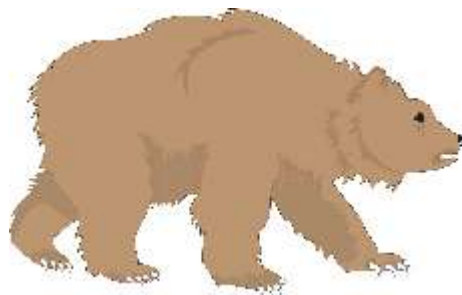


Ursus Philosophicus

Essays dedicated to Björn Haglund on his sixtieth birthday



Ivar Segelberg on Relations

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Abstract

In this article the relational side of the Swedish philosopher Ivar Segelberg's ontology is discussed. The outcome of the discussion is that Segelberg seems to recognise two elementary relations. One of these relations is internal, while the other is external. Some of the problems surrounding the characterisations of the two elementary relations are discussed as well.

1. Introduction

In the summary of his 1947 book Ivar Segelberg¹ says: 'Qualities and relations constitute, in a certain sense, the elements of which the universe is ultimately composed.'² The terminology used here may easily give the impression of Segelberg being an ontological realist. Since he recognises universal relations, the impression is to some extent correct. It would be misleading though to classify him as a realist with regard to qualities. In accordance with the frequent terminology, I suppose his ontology could be described as being (partly) nominalistic. This would not be consistent with his own terminology though.³

Thus the term 'qualities' of the summary rendered above is unfortunate. A better

¹ Holder of the professorial chair of theoretical philosophy at Göteborg university from 1951 to 1979.

² Segelberg 1999/1947, p. 228/137. Here '1999' and the number to the left of the slanting stroke refer to the English translation of the three books Segelberg 1945, 1947 and 1953.

³ Segelberg seems to have a specific theory in view when using the term 'nominalism'. It is the kind of theory David Armstrong calls 'resemblance nominalism'. Cf. Armstrong 1978. Segelberg is not an advocate of this type of nominalism.

choice would be ‘quality-instances’.⁴ Yet another alternative is ‘quality-moments’ — or just ‘moments’.⁵ The term ‘quality-moments’ is the preferred term of Segelberg 1953. It will be the preferred term in the present article also. Quality-moments are particulars of a certain sort. Examples are the individual yellownesses of Swedish letter-boxes.⁶ According to the theory, the letter-boxes — which are ordinary particulars — have one yellow-moment, or one instance of yellowness, each. These moments are thought of as being exactly similar to each other, given — so to say — that they are moments of the same lowest determinate of a certain colour determinable.⁷ The other qualities of ordinary particulars are viewed correspondingly.

The present article concentrates on the relational side of Segelberg’s ontology. Two kinds of relations are recognised: internal and external relations. Besides being

⁴ In the English translation of Segelberg 1947 this term is introduced in connection with a report Segelberg gives of the views of G. F. Stout. See Segelberg 1999/1947, chapter II. A more apt term would perhaps be ‘quality-exemplars’, since the Swedish term actually used by Segelberg is ‘kvalitetsexemplar’. Among the terms Stout uses, ‘abstract particulars’ is the one which is for ever associated with his name. It appears, for example, in Stout 1923; see p. 114 of that work. Although Segelberg, in Segelberg 1947, refers to Stout 1923 and allies himself with him, he never uses the term ‘abstract particulars’ himself. The agreements between the views of Segelberg and Stout should not be exaggerated, since there are also significant differences between them. One of these is the fact that Stout is a class nominalist with regard to the natures of his abstract particulars. This can be gathered from Stout 1930, pp. 384-403. Segelberg refers to this work also, but he does not comment on the specific issue of class nominalism.

⁵ The term ‘moment’ is introduced in Segelberg 1947, chapter IV. It is borrowed from Edmund Husserl, who uses it in Husserl 1970 — in the third investigation, named ‘On the Theory of Wholes and Parts’, of this book. A distinction is made there between dependent parts (Momente) of objects, on the one hand, and independent parts (Stücke), on the other. Also between Segelberg and Husserl there are significant differences. One is that Husserl is a realist with regard to the natures of his moments. Cf. Moreland 1989 for arguments supporting the assertion that Husserl is a realist.

⁶ There are blue letter-boxes in Sweden as well. These have one instance of blueness each.

