movement," *Revue Française des Sciences de l'Information et de la Communication* 11 (2017), https://doi.org/10/gft6rz. Through the development of digital humanities, core ideas of the concept can also be applied to the humanities. In that regard, see Ryan Shaw, Michael Buckland, and Patrick Golden, "Open Notebook Humanities. Promise and Problems," Digital Humanities website, 19 July 2013, http://dh2013.unl.edu/abstracts/ab-297.html.

[9] On international research groups, see Susann Wagenknecht, *A Social Epistemology of Research Groups: Collaboration in Scientific Practice* (London: Palgrave Macmillan, 2016).

above."[10] Their standpoint affords them not only different but *better* insights into how social systems function than those available to insiders.[11] Social epistemologies thus emphasize that increasing the accessibility and participation of knowledge production is of interest not only for ethical but also for epistemic reasons.[12]

Social epistemologies develop theories of witness and testimony that mediate social and individual factors by accounting for the conditions and dynamics of communal knowledge production, while also recognizing the particular contribution of individual, discursively marginalized voices in processes of constructive irritation of knowledge.

The individual and the communal are intensively interrelated in testimonial processes. Witness and testimony are always embedded in forms of communal practice that both carry and produce implicit knowledge and non-verbal beliefs. At the same time, testimonies create, modify, and transform their respective communities. The digital age affords excellent illustrations of the increasing transformative potential of the mutual and constitutive relationships between witnesses and testimonies as well as their communities and public contexts (see, for example, the #MeToo movement with its platform-related functional differentiations).[13]

Theology and the Witnessing Community of the Body of Christ

The theological epistemology of the witnessing community

Both the testimonial character of all knowledge and the epistemological reciprocity between individual and community apply also and especially to faith-related knowledge, and therefore to theology as its scientific and academic reflection. We come to faith in the form of *notitia*, only through the testimony (or witness) of others. As *assensus*, faith signifies the confession that takes the content of this testimony to be true, performatively allowing oneself to be called into the witnessing community by offering a testimony in turn. And in its culmination in *fiducia*, the trusting relationship with God in covenantal faithfulness, faith relies on the testimonies of promise and fulfilment, on God's revelatory witness in the history of God's faithfulness to God's people, which manifests itself in the life, teaching, cross, and resurrection of Christ.

[10]   For rebuttals of epistemic individualism, see Lynn Hankinson Nelson, "Epistemological Communities," in *Feminist Epistemologies*, ed. Linda Alcoff and Elizabeth Potter (London: Routledge, 1993), 121–60; Elizabeth Potter, "Gender and Epistemic Negotiation," in *Feminist Epistemologies*, ed. Alcoff and Potter, 161–86.

[11]   Patricia Hill Collins, "Learning from the Outsider Within: The Sociological Significance of Black Feminist Thought," *Social Problems* 33:6 (1986), 14–32, https://doi.org/10.2307/800672.

[12]   Sandra Harding, "Rethinking Standpoint Epistemology: What Is 'Strong Objectivity'?" *The Centennial Review* 36:3 (1992), 437–70.

[13]   Lydia Manikonda et al., "Twitter for Sparking a Movement, Reddit for Sharing the Moment. #metoo through the Lens of Social Media," *arXiv* 1803.08022, http://arxiv.org/abs/1803.08022.

The content of faith and its *noetic* attainment are testimonially intertwined with each other. *Who* God is affects *where* and *how* God bears witness to Godself for human beings and how they in turn testify to God. Because of who this God is, God is not recognized primarily in categories that correspond to human valuations of power, expertise, and status. God's revelation appears through witness to the crucified risen one, who reconciles the world with God at the site of utmost God forsakenness, on Calvary. Here the identity and action of God break with all categories of human wisdom and authority, and God's Spirit calls forth witnesses lacking authority in their respective social contexts: the women at the tomb who first proclaimed the resurrection would not have been legally considered witnesses under Jewish law.[14] The communion of faith is thus constituted by the testimony of witnesses who, by human standards, have neither authority nor institutional standing. The reversal of all values in the theology of the cross (1 Cor. 1:18-29), vehemently advocated by Paul, also recognizes the weakest members as being especially privileged by God (1 Cor. 12:24). The confession of the crucified Christ – who died on Golgotha, excluded and condemned by all societal institutions – can thus deny the apparent powerlessness in the witnessing community only at the price of a theological self-contradiction.[15]

Our concern here is to draw observations from the reciprocal insights of social epistemology and the theology of the cross for the self-understanding and the design of theology.

