Аннотация к статье Хитоси Очиаи «Открытый Бог, открытое многообразие»

Статья японского исследователя Хитоси Очиаи (Hitoshi Ochiai) «Открытый Бог, открытое многообразие» посвящена попытке логико-математического обоснования идей так называемого «открытого теизма», который из антиномии «Бог всемогущ и Бог всеблаг», где тезис и антитезис оказываются несовместимыми, выбирает всеблагость Бога за счёт его всемогущества. В этом случае перед открытым теизмом возникает проблема, будут ли совместимыми с его выбором другие важные положения христианской догматики, в частности, представления о крестной жертве Христа и воскресении. В своей небольшой статье Хитоси Очиаи показывает, что версия открытого теизма, принимающая важные постулаты христианства, по его мнению, оказывается непротиворечивой. Делает он это весьма своеобразным для классического богословия способом, который, однако, оказывается очень понятным математику и логику и родственен методологии неовсеединства[9].

В математической логике есть стандартный способ проверки на непротиворечивость формальной аксиоматической теории. Для этого нужно построить модель, на которой выполняются аксиомы этой теории. Нечто подобное в отношении к открытому теизму делает японский исследователь. Конечно, он работает в полуформальной манере, скорее иллюстрируя аксиоматику открытого теизма на ряде канонических положений Библии, а затем предлагая их интерпретацию средствами модели. Наибольшая оригинальность данного подхода заключается в том, что в качестве модели для аксиоматики открытого теизма избираются средства математической топологии.

Хитоси Очиаи избирает три основных пункта открытого теизма – идею открытого Бога, идею воплощения Бога в материю и идею воскресения и бессмертия души.

Для интерпретации этих положений используются определения топологического пространства, в качестве конкретного примера которого рассматривается топология открытых кругов на комплексной плоскости.

В этом случае комплексная плоскость **C** является максимальным открытым множеством и предлагается к рассмотрению как модель Бога. Особенность этого множества также в том, что оно не имеет внешней границы, подобно безграничности Бога.

В качестве процедуры воплощения автор рассматривает *операцию компактификации*, гомеоморфно преобразующую некомпактное топологическое пространство в компактное, т.е. способное быть покрытым конечным подпокрытием любого покрытия этого пространства. В случае хаусдорфовости компактного пространства получаем также его замкнутость. Автор интерпретирует телесно воплощённые сущие как компактные замкнутые множества.

Наконец, в качестве результата воскресения автор рассматривает бессмертную душу, которую он предлагает моделировать открытым множеством, имеющим границу, например, открытым единичным кругом (диском) $D = \{z \in \mathbf{C}: |z|<1\}$ на комплексной плоскости.

С точки зрения топологии, между **C** и D нет разницы, т.е. они гомеоморфны. Поэтому привлекаются дополнительные средства, чтобы отличить эти объекты. В частности, они разнятся как *римановы поверхности* (многообразия)[10]. Если комплексная

---

[9] Электронные ресурсы: 1) Моисеев В.И. Сайт «Неовсеединство», http://neoallunity.ru; 2) Сайт «Интегральное сообщество», http://integral-community.ru.

[10] Интересно, что о связи структур идеального бытия с римановой поверхностью писал и участник Интегрального сообщества С.А. Борчиков в статье «Исток идеи качественного множества» // От всеединства к неовсеединству. Размышления о… Вып. 12. Озёрск: ОТИ МИФИ, 2011. С.29.

плоскость **C** представляет собою *параболический* случай односвязной римановой поверхности (конформно эквивалентный сфере Римана с выколотой точкой), то единичный круг D – это *гиперболический* случай (конформно эквивалентный сфере Римана с разрезом положительной длины). Таким образом, подобно тому как индивидуальная душа имеет и общее с природой Бога, и отлична от него, подобно этому ведут себя объекты **C** и D.

