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The Historical Conditions Affecting the Development of "Geographia Generalis"

Organon 14, 167-177

1978

Artykuł umieszczony jest w kolekcji cyfrowej Bazhum, gromadzącej zawartość polskich czasopism humanistycznych i społecznych tworzonej przez Muzeum Historii Polski w ramach prac podejmowanych na rzecz zapewnienia otwartego, powszechnego i trwałego dostępu do polskiego dorobku naukowego i kulturalnego.

Artykuł został zdigitalizowany i opracowany do udostępnienia w internecie ze środków specjalnych MNiSW dzięki Wydziałowi Historycznemu Uniwersytetu Warszawskiego.

Tekst jest udostępniony do wykorzystania w ramach dozwolonego użytku.



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THE HISTORICAL CONDITIONS AFFECTING THE DEVELOPMENT OF "GEOGRAPHIA GENERALIS"

Since the Reformation geography¹, at least in Protestant Europe, had been at the service of theology. Its task was to demonstrate or to prove God's *Providentia* (divine control of the world)². First signs of its emancipation become apparent only

¹ When I speak of "*Geographia*" here, I do not of course mean what we would understand by geography today. In the IGU (International Geographical Union), which is about to publish an international standard work on the historical development of geographical thought, we have agreed on the following definition: all those works belong to the field of geography and its history which are in some way concerned with what we understand today by the overall term "geographical facts" in its widest sense, regardless of whether this "factual material", from a contemporary point of view, was ordered, systematised and taught according to philosophical, theological or purely geographical criteria. We undertook practically no research of our own.

Furthermore all those scholars have a place in this work on the history of geographical thought who have influenced the criteria for approaching the geographical material, the method selected, the aims set, etc.

Before Kant it was mainly "subsidiary subject geographers" or non-geographers, such as for example philosophers, theologians, etc., who decisively influenced the subject we today call geography. The significance of discoverers and explorers for the development of geographical thought really begins only with the Forsters, that is in the 18th century (my thanks are due to Mr Plewe for the reference to the Forsters).

As these "subsidiary subject geographers" or non-geographers treated the factual material of geography chiefly according to theological or philosophical standpoints, the respective works again seen from a present-day point of view, usually more closely related to theology, philosophy, etc. than geography. Nevertheless they must be taken into account in the history of geography. Stronger impulses for the development of geographical thought emanated for example from Zwingli's paper on *Providentia* than from many of the contemporary "main subject geographers". Kant probably exercised a greater influence on the development of geographical thought with his philosophical physico-theological writings than with his geography lectures, which were published in book form. Cf the following publications:

M. Büttner, *Die Geographia generalis vor Varenius. Geographisches Weltbild und Providentialehre* (Habilitationsschrift.) Erdwissenschaftliche Forschungen, ed. C. Troll, vol VII, Wiesbaden, Franz Steiner Verlag, 1973; M. Büttner, *Kopernikus und die deutsche Geographie im 16. Jahrhundert*, [in:] "Philosophia naturalis", Meisenheim/Glan 1973, vol. 14, pp. 353-364; M Büttner, *Kant und die Überwindung der physikotheologischen Betrachtung der geographischen-kosmologischen Fakten*, [in:] "Erdkunde", Bonn 1975, Bd. 29, hfg 3, pp. 162-166; M. Büttner, IGU *Commission on the "History of Geographical Thought". Ein Kurzbericht über die Ziele und den Stand der Arbeiten*, [in:] "Geographische Zeitschrift", Wiesbaden 1974, Bd. 62, pp. 233-235.

² Since the Reformation, Protestant Europe had proceeded radically to subordinate geography to theology, that is, to treat the factual material of geography according to a theological standpoint and to place it at the service of the doctrine of *Providentia*.