First, as the primary subject of the knowledge of faith, the community remains epistemologically dependent on the testimony of its vulnerable members, who therefore need to be privileged epistemologically. One could speak of an epistemic version of the "preferential option for the poor." Obviously, such a privileging cannot be converted into a static structure without self-contradiction but has to be renegotiated and reoriented in dynamic processes.

Second, the entire life expression of communities – with their explicit and implicit, verbal and non-verbal aspects – has to be understood as the testimony of faith in the unity of the Spirit. Theological knowledge encompasses more than theological *epistêmê*, or propositional "knowledge-that." Practical "knowledge-how,"[16] theological *technê*,

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[14] Günter Mayer, *Die jüdische Frau in der hellenistisch-römischen Antike* (Stuttgart/Berlin: Kohlhammer, 1987).

[15] Martin Vahrenhorst relativizes the "basic assumption of the incapacity of women to testify in ancient Judaism" but confirms its unambiguous validity in the judicial context. See Martin Vahrenhorst, "'Se non è vero, è ben trovato.' Die Frauen und das leere Grab," *Zeitschrift für die neutestamentliche Wissenschaft* 89:3 (1998), 283, 285.

[16] For an introduction, see Jeremy Fantl, "Knowledge How," in *The Stanford Encyclopedia of Philosophy Archive*, Fall 2017 edition, ed. Edward N. Zalta, Metaphysics Research Lab, Stanford University. https://plato.stanford.edu/archives/fall2017/entries/knowledge-how, and J. Adam Carter and Ted Poston, *A Critical Introduction to Knowledge-How*, HPOD edition (New York: Bloomsbury Academic, 2018).

exists largely independent of forms of propositional theological knowledge in the life expressions of faith communities. Christian practices, with their immense potential to articulate faith in diverse forms, can be understood as artisanal knowledge.[17] The performative competency and competent performance of the community as a whole, and of its individual members in their mutual dependence and interdependence, are epistemologically central. Theological competency cannot therefore be understood reductively as the (certified) expertise of individuals or its articulation in the form of academic jargon (though we are aware that our article is performatively self-defeating in this regard). The community that is theologically competent (in the sense of rational self-reflection) is the community that develops practices of testimonial exchange, collaborative reason giving, and transparent engagement. Such practices need to procedurally make room for innovation, irritation, and intervention.

Third, where this implicit theological dimension is itself addressed and reflected upon, we are talking about theology in an explicit sense. This may, but does not have to, culminate in professionalized roles and the development of special institutions. Academic theology may be considered as *one* possible form in which the Spirit's gift of reason may be concentrated. The continued epistemic dependence of such explicit theology on the implicitly theological life expressions of communities is then decisive for discerning how and where such transitions from implicit to explicit theology take place, who participates and in what way, and what practical forms this should take.

Fourth, the community of witnesses is not a self-contained structure but participates in the language, culture, and rationality of the society in which it is embedded. The witness of faith is constituted in discursive-communicative negotiations of language, action, and symbols. It becomes apparent that faith itself tends toward rational justification, coherence, and communication (*fides quaerens intellectum*). Life expressions of faith communities are always situated in public contexts and remain dependent on the means of communication and exchange their environment affords them. Theology therefore participates in negotiations within the context of wider – potentially ecumenical and global – publics. To do so with transparency and accountability, theology needs to be understood as a public dynamic of asking questions and offering reasons.

The canonical complementarity of the body–Christ metaphor

The New Testament describes the Christian testimonial or witnessing community as the spiritual body of Christ. The different traditional variants of this metaphor insist on different ways of locating authority through the interplay of the various individual

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[17] Boaventura de Sousa Santos, *The End of the Cognitive Empire: The Coming of Age of Epistemologies of the South* (Durham, N.C.: Duke University Press, 2018).

members and their gifts and abilities within this community. According to 1 Corinthians 12:12, "Christ" is the totality of the body; according to Romans 12:5, the totality of the members is a body "in Christ"; according to Colossians 1:18 and Ephesians 5:23, Christ is the head of the body. From an exegetical perspective, issues of spiritual, religious, ecclesiastical, and theological authority are often run together in a not unproblematic way.[18] The concept of the layperson stands in a latent dual tension both with clergy and with certified theologians.

Where Christ is understood as a specific member of the body and as superior to the rest of the body, as in Colossians and Ephesians, hierarchical conceptions of ecclesiastical authority seem obvious. The strongest expression of this connection can historically be seen in papalism. But even modern Protestant theology sees itself as a functionally outsourced, academically specialized organ of professionals who then exclusively fulfil the function of theological reflection for the whole body. Institutionally differentiating theology as *one* member runs the structural risk of identifying it as a "thinking organ" and, therefore, erroneously identifying it with the head of the body. With its scientific technical language and a monopoly on the power of interpretation (perhaps even supported by state church law), theology then acquires not only academic but also religious authority. The testimonial positionality of the participating members leads to a social-cultural filtering of specific faith testimonies in explicitly theological reflection. The institutional and hierarchical nature of such filters, however, suppresses, marginalizes, and disempowers vulnerable witnesses – and is inherently at odds with the social epistemology grounded in the theology of the cross outlined above.