⁷ The characterisation would to some extent be more correct if rendered in the reverse order: the quality-moments are of the same lowest determinate if they are exactly similar to each other. Though being more correct than the former, this characterisation is also incorrect. It makes Segelberg look like a kind of resemblance nominalist with regard to the natures of his quality-moments. I strongly suspect that his own theory, with reference to qualities, is intended to be something different from both realism and (resemblance) nominalism.

among the elements of which the universe is ultimately composed, both kinds are essential in explanations and analyses of various phenomena.

2. Universal relations

As hinted at above, Segelberg considers relations to be universals. The following quotation may give an idea of what he means by that.

No one would deny the following three statements. 1) There may not be two exactly similar objects in the universe, but it is not impossible that there be two objects, two sense-data for example, that are exactly alike. 2) If *a* is a universal, there cannot be another object exactly like *a*. 3) If there is an object other than *a* that is exactly like *a*, then *a* is an individual. But, *a* can be an individual even though there is no object, other than *a*, that is exactly like *a*. For *a* to be an individual, it is only necessary that there *can* be other objects that are exactly like *a*. (Segelberg 1999/1947, pp. 145/18-19)

Universality and individuality are here characterised in terms of exact resemblance. While individuals can resemble each other exactly, universals cannot. It seems as if the principle of the identity of indiscernibles⁸ is invoked here with regard to universal entities.

⁸ This principle is traditionally associated with G. W. Leibniz, and accordingly often called ‘Leibniz’s principle’. In McTaggart 1921, p. 101, the following apposite comment on the principle is made:

The name [‘The Identity of Indiscernibles’], however, is not a good one. For the principle does not assert that there are indiscernibles which are identical, but that there is nothing which is indiscernible from anything else. It would be better to speak of the Dissimilarity of the Diverse.

Leibniz’s view seems to be that no two entities — of any category — can be exactly similar to each other. This seems to prevent him from recognising entities like Segelberg’s quality-moments, since vast numbers of these are claimed to be exactly similar to each other. According to Leibniz’s principle, entities are at the most almost exactly alike. Despite this, Leibniz is, by many, considered to be an advocate of individual accidents. Campbell 1990, p. 4, is a case in point.

A distinction is made in Segelberg's ontology between different orders of entities. Universals are of higher order, while individuals are of the lowest order. Entities of the lowest (the first) order have location in space and time; higher order entities have no such location. A consequence of all this is that anything containing a relation is an entity of higher order. Examples of this are state of affairs. Segelberg says:

The characteristic that distinguishes a state of affairs from an object of the first order seems to be that a state of affairs contains a *relation*. Compare a rectangle H , consisting of the squares a and b , to the following state of affairs (S): the square a lies beside b . Both H and S are complexes containing a and b . What basically distinguishes H from S is that S contains, in addition to a and b , a relation. It appears likely that every complex unity (i.e. every complex that is not simply a collection)⁹ which contains a relation is either a *state of affairs* or a *relational property*. Objects of the lowest order never contain relations. In an object of the lowest order which is complex, a relation obtains among its components, but *the relation is not a component of the object*. If x is the complex yz ¹⁰ and if the relation R obtains between y and z , then R is not a component of x ; but R is a component of the state of affairs yRz , which is an object of the second order. (Segelberg 1999/1947, pp. 165-166/47-48)

A rectangle like H , which consists of two squares, would not exist if certain relations did not hold. Notwithstanding this being so, the relations in question are not among the contents of the rectangle. Segelberg's reason for this view is the expected one — viz. Bradley's regress:¹¹

⁹ The two notions *complex unity* and *collection*, are, according to Segelberg, fundamental. He characterises them as being urphenomena. This is done in Segelberg 1999/1945, p. 55/46.

¹⁰ This way of naming the first order object is intended to make explicit that no relations are among its contents.

¹¹ Cf. Bradley 1930, p. 19.

If one supposes that H contains those relations that obtain between a and b , one falls victim to Bradley's infinite regress. Bradley is right in that there is a relation R between a and b , and there is a relation R' between a and R , and so on. However, these relations are not components of H , but of complexes of higher order. (Segelberg 1999/1947, pp. 221/127-128)

If Bradley's regress is supposed to be a conclusive reason against relations being components of first order objects, why is this not the case with regard to states of affairs? I am not certain what Segelberg's considered answer would be. Perhaps the relation of elementary connection plays a part here. More about the elementary connection later.