Melanchthon, founder of the German school and university system, had introduced this development, which was in harmony with the general mental outlook of that time; cf my habilitation thesis cited in Note 1, in which I go into these things in detail; see also: M. Büttner, *Die Bedeutung*

towards the end of the 16th century. Gerhard Mercator, for example, the leading geographer of that time, did indeed still maintain that the geographer's task was to demonstrate God's *Providentia* and that the Bible must be taken as a basis for this³. In contrast to his predecessors⁴, however, he no longer succeeded in basing geography on the principles demanded. In his main work, written towards the end of the century, there are already indications of the emancipation from theology⁵.

An emancipation such as this was bound to have aggravating consequences for the believing Christian, and Mercator foresaw them. For if geography can no longer fulfil the task of illustrating or even proving *Providentia*, then a "shrinking" of the dogma of God's world government is the inevitable result.

If up until this time it had been possible to impress on people in a striking manner God's control of the world⁶ with the help of geographical facts, or with the help of the science in whose field of competence these facts lay, such as rain and snow, summer and winter, ebb and flow, etc., then a whole world inevitably collapsed for the believing Christian at the moment when geography did not or could not fulfil this task⁷.

der Reformation für die Neuausrichtung der Geographie im protestantischen Europa und ihre Folgen für die Entfaltung der Providentialehre, [in:] "Archiv für Reformationsgeschichte", Gütersloh 1977 Jg. 68, pp. 209 - 225.

³ Cf the publications cited in Note 1. There I also follow up the question of the consequences for the structure of geography, according to whether it is based on the Lutheran or the Reformed Church doctrine of *Providentia*. Theological reasons led to the formation of two different schools of geography in the 16th century: the Melanchthon school, whose chief interest was the present "functioning" of geographical facts such as rain and snow, summer and winter, etc., and the Münster school, whose attention was directed more towards the past, to what from today's point of view we would describe as something like geology. In any case, because of the special doctrine of *Providentia* in the Reformed Church, the Calvinist and Reformist territories of Europe were more open-minded than the Lutheran for the development of geology.

⁴ The most important predecessors are Münster, Melanchthon, Peucer and Neander; cf Note 1.

⁵ One has the impression that Mercator was to a certain extent pushed towards this first step in the direction of emancipation under the pressure of the new general outlook (which slowly led to the geographical facts being seen with new eyes) almost against his will, or at any rate more sub-consciously than consciously.

It looks as though geographical material, as a result of the emergence of a new way of looking at things, liberated itself and rose in opposition to the prevailing theological orientation towards the *Providentia*, which of course was only possible on the basis of the theological view of the geographical facts (this had been introduced by Aristotle); cf the publications cited in Note 1 and in addition: M. Büttner, *Die Emanzipation der Geographie zu Beginn des 17. Jahrhunderts, [in:] "Sudhoffs Archiv", Wiesbaden 1975, Bd. 59, H. 2, pp. 148-164.*

⁶ This is done with the following "physico-theological" argumentation, which then re-appears in the 18th century: because rain and snow, heat and dry periods, etc. always come at the right time and exactly in those places where plants and animals are dependent on them, one can see that God controls the world in wisdom and goodness. In those places where no plant grows as in the desert for example, God does not send any rain; cf in addition to the publications cited:

M. Büttner, *Theologie und Naturwissenschaft, insbesondere Geographie*, Theologische Dr. - Arbeit, Münster 1963 (unpublished); M. Büttner, *Theologie und Klimatologie, [in:] "Neue Zeitschrift für systematische Theologie und Religionsphilosophie", Berlin 1964, Vol. 6, No. 2, pp. 154 - 191*; M. Büttner, *Zum Gegenüber von Naturwissenschaft (insbesondere Geographie) und Theologie im 18. Jahrhundert. Der Kampf um die Providentialehre innerhalb des Wolffschen Streitiges, [in:] "Philosophia naturalis", Meisenheim/Glan 1973, Vol. 14, pp. 95 - 122*; M. Büttner, *Zum Übergang von der teleologischen zur kausalmechanischen Betrachtung der geographischen Fakten, [in:] "Studia Leibnitiana"* Wiesbaden 1973, Vol. V. No. 2, pp. 177 - 195.