On the other hand, where "Christ" is identified with the body as a whole, as in 1 Corinthians 12, this suggests a more democratic and ecumenical perspective. Such a reading has been historically expressed in conciliarism. Authority is located in the body as a whole, in the totality of its members. This takes seriously the epistemological irreducibility of the whole body but leads to problems of its own: where this body is identified with the institution of the church (as in the encyclical *Mystici Corporis*), a particular historical form becomes the final criterion for all current testimony. And even a democratically and ecumenically ambitious conciliarism always requires a form of representation and the delegation of competencies. Such representation engenders a prioritization in the process of theological reflection which tends to undermine the recognition of the life expressions of the body as a whole and of its (weakest) members in particular. The epistemological problems of this model are therefore not fundamentally different from those of the hierarchical structure.

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[18] John E. Thiel, *Imagination & Authority: Theological Authorship in the Modern Tradition* (Minneapolis, Minn.: Fortress, 1991).

These issues are even present in the Protestant development of the "general priesthood of all baptized."[19] Luther's understanding was originally close to the conciliarist model. It avoided the mediating function of the body as a whole, which was equated with the Catholic Church as an institution, by identifying Christ as the head. Luther thus established a direct relationship between the faithful and Christ. In doing so, he rejected the differentiation between clerics and laypeople in relation to their relationship to and knowledge of God and denied a soteriological function to the church. In their historical reception, however, Luther's fundamental theological decisions led to identifying the basis for explicit theological reflection in individualistic perspectives of faith, which could only be constituted by separating and privileging them from social, implicitly theological expressions of life.[20]

Historically, Protestantism also shows that the talk of the "priesthood of all believers" can lead to one form of hierarchy being replaced by another, in this case a social status ("clergy") being replaced by a certain level of competency ("certified experts"), which adds to the problem of institutionalism that of intellectualism.

Such one-sided approaches to the body of Christ metaphor thus neglect either the epistemological importance of the witnessing community as a whole or the significance of vulnerable witnesses in particular. This leads not only to testimonial injustice,[21] or problematic forms of constituting hierarchies, but above all to a self-contradiction in the organizational justification of theology as science. As an academically institutionalized science, theology, in its attempt at self-justification, inevitably acts against the testimonial precarity of the witnesses on which it is based. Of course, in practice, some form of division of labour and hierarchies will be indispensable for reasons of logistics and efficiency; but such institutional dynamics must, for theological and epistemological reasons, always be complemented strategically by mechanisms of self-deconstruction.

Against interpretive resolutions of the individual variations in the body of Christ metaphor, the fact that these three variants have been canonized side by side gives us pause; it suggests a theological concern for the dynamics of the body as a whole, in which its vitality cannot be reduced to any one static relationship through the location of

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[19]   See Martin Luther, "An den deutschen Adel von des christlichen Standes Besserung, 1520," *D. Martin Luthers Werke. Kritische Gesamtausgabe*, vol. 6 (Weimar: Boehlau, 1888), 407; "Von der Freiheit eines Christenmenschen. 1520," in *D. Martin Luthers Werke. Kritische Gesamtausgabe*, vol. 7 (Weimar: Boehlau, 1897), 28–29.

[20]   For interpreting Luther from within the inner-Catholic prehistory of conciliarism and papalism, see Allen G. Jorgenson, "Contours of the Common Priesthood," in *The Global Luther: A Theologian for Modern Times*, ed. Christine Helmer (Minneapolis, Minn.: Augsburg Fortress, 2009), 248–65.

[21]   Miranda Fricker, *Epistemic Injustice: Power and the Ethics of Knowing* (Oxford: Oxford University Press), 2009.

theological competency.[22] Rather, the strengths of the various interpretations can be held in constructive tension in a canonically complementary reading that allows for their mutual critique. Neither the delegation of authority to individual, theologically virtuous members nor the dispersion of theological authority to each individual takes into account the communal constitution of witness to Jesus Christ. Instead, theology as the task of the constitutive theological life expression of the witnessing community should be seen as a function of the whole organism, not of any single member.

The changes wrought by digital technology can provide useful resources when it comes to tracing consequences of how we organize theological work from the theological and social epistemological perspectives set out above. Technology opens up new possibilities for the participation of non-professionals in theological reflection, and digital spaces themselves come into view as spaces where theology is generated. For what this might mean in practice, we turn particularly to the concept of citizen science.