В итоге автор предлагает указанную систему математических объектов для интерпретации основных положений открытого теизма: открытый Бог моделируется максимальным открытым множеством, не имеющим границы; процесс воплощения – как процедура компактификации; бессмертная душа – как открытое множество, имеющее границу.

В конце мне хотелось бы отметить, что такого рода сопоставления сами по себе вызывают много вопросов, и для ответа на них необходимо подвести определённое обоснование, почему используются именно такие интерпретации. По какой причине, например, открытость Бога интерпретируется топологической открытостью и т.д. Здесь, как представляется, будет полезным обращение к идее *онтологии границ* (см. одноименную лекцию общего курса по философии неовсеединства[11], в рамках которой делается попытка связать геометрическую и онтологическую топологию). С этой точки зрения, многие конструкции, предлагаемые Хитоси Очиаи, получают своё дополнительное обоснование и обнаруживают множество интересных перекличек с философией неовсеединства, которые, как представляется, требуют дальнейшего исследования и могут оказаться очень плодотворными.

Главный редактор В.И. Моисеев

[11] Моисеев В.И.. Онтология границ // Электронный ресурс: http://neoallunity.ru/lec/lec11_.pdf.

Хитоси Очиаи. Открытый Бог, открытое многообразие

OPEN GOD, OPEN MANIFOLD
Hitoshi Ochiai

God regrets. God regrets that which he has wrought when it does not comply with his will. God cannot carry out his original intentions counter to the free will of his creations, including Man. The future of the world is determined by its relationship not just with God's will but with the will of his creations, starting with Man. God opens the future of the world not just to himself but to his creations, starting with Man. This idea of an "open God" is called "Open Theism" and was the view of God arrived at around the end of the 20th century by the largest Christian group in the United States, the evangelicals.(1)

God is open. God cannot determine the future of the world by his will alone. This open theology conflicts head on with the traditional, closed theology of God that considered him the omnipotent and the final arbiter of the future of the world. However, the traditional creed of Christianity, that God became incarnate as a man, was hung on the cross to die in suffering, and was resurrected three days later, and that we humans too will be resurrected after death, seems to assume the traditional theology that God is omnipotent.

For example, the Nicene Creed, on which the Christian creed is based, starts with a profession of faith that God is all-powerful, and then professes the incarnation of God, the passion of God, and the resurrection of God, as well as the resurrection of mankind.

Open theology denies the profession of omnipotence at the start of the Nicene Creed, so must show that it is itself conformable with the other parts of the creed: namely, the incarnation and passion of God and the resurrection of the dead. Whether open theology can be logically consistent with these fundamental creeds of Christianity is the focus of this paper.

Therefore this paper will map the open God onto an open manifold. By considering the open manifold as an image of the open God, we can show that the incarnation of the open God and the resurrection of mankind sans flesh also have images in the manifold, and demonstrate that there is a logical consistency in the open God and incarnation and resurrection. By considering the open manifold without boundaries as the image of the open God, the compact manifold as the image of the incarnation of God, and the open manifold with boundaries as the image of the resurrection of the dead, we can map a logically consistent relationship between the open God and incarnation / resurrection in the form of the mutual relationship among the manifolds.

The Open God: the Open Manifold without Boundaries God regrets.

> I will wipe from the face of the earth the human race I have created … for I regret that I have made them. (Genesis 6:7)

God regrets that his creation, Man, does not comply with his will. This is the prelude to Noah's flood.

However, God sometimes reconsiders the disaster that he threatens.

> Then the Lord relented and did not bring on his people the disaster he had threatened.
> (Exodus 32:14)

At this time, God reconsidered thanks to Moses' plea.

> I knew that you are a gracious and compassionate God, slow to anger and abounding in love, a God who relents from sending calamity.
> (Jonah 4:2)

The regretting, and reconsidering God is no longer the all-powerful God who determines all things according to his own will. To regret and reconsider is when what has been decided does not work out in accordance with the will, or when what has been decided changes in accordance with the will of people or other beings. This sort of God is far removed from the all-powerful God who foresees all, and forces through his own will, sweeping aside any protest. God is open to the will of all his creations for the future of the world, starting with Man, and not just his own will. The decisions of God are not closed as final, but are open to be freely affected by Man or other beings.