⁷ Cf as well as the publications already mentioned especially: M. Büttner, *Geographie und Theologie im 18. Jahrhundert, [in:] Verhandlungen des deutschen Geographentages 1965 Bochum*, Wiesbaden 1966, pp. 552-559; M. Büttner, *Das "physikotheologische" System Karl Heims. Einordnung und Kritik, [in:] "Kerygma und Dogma", Göttingen 1973, Jg. 19, Vol. 4, pp. 267-286*; Suzuki Hideo (ed.), *Manfred Büttners Arbeiten über die Beziehungen zwischen Geographie und The-*

These consequences, which would allow a "pious geographer" no peace, were acutely experienced by Mercator⁸. This conflict was resolved for the first time by Bartholomäus Keckermann (1572-1609). He developed an emancipated geography and refuted the theological arguments speaking against such an emancipation. But this was not all—he even maintained that this very geography, this neutral geography which was not primarily at the service of theology, can assume a much better theological task.

ON KECKERMANN'S THEOLOGY

I intend to pick out here only those parts of Keckermann's theology which are important in the context mentioned.

THE THEOLOGICAL ARGUMENT FOR NATURAL SCIENCE, ESPECIALLY THEOLOGY

Keckermann substantiated the separation of natural science and theology in the dogma of sin⁹. Here are his theses in summary:

1. Keckermann's starting-point is the division of total knowledge into theory and practice. In every discipline the practical side is the important one; theoretical discussions in themselves have no meaning and value. For theology this means that, since the main thing—redemption—is of a practical nature, the whole of theology must be directed towards this aim.

2. This practical approach results in the so-called analytical method, which Keckermann then applied not only in theology but in all disciplines. The principle of this method is that the starting-point is the aim, in the case of theology the salvation of mankind. The next task is to develop a systematology within the subject itself to correspond to this aim.

3. In order to attain the main aim, the salvation of mankind, Keckermann incorporates into his system of relationships between theology and natural science a new doctrine, the doctrine of man created in the image of God (*Imago Dei*).

His premise is that man's aim is to attain *Imago Dei*, which is what assures his salvation. This was lost to him through original sin, but can be regained in two ways: firstly with the help of theology through revelation and secondly through philosophy, which for Keckermann means through natural science, especially geography.

This idea must be explained. Keckermann's premise is that God is all in all. A true image of God must then also be all in all, therefore it must comprehend all and control what it comprehends. It follows from this that the more knowledge man has of the earth and thus the more he can control it, the nearer he comes to regaining the old *Imago Dei* which he lost.

According to Keckermann, man in paradise knew more about nature than all

ologie, Translated, compiled and edited by Hideo Suzuki, [in:] "Geographical Review of Japan", Tokyo 1974, pp. 653-657; M. Büttner, *Regiert Gott die Welt? Vorschung Gottes und Geographie. Studien zur Providentiallehre bei Zwingli und Melanchthon. Calwer Theologische Monographien*, Stuttgart 1975.

⁸ Cf in this connection my habilitation thesis (see Note 1), p. 156 ff.

⁹ Here and in the following I dispense with individual quotations and source references. They are collected in my habilitation thesis.

today's scientists put together. After original sin, this knowledge of nature, amongst other things, was lost to him; from then on the whole of man's being was filled with sin. Yet natural science, especially geography, can reproduce the old, complete knowledge of nature through the enrichment of knowledge and thus can give back to mankind this part of *Imago Dei*.

4. The question of how exactly this can happen is answered by Keckermann with the allusion to the fundamental difference between subject-related and object-related knowledge. As all knowledge related to the subject has been inaccessible to man since original sin, and important things like salvation can no longer be regained by him (except through revelation), Keckermann infers that *Imago Dei* cannot be re-attained in this field.