3. Internal and external relations

A distinction is frequently made between internal and external relations. Segelberg is no exception to this rule. Through the history of philosophy various characterisations of internality in particular have been presented. This being so, saying that a relation is internal, or external, is rather elusive. It is essential to know according to which conditions the distinction between internality and externality is made.

3.1 Internality

Segelberg defines internality in terms of congruence. As the latter is described in Segelberg 1945 it is closely related to — if not identical with — exact similarity. An indication of the two being one is his frequent use of 'exactly similar' instead of 'congruent'; particularly in Segelberg 1947. In Segelberg 1945, where congruence is introduced, it may be considered to be something slightly different from exact similarity though. Ponder upon the following statement.

The concept *congruence* and its contradictory *incongruence* are elementary concepts, which cannot be defined by analysis. Their meaning can only be made clear by examples. That x and y are *congruent* implies that they are *exactly similar*; thereby implying that they have all internal properties in common. On the other hand, congruence does not imply that all external properties are shared. (Segelberg 1999/1945, p. 38/29)

In a different terminology, the internal properties of things are their qualities; the external properties of things are their relational properties.¹² In the quotation the following three relation names appear: ‘congruence’, ‘exact similarity’ and ‘having all internal properties in common’. Are they different names of the same relation? Let us see what Segelberg says concerning yet another relation — the mirror relation:

We must distinguish congruence from the relation which obtains between an asymmetrical object and its mirror image. We call this relation the *mirror relation*. A right hand stands, at least approximately, in the mirror relation to a left hand. As one can distinguish them, without taking external properties (location) into consideration, they are incongruent. [...] It is important that a pair of mirror correlates can agree in all their internal properties. [...] The statement ‘ x is congruent to y ’ is thus not equivalent to the statement ‘ x and y have all their internal properties in common’. (Segelberg 1999/1945, p. 39/30)

Since mirror correlates have all internal properties in common, but despite that are not congruent, there must be something else in virtue of which congruence hold — in

¹² The pair ‘qualities’ and ‘relational properties’ are used in Segelberg 1947 and 1953. Note that ‘internal properties’ and ‘qualities’ are slightly misleading. This is so since Segelberg is of the opinion that the qualitative aspects of things are entirely individual — i.e., they are quality-moments. Furthermore, the ‘internal’ and ‘external’ of the two phrases ‘internal properties’ and ‘external properties’ do not have the same meaning here as they have in the pair ‘internal relation’ and ‘external relation’.

addition to the internal properties of the relata. I would say that the mirror correlates have structural properties. These are relevant for the congruence between the objects. But, structural properties¹³ involve relations. Therefore, Segelberg cannot recognise them as being components of the mirror correlates of the quotation.

It is explicitly stated that congruence is not the same relation as the relation of having all internal properties in common. Alas, there is another passage which points in another direction.¹⁴ Since the passage is hard to understand in isolation, I will not quote from it. I just report the relevant statement. It is that qualitative identity is the same as congruence. In contrast, numerical identity is the same as real identity. This suggests that having all internal properties in common is the same as being congruent. After all, how should 'qualitative' be interpreted if not as having the same sense as 'with regard to internal properties'?

What about exact similarity? It can at most be identical with one of the other two relations. In addition to the names of relations already mentioned, there is also 'absolute similarity'. Concerning this, and its companion 'relative similarity', Segelberg says:

One can distinguish two senses of the word 'similarity': absolute similarity¹⁵ and relative similarity. "Absolute similarity" is the same as congruence; "relative similarity" obtains between objects which are "like" in one respect and "different" in another. That relative similarity obtains between a pair of objects, x and y , implies: x is incongruent to y and x has a content z and y has a content z' and z is congruent to z' . We will assume in the future that every "similarity" between incongruent objects has this character. (Segelberg 1999/1945, p. 43/34)

Strangely enough, exact similarity is not mentioned here as a variant of similarity. The

¹³ They could perhaps be called 'interior properties'.

¹⁴ Cf. Segelberg 1999/1945, pp. 40-41/31-32.

¹⁵ In the translation '(exact)' is inserted between 'absolute' and 'similarity'. The translators put the matter in order that way.

quotation does not really give any information concerning the sense of ‘exact similarity’. Another piece of information can be found here though: similarity between objects always involves congruence.