> See, I have placed before you an open door that no one can shut. (Revelation 3:8)

God is open. Let us map this open God onto an open set. We must define the topological space in order to define the open set. Topological space is defined as when the union $\cup O\lambda$ that includes the infinite potency of the subset $O\lambda$ of X is once again the subset of X and at the same time the intersection of the finite numbers of $O\lambda$ is also the subset of X. At this time we call the subset $O\lambda$ of the topological space X an "open set."(2) For the set X itself to be open, it is enough that X matches the union $\cup O\lambda$ of all its own open sets $O\lambda$, or in other words, when and only when X matches the greatest open set that includes itself.(3)

For example, let us look at the complex plane C. The complex plane C is the total of the complex numbers z:

$$z=x+iy$$

However, x and y are real numbers, and i represents the imaginary unit

$$i=\sqrt{-1}$$

We consider $D\varepsilon$, the interior of the circumference of the radius ε centered on the point at origin O of the complex plane C:

$$D\varepsilon=\{z\in C;|z|<\varepsilon\in R\}$$

However, R represents the entirety of real numbers, or the real number line. Dε is the subset of the complex plane C, and the union ∪Dε which includes the infinite potency of Dε is also again a subset of C, and at the same time the intersection Dε∩Dδ of the finite element of Dε is also a subset of C, so the complex plane C is topological space, and its subset Dε is open. We shall call this subset Dε of C the “open disc.”

The complex plane C matches the union ∪Dε of all open sets Dε that are included in itself, or in other words, it matches the greatest open set D∞ included in itself.

$$C=\cup D\varepsilon=D\infty$$

Therefore the complex plane C is open.

The greatest open set D∞ included in C is when the limit of the diameter ε of the open disc Dε is infinite, or in other words, when

$$\lim\varepsilon=\infty$$

is an open disc of infinite circumference, so C cannot have any bounds or boundaries with the outside. The complex plane C is open and at the same time it has no boundaries.

We can consider the complex plane C as a specific example of the open set as the image of the open God. This will allow us to make the open God and his incarnation

and resurrection logically consistent, as shown below.

The Incarnation of God: the Compact Manifold

Whoever does not love does not know God, because God is love. (1 John 4:8)

God is love. This is probably the most basic gospel of Christianity. Love is to feel joy with others, and at the same time, to suffer with others. Love is the enjoyment, just as it is also suffering.

Surely he took up our pain and bore our suffering (Isaiah 53:4)

As God made Man, Jesus Christ shared the pains of mankind, and suffered as we suffered.

A strong God full of power became a weak human, and suffered human sufferings.

My power is made perfect in weakness (2 Corinthians 12:9)

For God to take on human weakness was nothing less than taking on human flesh, as it is the flesh that allows humans to feel joy, and at the same time, brings them suffering.

The Word became flesh and made his dwelling among us (John 1:14)

God became incarnate. God was incarnated as flesh, and experienced the pain of flesh, the suffering of flesh. Here is the very peak of the salvation of Christianity.

So what is the incarnation of God? What sort of phenomenon is the open God becoming flesh in this world and taking on its sufferings? Let us map the incarnation of God onto the compactification of open set. Topological space is defined as compact when the topological space X matches the union ∪Oλ of the open set Oλ that is included in itself, and this always contains the union Oλ∪Oμ of the finite numbers that match X.(4) For example, the complex plane C matches the union ∪Dε of the open set Dε included in itself, but the union Dε∪Dδ of the open sets Dε and Dδ of the finite numbers that match C within this union does not exist, and so it is not compact.