In the objective field of knowledge of nature, however, a remnant of *Imago Dei* was preserved, and this can be enriched again. The less a science concerns itself with man himself and his subjective relationship with God, and the more it directs its attention to the knowledge of the objects of nature alone, the more capable it is of producing genuine, true knowledge and recreating man in God's image in this field by giving him God-like authority over nature.

Should complete *Imago Dei* be re-attained, however, then the man striving for this aim should tread both the theological and the philosophical (scientific) path.

5. A natural theology was fundamentally rejected by Keckermann. For him there was no way leading to God "from below" with the aid of geographical facts. From what has been said it follows that geography cannot possibly be at the service of the illumination of *Providentia*. Therefore it must be conducted in a theologically neutral, in an emancipated manner. In contrast to Melanchthon, for whom natural science, especially geography, led man to the knowledge of God and his *Providentia* within the framework of so-called natural theology, geography for Keckermann fulfilled another much more important task: it makes him equal to God.

How these emancipated disciplines, geography, physics, etc. respectively develop their own systematology and research methodology, what aims they set for themselves, is for Keckermann a matter for those involved in the subject itself, not for theologians, and not for a theological orientation or subordination of the subject to theology. A compromise between *Doctrina Evangelica* and natural science, or a subordination of natural science to aims which are to be specified by the theologian (as was aspired to by Melanchthon), or a compromise between biblical ideas and those of classical geography (as Mercator tried to achieve) do not need to be enforced, and indeed should not be enforced.

In place of the old relationship, which was produced by way of *Providentia* and amounted to the subordination of geography to theology, Keckermann created a new relationship, which is basically of greater theological relevance (*Imago Dei*)¹⁰, although

¹⁰ This positive "theology of natural science" is in sharp contrast with Calvin's view that association with the natural sciences leads man to knowledge of his sin and powerlessness and thus away from God. The connection between Calvin and Keckermann has not yet been studied closely by theology. Only so much is known that Keckermann was the head of the German Reformists and thus Calvin was not able to assert himself with his doctrine in Germany as he was in the Anglo-Saxon countries. A surprising point in this connection is that the complete edition of Keckermann's work

he reconciled himself theologically to the fact of emancipation and did not engage in a running fight, as did the theologians of the 18th or even the 19th century¹¹.

THE "SHRINKING" OF *PROVIDENTIA*—CAUSE OR CONSEQUENCE OF EMANCIPATION?

In his main theological work¹², he speaks "only" of a shrunken doctrine of *Providentia*, a doctrine orientated towards man, which exactly "matches" the recognition of the emancipation of the natural sciences. As in all his works, and above all in those on geography, he uses the distinctive analytical method. This is his procedure:

He begins with God and says that there is an inner and an outer side of God. The outer side is to be sub-divided into what God plans for those things "outside himself" and what he carries out in accordance with the plan. The execution can then be either ordinary or extraordinary.

Proceeding in this way he reaches, after making more and more distinctions, the *Volitio* (will) of God. This is sub-divided again into *Volitio conditionalis* and *Volitio generalis*. By way of *Providentia*¹³, which forms a part of the active effective side of *Volitio* emanating from God, he finally reaches the *Directio specialis*, that is, the guidance of man to salvation. His sole concern is this guidance of man to salvation, not only in the doctrine of *Providentia* but in the whole of theology¹⁴.

The shrinking of *Providentia* towards man is thus perfected. It matches the emancipation of geography from theology, leaving us just one question to answer, namely what is cause and what is effect.

KECKERMANN'S GEOGRAPHY

Keckermann's main geographical work, which is our main concern here, appeared shortly after 1600 in many editions and several languages¹⁵. What method does he adopt?

which after all for a true Calvinist contained many heretical ideas, was already published at the beginning of the 17th century, in Geneva; of all places see: *Opera omnia*, Geneva 1614.

¹¹ I have concerned myself more closely with these running fights in my theological doctoral thesis (cf Note 6) and in the essay on Karl Heim (cf Note 7).