From Citizen Science to Citizen Theology

Citizen science

In the past decade, a new set of scientific methods has emerged that are drawing on the idea of including the expertise of the non-professional in the processes of knowledge production. What is described as citizen science seeks to establish a "participatory approach to research . . . that enables and promotes the cooperation of various actors in society."[23]

Based on the idea of distributing the processes of scientific research to a wider public sphere, citizen science encourages non-professionals to be part of research projects by implementing cooperative modes of knowledge seeking.[24]

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[22] Gottfried Nebe, "Der Leib Christi und seine Glieder. Überlegungen zur Auslegungsvielfalt und Tragweite eines paulinischen und deuteropaulinischen Motivs," in *Pluralismus und Identität*, ed. Joachim Mehlhausen (Gütersloh: Kaiser/Gütersloher Verlag, 1995), 320–38.

[23] Lisa Pettibone, Julia Hahn, and Kathrin Vohland, "GEWISS Dialogforum: Was ist Partizipation in Citizen Science?" GEWISS Report No. 10, February 2016, 4, https://www.buergerschaffenwissen.de/sites/default/files/grid/2017/11/20/10_gewiss_partizipationbericht_0.pdf.

[24] The term "citizen" in citizen science aims to widen the participants of scholarly efforts and contrasts concepts of certified-only scientific communities. Although we are well aware of the problematic normative implications of this terminology, especially when used in a political way or in a Western context, we want to build on the decentralizing, distributing, and emancipatory aspects of this well-established concept of doing scientific research. Thus, we are not beholden to the terminology of citizen science or that of citizen theology as sketched out below. They are themselves to be understood as preliminary terms.

Due to the development of digital communication tools and the accessibility of scientific data, citizen science has proven itself to be a serious approach to contemporary knowledge production. This obliges us to renegotiate traditional concepts of expertise, competency, and epistemic authority.

A majority of the projects established so far have focused on a workflow that includes and processes data collected by non-professionals. Such a mode is often called citizen science "light," because in this mode non-professionals mainly provide data without being further involved in designing and evaluating the process of knowledge production. However, this is to be distinguished from citizen science "proper," in which non-professionals may also play a decisive role in undertaking research beyond merely collecting data. In this mode, amateur scientists have a significant impact on decisions regarding the research design, the questions a given project tries to answer, as well as the interpretation of the results.[25]

The methodological significance of citizen science is its stimulus for reconfiguration of the relationship between professionals and non-professionals, to which a significant epistemological potential is ascribed. Thus, Dickel and Franzen have presented a sociological typology in order to detail this relation.[26] They argue in favour of a differentiation along two axes; they distinguish between cooperative and competitive (and constructively irritating) relationships, while with regard to the mode of participation, they differentiate reception and production of knowledge. By combining those poles, they outline four ideal types of interaction within citizen science. It can be shown that the digitization of scientific communication supports the enabling potential for each of these types:

Cooperative knowledge reception. Traditionally, the impact of scientific research has been measured by numbers of inner-academic citations. Citizen science draws upon the vision that scientific results may be cooperatively shared between professionals and non-professionals. This aspect is strengthened by the emerging communication possibilities of social networks. Generating attention to scientific issues through likes, retweets, and forwarding according to one's preferences does not discriminate against participants with respect to certified expertise. Using such low-threshold methods, which can be

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[25] Finke and Laszlo, *Citizen Science*, 41–42.

[26] See Sascha Dickel and Martina Franzen, "Digitale Inklusion: Zur sozialen Öffnung des Wissenschaftssystems," *Zeitschrift für Soziologie* 44:5 (2015), 330–47, https://doi.org/10/gft89c; "The 'Problem of Extension' Revisited: New Modes of Digital Participation in Science," *Journal of Science Communication* 15:1 (2016), 1–15, https://doi.org/10/gft89d.

evaluated by systemic algorithms such as altmetrics,[27] non-professionals can communicate issues, preferences, and their initial assessment of any published research. Thus, they may have a retroactive effect on institutionalized knowledge production by influencing the direction of further research in the medium term.

Competitive knowledge reception. When it comes to enhancing the development of scientific theories, traditional methods rely on the inner-academic mechanisms of critique. However, citizen science gains intellectual profit out of non-professionals' voices about research. For example, the review pages of online booksellers, presenting readers' impressions and offering criticism of scientific publications by non-professionals, may highlight non-academic quality standards for knowledge production. This aspect supports the assessment that knowledge is to be estimated as of high quality when it is distributable into different contexts that may not always be reproducible by academic professionals.