Consider the sphere S2 of radius 1 centered on the point at origin 0 of the complex plane C:

$$S2=\{(z,t)\in C*R;|z|2+t2=1\}$$

Let us show that the sphere S2 is compact.

If we now make the intersection with S2 of the line that connects the north pole (0,1) of the sphere S2, and the point (w,0) on the complex plane Cν that includes the equator of S2, P, then the continuous mapping

$$(z,t)\in S2-(0,1)\rightarrow w=z/(1-t)\in C\nu$$

from the point P on S2 excluding the north pole to the point w on Cν exists.

The inverse mapping

$$w\in C\nu\rightarrow(z=2w/(|w|2+1),t=(|w|2-1)/(|w|2+1))\in S2-(0,1)$$

of this exists, and is continuous, so the sphere S2 -(0,1) excluding the north pole and the complex plane Cν are homeomorphic and can be seen as the same.

This sort of mapping also exists between the sphere S2 -(0,-1) excluding the south pole and the complex plane Cσ. If we now make the intersection with S2 of the line that connects the south pole (0,-1) of the sphere S2, and the point (r,0) on the complex plane Cσ($\not\simeq$Cν) that includes the equator of S2, Q, then the continuous mapping

$$(z,t)\in S2-(0,-1)\rightarrow r=z/(1+t)\in C\sigma$$

from the point Q on S2 excluding the south pole to the point r on Cσ exists.

The inverse mapping

$$r\in C\sigma\rightarrow(z=2r/(|r|2+1),t=-(|r|2-1)/(|r|2+1))\in S2-(0,-1)$$

of this exists, and is continuous, so the sphere S2 -(0,-1) excluding the south pole and the complex plane Cσ are homeomorphic and can be seen as the same.

However, the union of the sphere S2 -(0,1) excluding the north pole and the sphere S2 -(0,-1) excluding the south pole is the sphere S2 itself. Therefore the union of the complex plane Cν that can be seen as the same as the sphere S2 -(0,1) excluding the north pole and the complex plane Cσ that can be seen as the same as the sphere S2 -(0,-1) excluding the south pole can also

be seen as the sphere S2 itself. In other words,

$$S2=C\nu \cup C\sigma$$

This fact means that it matches the union $C\nu \cup C\sigma$ of the open sets $C\nu$ and $C\sigma$ of the finite

numbers that are included in the sphere S2 itself. The sphere S2 is compact.

As can be intuitively realized, the sphere S2 is a closed space. A compact topological space (strictly speaking, a compact Hausdorff space) is closed.(5) If the creations of this world are not closed they cannot exist. "Open" is not an attribute of this world.

Therefore the image of the flesh of this world is compact. Thus the image of the open God becoming incarnate is simply open set becoming compact. The open set that cannot exist in this world arrives in this world through compactification. The incarnation of the open God can be understood without contradiction by being mapped from the openness of set to its compactness.

The Resurrection of the Dead: the Open Manifold with Boundaries Humans die. Humans die and the flesh of this world is lost. So what happens next?

Christianity believes that the soul remains.

> What good will it be for someone to gain the whole world, yet forfeit their soul? (Matthew 16:26)

As Jesus called out to God at the moment of his death on the cross:

> Father, into your hands I commit my spirit (Luke 23:46)

The spirit of the human Jesus is clearly the soul of the human Jesus. The moment when Jesus gave up his worldly flesh he committed his own soul.

However, as the human Jesus was at the same time God, the spirit of Jesus may have been the spirit of God, or in other words, the Holy Spirit. So what do we humans, who are not God, leave when we die?

> …it is sown a natural body, it is raised a spiritual body (1 Corinthians 15:44)

We humans are born in this world as natural living objects, as flesh, and then die, losing our flesh and being resurrected as the spirit body, the soul. The human spirit is simply the human soul. The human soul is to some extent continuous with the spirit of God.