¹² *Systema S. S. Theologiae*, Hannoviae 1602; cf in this connection: M. Büttner, *Die Neuausrichtung der Providentialehre durch Bartholomäus Keckermann im Zusammenhang der Emanzipation der Geographie aus der Theologie. Ursachen und Folgen*, [in:] "Zeitschrift für Religions- und Geistesgeschichte", Köln 1976, Bd. 28, pp. 123-132.

¹³ Neither here nor at any other place in his theology are geographical facts cited for the purpose of illustration (as with Zwingli) or as a proof (as with Melanchthon).

¹⁴ For this reason Keckermann has gone down in the history of theology as an analyst of salvation.

¹⁵ This is most easily accessible in the complete edition of his works, which is available in several German libraries. See: B. Keckermann, *Opera omnia*, Geneva 1614, column 1921-1991.

In this work (which he calls *Systema Geographicum*) the term "*Geographia generalis*" appears for the first time. Hence the founder of general geography is not Varenus, as has been widely assumed, but Keckermann. In my habilitation thesis (already cited) and in my essay in the "Plewe-Festschrift", and also at the international Geographers' Congress in Montreal I dealt with the relation between Keckermann and Varenus in more detail. As has since also been pointed out by Kastrop, Varenus is essentially based on Keckermann. He has copied whole passages from Keckermann's book without naming his sources. We cannot excuse Varenus by saying it was not usual practice at that time to quote one's sources. Alsted, Keckermann, etc. (to name just some of Varenus' "predecessors") give precise details of their sources. See: R. Kastrop, *Ideen über die Geographie und Ansatzpunkte für die moderne Geographie bei Varenus unter Berücksichtigung der Abhän-*

His predecessors, especially Münster and Mercator, had been guided above all by the order laid down in *Genesis*. They developed the factual geographical material known to them from Aristotle, Ptolemy, etc. according to the order in the first account of Creation.

The question now arose for Keckermann of the criteria for ordering this material, if the order fixed by the *Bible* is no longer to be taken as a basis; such an order would contradict an emancipated geography. The possibility of using Aristotelian elementology as a continuous thread and (as Aristotle does himself) dealing with the geographical material in the order "from the outside to the inside" (that is, in the order: fire, air, water, earth)¹⁶ is also rejected by Keckermann; for the result of this would be physics, but not geography, since the geographer's concern is the uniform globe, made up of both earth and water, or respectively with the surface of the earth¹⁷.

Keckermann chose another way, dealing with the individual facts neither in the physical nor the biblical order, and not, as had been usual until that time, according to criteria we would today describe as "extra-geographical", but by creating a kind of hierarchical systematology of concepts, thus giving geography for the first time in its history a kind of methodology appropriate to the subject.

Keckermann thus emancipated geography from theology, but one purely superficial connection remained in that the method according to which he orders the material is the distinctive analytical one already tried out in theology (but also in other disciplines).

He sub-divided our subject initially into *Geographia generalis* and *Geographia specialis*. *Geographia specialis* is dealt with by him only marginally¹⁸. General geography is then further divided into *Geographia generalis absoluta* and *Geographia generalis comparata*, that is, into theoretical and practical (or comparative) geography. In the theoretical part the basic rules are worked out and in the practical part they are applied¹⁹.

gigkeit des Varenius von den Vorstellungen seiner Zeit, Dissertation, Saarbrücken 1972; M. Büttner, *A Geographia generalis before Varenius*, [in:] *International Geography* 1972, vol. 2, University of Toronto Press 1972, p. 1229 ff; M. Büttner, *Keckermann und die Begründung der allgemeinen Geographie. Das Werden der Geographia generalis im Zusammenhang der wechselseitigen Beziehungen zwischen Geographie und Theologie*, [in:] "Plewe-Festschrift", Wiesbaden 1973, pp. 63-69.