Competitive knowledge production. New media formats also allow non-professionals to engage in independent constructive discussion on particular subjects or issues. While in the encyclopaedic field Wikipedia is best known for such extra-academic text and knowledge production, there are also well-established formats in the area of theory production and constructive research. The podcast and blogger scene has built an especially active community around specific issues that are of interest for professionals and non-professionals alike. Expert communities of the latter depend on the network effect, which is quantitatively crucial for their stability as well as their epistemic quality.[28] However, these communities and academic circles often exist separately, without an overlap of discourse.

Cooperative knowledge production. This approach aims at distributing the model of scholarly inquiry itself to non-professionals, thus already connecting professionals and non-professionals at the level of theory building. Although this has not been a dominant feature in established citizen science projects so far, it is, for example, technically possible to make the process of writing scientific theses publicly accessible at an early stage. Although scientific topics and research trajectories may initially originate from individual authors, other persons (or groups) – regardless of their certified

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[27] Finbar Galligan and Sharon Dyas-Correia, "Altmetrics: Rethinking the Way We Measure," *Serials Review* 39:1 (2013), 56–61, https://doi.org/10/gft89b.

[28] Nov, Arazy, and Anderson, "Scientists@Home."

expertise – are able to participate in developing and refining these very texts by means of annotation, editing, and moderation tools.[29]

This typology not only envisions a participatory and distributed manner of knowledge production but also hints at the theoretical possibilities that come with emerging communication technologies. With respect to the conclusion of the theological section of this paper, Christian theology depends hugely on the religious experiences and the witness of those who live outside the social boundaries that come with the prerogative of certified expertise. Sociological research on the methodological array of citizen science has demonstrated the possibilities of addressing these very questions of transgressing the boundaries of certified expertise for the creation of knowledge. For that reason, the participatory strategies of citizen science offer a promising approach for a distributed means of conducting theological inquiry.

The following section will elaborate upon the idea of implementing a methodological framework for a collaborative theology called citizen theology. This approach draws upon the assumption that theological knowledge is fundamentally based on theology-producing communities and benefits from recent technological developments of the digital.

Toward a Citizen Theology

Based on the epistemological considerations and the model of citizen theology described above, we propose a new methodology for theology, which is able to make use of the possibilities of digital media transformation. What we call citizen theology is a mode of doing theology in a collaborative and decentralized way.

The fundamental hypothesis of citizen theology is that the questions of *who* is involved in theological knowledge production and *how* this happens are neither neutral nor arbitrary. Given the fact that the testimony of the risen Christ is constituted collectively in testimonial vulnerability, we understand theology to be a reflective endeavour that relies on the participatory and collaborative production of the whole body and therefore strategically augments the often-undermined epistemic authority of marginalized voices. These voices are very likely those of non-professionals. Thus, theological research depends on a close and co-productive exchange with them.

Digitization of communication can be of great help in establishing this methodology, as it allows cooperative and competitive collaboration in a transparent and accessible

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[29]   Karen Weingarten and Corey Frost, "Authoring Wikis: Rethinking Authorship through Digital Collaboration," *Radical Teacher* 90 (2011), 47–57, https://doi.org/10/bjqbpk.

fashion. Thus, it supports the empowerment of non-professionals in ways that go beyond the mere supplementary integration of individuals into existing theological discourses. Concepts of citizen science proper allow Christians to participate with at least implicit theological productivity in the (trans)communitarian discourse of explicit and institutionalized processes of theological knowledge acquisition. In particular, citizen theology helps a community's little-noticed or deliberately latent theology to take on more explicit forms.[30]

Such a mode of theology does not dispense with functional differentiation of scholarship and the church, but it seeks to develop complementary mechanisms of shared authority. Citizen theology does not work toward a self-dissolution of academic theology, but initiates structures and interactions that foster close feedback loops and moments of constructive irritation involving a broad spectrum of the witnessing community in general and its vulnerable witnesses in particular. Old and new divisions of labour need to allow the testimony of vulnerable witnesses to be heard. Institutionalized theological research needs to remain functional and preliminary in the sense that all members have at least potential access to theological participation, co-production, and self-reflection.

Through this co-dependency with implicit theological life expressions of the body of Christ, explicit theologies are able to reflect in a different way on their own positionality and epistemology. By making religious experiences and expressions of faith by vulnerable witnesses explicitly and theologically fruitful, it also seeks to make academic work relevant to the different life forms of Christian community. Particularly where institutionalized monopolies and epistemological imbalances of explicit theology by certified professionals have become rigid, new forms of cooperation can help to widen the perspectives of academic theologians that so far have been limited by their status.