> God is spirit (John 4:24)

The image of the open God, sans flesh, is the open set. The image of God incarnate in this world is the compact set. Therefore the image of the soul of humans who have lost their flesh cannot be compact, and must be open. The image of the human soul must, like the image of the open God, be an open set. However, is the human soul exactly the same as the spirit of God? Even if the human soul is continuous with the spirit of God to some extent, does it not split apart in some depths?

As an image of the human soul, we can consider the interior of the circumference S1 of radius 1 centered on the point at origin 0 of the complex plane C, or in other words the open disc D,

$$D=\{z\in C;|z|<1\}$$

The open disc D is an open set that is not included in itself yet is bounded by the circumference S1,

$$S1=\{z\in C;|z|=1\}$$

The image of the human soul, the open disc D, is the same as the complex plane C that is the image of the spirit of God in terms of being open set. There is a homeomorphic mapping between the open disc D and the complex plane C,

$$z\in D\leftrightarrow w=z/(1-|z|)\in C$$

Therefore as long as we are considering topological space, there is no difference between the human soul and the spirit of God.

Now let us consider topological space as a more specific space, which we term a “manifold.” We shall consider a one-dimensional complex manifold: a Riemann surface.

A Riemann surface is defined as the X when the (Hausdorff) topological space X matches

the union $\cup O\lambda$ of the open set $O\lambda$ included in itself, there is a homeomorphic mapping $\varphi\lambda$

between $O\lambda$ and the open set $\varphi\lambda(O\lambda)$ of the complex plane C, and at the same time the union $O\lambda\cap O\mu$ between $O\lambda$ and $O\mu$ is not empty, then there is a biholomorphic mapping $\varphi\mu*\varphi\lambda\text{-}1$ between the open sets of C, $\varphi\lambda(O\lambda\cap O\mu)$ and $\varphi\mu(O\lambda\cap O\mu)$.(6) Here we can say that

biholomorphic means that there exists an inverse mapping to a mapping, and both can be differentiable.

For example, the sphere S2 matches the union Cν∪Cσ of Cν and Cσ which are

homeomorphic with its own open set, and has the biholomorphic mapping

$$w \in C\nu \cap C\sigma \leftrightarrow r = 1/\hat{w} \in C\nu \cap C\sigma$$

between Cν and Cσ, so it is a Riemann surface. However, ŵ is the conjugate complex number of w. And the complex plane C and the open disc D are a Riemann surface where φλ, therefore φμ*φλ-1, becomes an identity mapping.

Homeomorphic mapping exists between the complex plane C and the open disc D. In other words, if we look at it as topological space, then C and D can be seen as the same.

However, if we look at it as a Riemann surface, then there is no biholomorphic mapping between C and D. Biholomorphic functions which use as their domain the complex plane C which has no boundaries until the far side of infinity cannot have the open disc D which has the finite boundary S1 as their range (save for constant functions).(7)

Therefore C and D can be differentiated if we view them as Riemann surfaces. This shows that the difference, where C has no boundaries but D does, in contrast to being ignored when seen as topological space, is decisive when seen as Riemann surfaces.

The complex plane C that is the image of the spirit of God and the open disc D that is the image of the soul of Man are the same when see as topological space. The spirit of God and the soul of Man are continuous in that they are both open. Yet C and D are differentiated by whether they have boundaries when seen as Riemann surfaces. The spirit of God is infinite, without boundaries, but the soul of Man is finite, with

boundaries. The soul of a person stands as an individual that is clearly demarcated from others, starting with God.

NOTES

(1) Rice, Richard, The Openness of God, Downers Grove, InterVarsity Press, 1994, pp15-16

(2) Bourbaki, Nicolas, Topologie généralel, Berlin, Springer, 2007, p1

(3) ibid. pp6-7

(4) ibid. P59

(5) ibid. P62

(6) Donaldson, Simon, Riemann Surfaces, Oxford, Oxford UP, 2011, pp29-30

(7) Stein, Elias M. Complex Analysis, Princeton, Princeton UP, 2003, p50