¹⁶ On Aristotle's geography cf Note 5 and my habilitation thesis (already cited). As yet here is no synoptical study on the significance of Aristotle for the development of European geography. As this topic is of great importance for the IGU Commission (cf Note 1)—before Kant geographical thought was essentially influenced by Aristotle—I have written a rather long essay on the subject, which I have handed in for the corresponding section of the international Geographers' Congress in 1976: *Die geographisch-cosmographischen Schriften des Aristoteles und ihre Bedeutung für die Entwicklung der Geographie in Deutschland*, [in:] M. Büttner (Hrsg.), *Wandlungen im geographischen Denken von Aristoteles bis Kant (Abhandlungen und Quellen zur Geschichte der Geographie und Kosmologie*, Bd. 1), Paderborn—München—Wien—Zürich 1979, pp. 15-34.

¹⁷ Keckermann is one of the first scholars to mark geography off from physics in this way. Further study would be needed to show whether he was the very first.

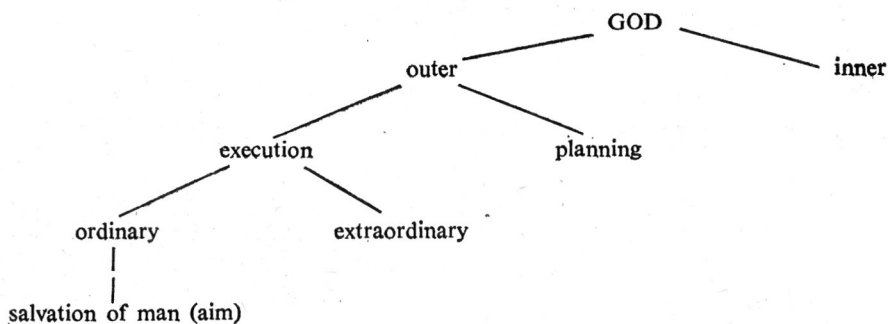
¹⁸ He does not seem to think much of *Geographia specialis* (Länderkunde). He does not say in so many words that it is in fact not a science at all, but it emerges from his whole representation that for him only *Geographia generalis* is of educational value, because it teaches to think, whereas *Geographia specialis* "only" offers information.

¹⁹ Keckermann took his pupils to the country and instructed them in the practical application of what they had learned theoretically in their lessons, by comparing different examples. It would be interesting to investigate his influence on Clüver and his comparative geography.

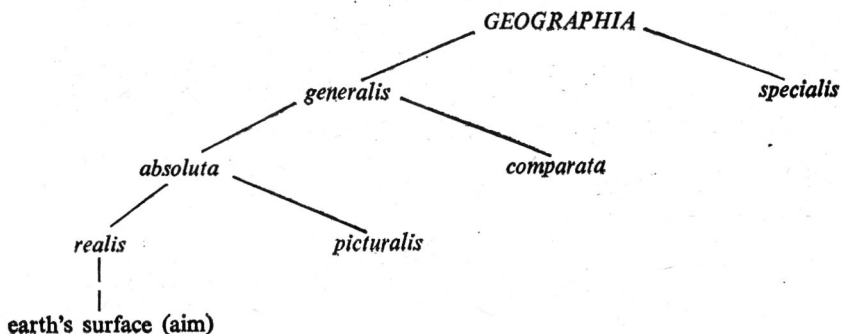
Geographia generalis absoluta is further sub-divided into *Geographia generalis absoluta realis* (the name becomes longer and longer, which corresponds to the distinctive method) and *Geographia generalis absoluta picturalis*. While pictorial geography deals with cartography, real geography is concerned with what today would be counted as morphology. Keckermann develops here for the first time a kind of morphological systematology of concepts, starting from the *Partes Terrae* which are first divided into land and water. The land is then sub-divided into *Terra principalis* and *Terra minus principalis*, that is into smaller parts (*Collis, Saltus*, etc.) and the larger parts (*Continens, Insula*, etc.) of the earth's surface or the land respectively.