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[30] As one example, the authors of this article serve as co-editors of the recently started theological journal *Cursor_*, a scholarly online-first medium that seeks to implement the ideas of citizen science proper in their working mode. *Cursor_* sees itself experimentally as a journal for "exploratory theology," which in particular "makes it its mission to bring together scientific discussions, participatory text formats, and various digital publics." See Thomas Renkert, Hanna Reichel, Rasmus Nagel, and Arne Bachmann, "Cursor_. Editorial Manifesto als Erkundung einer Metapher," *Cursor_ Zeitschrift für explorative Theologie* 1 (2019), https://doi.org/10.21428/106310b. It is hosted on the PubPub platform, originating from the MIT Media Lab and now developed by the Knowledge Futures Group*,* which supports collaborative and discursive forms of knowledge generation. *Cursor_* is linked to social media profiles. We recruit audiences, commentators, and sometimes new authors via Twitter and Facebook. We are launching targeted surveys, learning from click numbers, and adjusting the design of outputs and formats. Debates at the content and meta level, which we conduct on different platforms, can thus also be taken up by other media with similar concerns. *Cursor_* therefore embodies several traits of citizen science, including competitive elements, where non-professionals can claim their influence in established internal processes of academic theology. For an overview of our experiences so far, see Thomas Renkert and Frederike van Oorschot, "Digitale theologische Öffentlichkeiten: Perspektiven aus Theorie und Praxis," *Cursor_ Zeitschrift für explorative Theologie* 1 (2019), https://doi.org/10.21428/3249ee62.

By shifting the focus from certified expertise to models of competency, it is possible to reveal problematic biases of religious and ecclesiastical authority and to allow the emergence of more collaborative paradigms of authorship. The role typology developed for citizen science shows that participation of non-professionals in scholarly discourses through digital media takes place not only through inclusion in existing structures but is largely generated through the emerging networks of digital infrastructure that exist in parallel with, and independent of, the communication channels of professionals. From such discursive and medial niches, they can make significant epistemological interventions in established discourses.

Citizen theology may be understood as a significant expansion of the concept of public theology, driven by material theological insights. Compared to the latter, citizen theology focuses not only on strengthening the communication between professionals and the outside world, but it also highlights the necessity and potential of mutual learning effects between professionals and non-professionals. In addition, these processes take place in the mode of open science in the context of plural analogue and digital publics. It seeks to make its inherent theological negotiation processes more comprehensible and transparent for wider social publics – even beyond the boundaries of the witnessing community.

Thus, citizen theology is less a programme that prescribes certain methods and content and more a new kind of research attitude that can only be performed experimentally and exploratively as a counterweight to existing scientific distortions created by invisible biases. It does not dispense altogether with centralized forms of doing scholarly research. However, citizen theology embraces the development of an epistemology in which the processes crucial for the creation of knowledge are decentralized and distributed.

Beyond Citizen Theology: Distributed, Centreless, Glocal Theology

The idea of citizen science strives for a democratization and emancipation of knowledge production that resonates with the theological commitments we have laid out. At the same time, we have to be aware that citizen science is often based on unreflected positions of privilege, which may at best be naive and at worst be harmful, contravening its declared aims. We want to address two such aspects.

The first aspect is the name-giving metaphor of citizenship. As already mentioned, the political and judicial aspects of citizenship are closely associated with a bourgeois worldview and a middle-class perspective, where the voices of those with lower social status, or those excluded by the implicit normativity of citizenship, are systematically

marginalized. While this may strike some as a merely semantic issue, it is structurally problematic. We can easily think of contexts, especially in cases of research critical of privileged structures, where the divide becomes manifest and salient between citizens, denizens, and margizens: between those with full rights, those who have substantial but not full citizen rights, and those at the margins of society.

The second implication involves the accessibility of the necessary infrastructure of knowledge production as well as stakeholdership in it. Within the context of countries with developed infrastructure, it is relatively easy not only to take the Internet and the digitalization of our everyday lives for granted, but also to envision other ways of gaining access to at least some form of knowledge production and distribution (such as going to a library, visiting an archive, writing a letter to the newspaper, and so on). The digital divide affects the global South especially when digitalization is often – for lack of analogue infrastructure – the only way to gain access to knowledge or contribute anything by way of epistemic collaboration. Even where technological leaps have bypassed other avenues of infrastructural development, there are no fall-back structures in place should the "digital-only" solutions not work. The other, more fundamental problem concerns the question of how access to digital infrastructure is in fact offered and facilitated, such as in the consumption of news from only one source or channel with little to no fact-checking. But the issue starts much earlier. The software and hardware for networks of knowledge production are in many places controlled by the state and/or by big corporations.