Note that relative similarity does not hold between mirror correlates, according to what is said in an earlier quotation. Mirror correlates have all internal properties in common. Having all internal properties in common implies that there is no respect in which they are different. Despite there being no such respect in which two mirror correlates differ, Segelberg asserts that they are not congruent with each other.

Where do we stand then? Well, there is the indication of identity between congruence and exact similarity given by Segelberg’s frequent use of the term ‘exact similarity’ in Segelberg 1947 and 1953. Furthermore, the English translation of the introductory passage may be misleading. I quote it once more time:

That x and y are *congruent* implies that they are *exactly similar*; thereby implying that they have all internal properties in common. (Segelberg 1999/1945, p. 38/29)

Where the translation has ‘implies’, in the first sentence, the Swedish original uses a word which may be better translated ‘means’. There is no corresponding problem with regard to ‘implying’ of the second sentence. To some extent this indicates that ‘congruence’ and ‘exact similarity’ are different names for the same relation.

From what has been said above, it is fairly clear that there is a certain amount of obscurity surrounding Segelberg’s notion of congruence. Automatically ‘exact similarity’ gets its share of elusiveness. In the following the two will be looked upon as identical, subjected to the reservation that they may be slightly different from each other.

Congruence is the means by which internality is defined. The notions of internality and externality are introduced with a reference to David Hume though:

In *The Treatise*,¹⁶ Hume divides relations into two classes: those which are completely dependent on¹⁷ the “ideas” we compare, and those that can be changed without the compared “ideas” changing. We call the first type of relation simply a *relation*¹⁸ or an *ideal relation*; the second type a *connection* or a *real relation*. (Segelberg 1999/1945, p. 41/32)

Though inspired by Hume, Segelberg’s distinction is not intended to have the limited scope of Hume’s distinction. The Segelbergian internal relations are not holding just between ideas.

In Segelberg 1953 the notion of internality, under the name ‘ideality’, is defined as follows:

If R is an [ideal] relation, the following condition obtains. If xRy and $x\sim x'$,¹⁹ where

¹⁶ In the place referred to, Hume says:

These relations may be divided into two classes; into such as depend entirely on the ideas, which we compare together, and such as may be chang’d without any change in the ideas. (Hume 1978, Part I, sect. 5)

As is pointed out in Hochberg 1999, pp. 336-337n, Segelberg may, mistakenly, be thinking that Hume partitions all relations into one of these two classes. The distinction made by Hume is, in fact, made within the class of what he calls ‘philosophical relations’. Besides the philosophical relations, there are also the natural relations.

¹⁷ This way of expressing himself suggests, at least to some extent, that Segelberg considers these relations to be nothing besides their relata; i.e., that the existence of these relations is completely exhausted by their relata. Keith Campbell, among others, calls this alleged phenomenon ‘supervenience’. I find it strange to give the term ‘*supervenience*’ such a meaning. I also hasten to add that I do not believe that internal relations can be completely reduced to their relata. Cf. Campbell 1990, chapter V. Another advocate of this approach, under the name ‘pseudo-addition’ instead of ‘supervenience’, is Anna-Sofia Maurin. Cf. Maurin 2002, chapter V.

¹⁸ Unfortunately, the English language seems to have only two words where the Swedish has three. The Swedish words are ‘relation’, ‘förhållande’ and ‘förbindelse’; the first one being the most general of the three. The English word ‘connection’ is an excellent translation of ‘förbindelse’. When it comes to ‘förhållande’, the term ‘ideal relation’ seems to be the best alternative, despite its clumsiness. To use ‘relation’ both as a specific and a general term seems risky.

¹⁹ Here and henceforth ‘ \sim ’ stands for the congruence relation.

x , y and x' can be any objects, then there is an object z , such that $x'Rz$ and $z\sim y$.

(Segelberg 1999/1945, p. 41/32)

All ideal (internal) relations comply with this condition. Compliance with it makes them at least ideal of the b-type. Besides this condition, there is a stronger one. Compliance with the latter makes a relation ideal of the a-type. The stronger condition is the following:

If an [ideal] relation R is an a-relation (a-ideal), a general implication obtains from xRy & $x\sim x'$ to $x'Ry$. (Segelberg 1999/1945, p. 41/32)

Examples of ideal relations of type-a are congruence itself and the mirror relation. An example of an ideal relation of type-b is the relation of whole–part.²⁰ Congruence plays an essential part in these definitions. This may be something of a problem.²¹ The same holds for the definitions of Segelberg 1947. Segelberg says there, with a different

²⁰ Segelberg uses these three relations as illustrations of ideality/internality. Unfortunately, there are some misprints enclosed with the illustration.