What has been said so far may be sufficient to clarify Keckermann's method. He emancipates geography from theology, draws the theological conclusions from this emancipation by "shrinking" *Providentia* towards man, develops a doctrine of sin and *Imago Dei* to match it and finally helps emancipated geography to a method, thanks to which it is possible for the first time to order the factual material not according to principles alien to the subject (from today's point of view) but ones internal to the subject; moreover to make the material lucid and thus easier to teach and more readily available mentally. The fact that this procedure is superficially the same in theology and geography (that is, analytical and distinctive) may be illustrated by the sketch.

KECKERMANN'S THEOLOGY



KECKERMANN'S GEOGRAPHY



THE CHRONOLOGICAL RELATIONSHIPS BETWEEN THEOLOGY AND GEOGRAPHY
ACCORDING TO KECKERMANN

Now that the systematic and fundamental relationships between these two subjects have been clarified, I should like to discuss chronology. First of all a few biographical data.

Keckermann, son of a Reformist business family, was born in Gdańsk. His studies led him via Wittenberg to Heidelberg. There he became Professor of Theology, but later returned to an appointment in his home town, where as a teacher at the grammar-school he helped to strengthen resistance to Lutheranism (and probably even more to the counter-Reformation). In Heidelberg he published his theological writings; the scientific ones, including geography, follow later.

It seems reasonable to conclude from these data that, since his dogmatics originated in 1602, geography on the other hand only appearing later, Keckermann first of all worked on a scientific methodology for theology and only later developed a geography which matched his theology. This would mean that Keckermann was concerned with fundamental things (such as the relationships of the individual disciplines to each other, etc.) during his time as a professor in Heidelberg and only later wrote a geography because the books available for teaching in school perhaps appeared to him inadequate.

But conceiving ideas is not the same as publishing them. I consider it not only possible but even quite probable that Keckermann's overall theological and philosophical view, which is already evident by 1600²⁰, was influenced by previous contact with scientific works. It is likely he had been introduced to scientific, especially geographical ways of thinking during his schooldays, with Fabricius as headmaster in Gdańsk. He had probably already become acquainted with Melancthon's physics as a young man, likewise with the geographical works of Münster and Mercator. His interest right from the start was certainly not concentrated only on theology²¹. He was more concerned with the totality of all sciences and with the relationships of their individual fields to each other than with theology alone. In 1598—that is, even before the publication of this theological systematology—appeared his little paper on topography²².

As a young scientist, Keckermann was still struggling in it with the problem of the relationship between theology and natural science. He still seemed to be of the opinion that natural science (natural philosophy) has to be at the service of theology. But shortly after this, his work on earthquakes²³ appeared, in which a reversal is heralded. His attempt to order earthquakes according to God's *Providentia* fails. He is beginning to shrink *Providentia*. Evidently it is already clear to him that it is pointless to give geography or any other natural science a theological orientation.

²⁰ *Systema S. S. Theologiae*, Hannoveriae 1602.

²¹ See: Heppe-Bizer, *Die Dogmatik der evangelisch-reformierten Kirche*, Neukirchen 1958 S. L.

²² B. Keckermann, *Contemplatio gemina prior...*, Heidelberg 1598.

²³ Nowadays relatively easily available in the complete edition. Cf Note 15 (column 1812-1834).

Finally he adopts Aristotle's procedure, using the latter's earthquake theory as a basis, and takes flight in the following statement: earthquakes which cannot be explained according to Aristotle must have other causes²⁴.

From what has been said it could follow that even before 1602 Keckermann was already on the way to finding theological grounds for the emancipation of the natural sciences (in opposition to his teacher Melanchthon and possibly stimulated by his other teacher, Mercator), or to draw the theological conclusions from it. His dogmatics of 1602 would then be the result of his having come to terms with this problem.