In some areas of the world, Facebook or WhatsApp are all but synonymous with "the Internet" or "news." Google provides the first go-to source for many knowledge queries. However, a very large portion of the Web is not even indexed by Google's search engine (for a variety of reasons).[31] Even more fundamentally, humanity as such has no plan for how the "next billion users" are supposed to be included in the digital economy of the Internet.[32] Currently, the few somewhat viable solutions to bridge this digital divide are again the initiatives of private companies, such as the Google Loon project or Facebook's Internet.org initiative. There are other not-for-profit initiatives, like UNICEF's "Project Connect,"[33] but they are mostly concerned with analysis and

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[31] The actual ratios between the indexed surface Web and the not-indexed deep Web are subject to speculation. Absolute numbers of the surface Web can be compared here: https://www.worldwidewebsize.com.

[32] Payal Arora, *The Next Billion Users: Digital Life beyond the West* (Cambridge, Mass.: Harvard University Press, 2019).

[33] https://www.projectconnect.world.

advocacy.[34] With an Internet vertically integrated from hardware infrastructure to software platform, net neutrality is necessarily non-existent, thus making the algorithmic filtering of news, information, and knowledge by corporations a major problem. The Knowledge Futures Group at MIT has stated that "the battle over the control of knowledge is a defining struggle of our time."[35]

Despite differing degrees in severity between the global South and the global North, the underlying issues remain the same. The structure of the Internet today incentivizes the collaboration of prosumers, but it does this within the framework of digital capitalism, where the information generated is not only stored centrally but also (potentially) harvested by those providing the digital infrastructure. The current state of the Internet as a platform for knowledge production is tailored toward forms of "digital extractivism."[36]

There are, however, alternative models to centralized and corporate infrastructure. Some of those models focus on decentralized and cooperative[37] solutions where the stakeholders are collective owners of the platform, such as is the case with Mastodon.[38] Others favour completely serverless distributed platforms, where each participant is an

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[34] Notable exceptions are small grassroot projects, like Kasadaka, a platform that supports easy creation of local content and voice-based information services (https://www.kasadaka.com), and that take knowledge exchange seriously, for example, in contexts of low literacy rates. See André Baart et al., "Affordable Voice Services to Bridge the Digital Divide: Presenting the Kasadaka Platform," in *Web Information Systems and Technologies*, Lecture Notes in Business Information Processing, ed. María José Escalona et al. (Cham, Switzerland: Springer International Publishing, 2019),195–220, https://doi.org/10.1007/978-3-030-35330-8_10.

[35] See their website at https://www.knowledgefutures.org. Apart from the aforementioned publishing and collaboration platform pubpub.org, the Knowledge Futures Group is also developing an open access version of a knowledge graph for public data called Underlay (underlay.org). See Danny Hillis, Samuel Klein, and Travis Rich, "Whitepaper: The Future of Knowledge," *Underlay*, 18 July 2018, https://www.underlay.org/pub/future.

[36] See Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (New York: Public Affairs, 2018); María Soledad Segura and Silvio Waisbord, "Between Data Capitalism and Data Citizenship," *Television and New Media* 20:4 (2019), 412–19, https://doi.org/10.1177/1527476419834519; Verónica Gago and Sandro Mezzadra, "A Critique of the Extractive Operations of Capital: Toward an Expanded Concept of Extractivism," *Rethinking Marxism* 29:4 (2017): 574–91, https://doi.org/10.1080/08935696.2017.1417087.

[37] For examples of implemented platform cooperativism, see https://platform.coop.

[38] See the website https://joinmastodon.org. See also Trebor Scholz and Nathan Schneider, *Ours to Hack and to Own: The Rise of Platform Cooperativism: A New Vision for the Future of Work and a Fairer Internet* (New York: OR Books, 2017); Sasha Costanza-Chock, *Design Justice: Community-Led Practices to Build the World We Need* (Cambridge, Mass.: MIT Press, 2020); and Maureen Webb, *Coding Democracy: How Hackers Are Disrupting Power, Surveillance, and Authoritarianism* (Cambridge, Mass.: MIT Press, 2020).

equal member who contributes a certain amount of private resources to the existence of the platform (such as Secure Scuttlebutt, Dat, and InterPlanetary File System[39]).

The Internet in and of itself will not be the tool of free exchange of information, access to knowledge, and collaboration that its pioneers envisioned unless we abandon centralized, monetizable platforms. This is the central insight of a number of initiatives that try to rebuild core infrastructures of the Web to avoid the current forms of centralization that are either politically or economically exploitable, especially since members of the epistemic global South are disproportionately affected by data extractivism (for an example of such an alternative, see Tim Berner-Lee's Solid[40]).