Yet the question of whether his geography, which matches his theology and his concept of the relationships of the individual disciplines among themselves in such a special way, was conceived before or after the dogmatics still remains open. The obvious assumption, that he did not conceive the idea of his geography until the Gdańsk period, with the aim of creating a new text-book for himself and his pupils, is evidently not true; it is contradicted by the fact that he mentions America having been discovered 110 years before²⁵. From this it could be concluded that he did in fact conceive the idea of his geography in Heidelberg, possibly for teaching in the boarding-school which he ran, and then used it (maybe with a few slight changes, or even unaltered) in Gdańsk for teaching at the grammar-school.

This would mean that Keckermann reached this emancipation of geography, with all its resulting consequences for theology and geography, around 1600 by conducting with himself an intensive dialogue (between the geographer and the theologian in him) as a reaction to the current change in mental outlook²⁶.

If the greatness of a scholar is to be measured according to whether he succeeds in conducting his subject (or subjects) in harmony with the overall contemporary outlook, or in restoring such harmony if it has disappeared as a result of a change in outlook, then Keckermann must be counted among the really great scholars (as his pupil Alsted indeed does in so many words). He is one of those scholars who set a precedent—who for a certain period produce a balance (as Melanchthon did for the period after the Reformation) between the prevailing outlook and the methodological orientation of the sciences conducted by them (in Keckermann's case mainly theology, philosophy, geography, physics, astronomy, etc.).

²⁴ It is left to the reader to decide whether *Providentia* is also to be counted among the other causes, or merely other natural causes.

²⁵ Dr. Kastrop pointed out this reference to me. I had overlooked it, as it is not in the section on America but in the one on Europe (column 1980 in the complete edition cited in Note 15). Cf in this connection: M. Büttner, *Beziehungen zwischen Theologie und Geographie bei Bartholomäus Keckermann. Seine Sünden- und Providentialehre eine Folge der Emanzipation der Geographie aus der Theologie?* [in:] "Neue Zeitschrift für systematische Theologie und Religionsphilosophie", Berlin 1976, Bd. 18, pp. 209-234.

²⁶ Hübner's recently published book on Kepler should be mentioned in this connection. Hübner demonstrates in detail that Kepler, a contemporary of Keckermann, also shows the relations between theology and natural science. See: M. Hübner: *Die Theologie Johannes Keplers zwischen Orthodoxie und Naturwissenschaft*, Tübingen 1975. Cf in this connection my critique in: "Theologische Literaturzeitung", Leipzig 1977. Among other things I go into the question of the extent to which Kepler and Keckermann went through a similar development. In contrast to Hübner I believe that Kepler's theological thought does not form the basis for his scientific thought.

The method developed by a teacher is then followed by his adherents or pupils until the time when a change in the general outlook makes it necessary to create a new orientation, which then leads to a new balance²⁷.

The question of why Keckermann fell into oblivion and Varenius later came to be accepted as the founder of *Geographia generalis* is treated in the papers of mine cited in Note 15.

PAPERS BY THE SAME AUTHOR ON THE HISTORY OF GEOGRAPHY,
IN CHRONOLOGICAL ORDER

- Theologie und Naturwissenschaft, insbesondere Geographie*, Theologische Dr.-Arbeit (doctoral thesis in theology), Münster 1963 (unpublished), 704 pages, 15 plates, 25 sketches, 18 tables, index of persons and subjects.
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²⁷ It was Kant who first re-established a new balance in geography with the overall outlook, which had changed in the meantime. But cf in this connection Note 1. He certainly exercised a greater influence on geographical thought through his non-geographical works than through his lectures on geography. This was pointed out years ago by Ernst Plewe. After through discussions at the Geographers' Congress in the USA (April 1975) we were again of the opinion that Kant's significance for the history of geography cannot only be measured according to the importance of his lectures on geography or his other works on natural science.

It is thanks to Mr Hartshorne that a contribution has been made towards the clarification of this problem complex in front of an international forum, through his lecture and his questions.

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