The technological and infrastructural issues involved clearly touch on questions of epistemic and informational inequality, which is on the rise within and between many countries, despite the decline of absolute poverty. Access to knowledge and education, and their technological facilitation, becomes a question of global justice.[41] In light of the theological foundations laid above, these questions are also an issue for theology. Despite its focus on digitalization, it would be a misunderstanding to frame citizen theology as a form of "Internet theology." Technological and social developments are just as much in flux as the theological processes of knowledge. Nevertheless, it is not enough to simply place such developments adjectively before the word "theology" and to think that their importance has been taken into account. We expect important shifts to occur in the dynamics of theology as a global epistemic enterprise, and we are actively participating in shaping them.

In the digital age, citizen theology explores new possibilities of understanding the function and task of theological science from the life process of the Christian witnessing community in testimonial vulnerability. Although in its infancy, citizen theology will work only if it is a mode of providing an intersection between communities, local exchange, and globally distributed collaboration that can facilitate, inform, and enhance each other in meaningful ways. Citizen theology is glocal theology.[42] This "glocality" of

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[39]   See their websites: https://scuttlebutt.nz; https://dat.foundation; and https://ipfs.io.

[40]   "Solid (derived from 'social linked data') is a proposed set of conventions and tools for building decentralized social applications based on Linked Data principles. Solid is modular and extensible and it relies as much as possible on existing W3C [World Wide Web Consortium] standards and protocols." https://solid.mit.edu.

[41]   Christopher Hill and William Lawton, "Universities, the Digital Divide and Global Inequality," *Journal of Higher Education Policy and Management* 40:6 (2018), 598–610, https://doi.org/10.1080/1360080X.2018.1531211.

[42]   For an introduction to the terms "glocal" and "glocalization," see Roland Robertson, "Glocalization," in *The International Encyclopedia of Anthropology*, ed. Hilary Callan et al. (New York: John Wiley and Sons, 2018), online, 1–8, https://doi.org/10.1002/9781118924396.wbiea2275; Victor Roudometof, "Theorizing Glocalization: Three Interpretations," *European Journal of Social Theory* 19:3 (2016), 391–408.

distributed theological knowledge production will challenge a Western conception of academic theology, inviting it to better actualize its testimonial and cruciform character.

As distributed and centreless theology, citizen theology strives for and is itself a form of diaconal empowerment. Where glocal communities can help each other and their members gain a voice, share their experience, and engage each other in collaboration, the "witnesshood" of all believers becomes an important form of epistemic liberation and theological innovation, as well as a source for innovations of practical aid and solidarity.

To disentangle spiritual authority and theological expertise, to implement a genuine epistemic option for the margins,[43] to bring restorative epistemic justice to the margins over against the centre, a truly centreless theology is necessary. In exploring modes of distributed theology, we might be able to bring both implicit and explicit forms of knowledge into productive and empowering exchange as well as to link academic theology back to the life expression of faith communities. Distributed digital networks could be a historic opportunity to make real a "priesthood of all believers," where egalitarian participation and collaboration are possible regardless of status and even citizenship. This is obviously an inherently risky enterprise – but the risk reflects theological commitments to the body of Christ as the crucified one. Its practices have to be experimental and exploratory, preliminary and open to constructive irritation.

We need the courage to conceive of a theology that is ultimately centreless. Its centre is not one of its members, but Christ; and its witnesses come from the margins. Our epistemic practices need to reflect this embodied plurality, which is catholic (global), apostolic (decentral), and communal (local) all at the same time. These dimensions have to be viewed as entangled (glocality), yet distinct and unequally privileged. It is part of the task of theology to address and bridge this divide methodologically, diaconally empowering the priesthood of all believers on every level. Therefore, we cannot aspire to testimonially responsible forms of doing theology in any form other than ever more distributed ways.

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[43] This epistemic reformulation of the prominent theme "option for the poor" is not completely novel. Anthony J. Blasi, "Marginality as a Societal Position of Religion," *Sociology of Religion* 63:3 (2002), 267, https://doi.org/10.2307/3712470; Joerg Rieger, ed., *Opting for the Margins: Postmodernity and Liberation in Christian Theology* (Oxford: Oxford University Press, 2003); David N. Field, "On (Re)Centering the Margins: A Euro-African Perspective on the Option for the Poor," in Rieger, ed., *Opting for the Margins*, 45–70; World Council of Churches, "Mission from the Margins: Toward a Just World," *International Review of Mission* 101:1 (2012), 153–69, https://doi.org/10.1111/j.1758-6631.2012.00092.x.