Examples of relations [i.e., ideal relations]: (1) *Congruence*. If x is congruent to y and $x\sim x'$, then there is an object z (for instance y), such that x' is congruent to z and $z\sim x$ [should be y instead of x , my remark]. (2) The *mirror-relation*. If x has the mirror-relation to y and $x\sim x'$, there is an object (for example y itself), such that x' is a mirror-image of z and $z\sim y$. (3) The relation of *whole–part*. If x has y as a part and $x\sim x'$, there is an object z such that x' has z [the text has x , translators' remark] as a part and $z\sim y$. (Segelberg 1999/1945, p. 41/32)

If we for a moment accept the condition, as it is explicitly rendered in (1), we see that congruence satisfies it: $(x\sim y \text{ \& } x\sim x') \rightarrow \exists z(x'\sim z \text{ \& } z\sim x)$ is a true proposition. But this condition is not the same as the one we find in (2) and (3), which is the same condition as the one which is explicitly said to be the condition for being an ideal relation. Furthermore, neither the mirror relation nor the whole–part relation satisfy the condition as it is stated in (1). Congruence might be the only relation satisfying it. Since Segelberg is distinguishing between type-a and type-b ideal relations, it seems likely that the condition in (1) — i.e., $(xRy \text{ \& } x\sim x') \rightarrow \exists z(x'Rz \text{ \& } z\sim x)$ — is a misprint. If not, we are looking at a trisinction among ideal relations, instead of a distinction.

²¹ In Hochberg 1999, p. 48, it is considered to be a major problem.

terminology:

That a relation R is *internal* means, we will say, that *at least one* of the following statements holds:

1) If x has the relation R to y , then every object congruent to x has the relation R to at least one object congruent to y .

2) If x has the relation R to y , then every object congruent to y has the converse of R to at least one object congruent to x .²² (Segelberg 1999/1947, p. 191/82)

According to the terminology of Segelberg 1947, a relation is unilaterally internal if it complies with one of these two conditions; it is bilaterally internal if it complies with both conditions. Congruence and the mirror relation are bilaterally internal, while the whole–part relation is unilaterally internal.

In virtue of what is an internal relation holding between its relata? Judging from what is stated in connection with the introduction of congruence, it is in virtue of the qualities of the relata. According to this idea, the qualities of the relata ground the (internal) relations. This is not compatible with the view of resemblance nominalism, according to which resemblances between relata ground their qualitative natures. In Hochberg 1988 it is asserted that an ontological theory called ‘moderate nominalism’ comprises this kind of resemblance nominalism. Moderate nominalism seems to be closely related to Segelberg’s ontology. One significant difference though is the fact

²² These conditions are, like the ones of Segelberg 1945, worded in terms of ‘congruence’, not ‘exact similarity’.

that moderate nominalism recognises relation-moments,²³ while Segelberg does not.²⁴ Curiously enough, Hochberg combines the ascription of being a resemblance nominalism with the thesis that resemblance holds necessarily; the necessity being a consequence of resemblance being an internal relation. The following quotation, even though it is a bit thorny, corroborates my thesis:

The nominalist's connection is *not merely a connection* in that sense. It not only connects exactly similar quality-instances into what we may call 'similarity-facts', but, by so doing, it provides the qualitative content for an object. This is readily seen when we note that the realist's connection *may or may not obtain*, in the sense that a state of affairs may or may not obtain, *given the elements — the particular and the quality* — that enter into it. The nominalist's similarity fact must obtain, given the elements that enter into it, and is thus necessary, just as the similarity relation may be said to be 'internal', as opposed to an 'external' tie of exemplification. Thus, the relation of exact similarity is quite different from a connecting tie like exemplification. (Hochberg 1988, p. 189)

Segelberg would probably concur in the assertion that internal relations hold necessarily. He would be mistaken though if he concurred in the assertion that resemblance grounds the qualitative content of an object. I do not think he would make

²³ Hochberg enumerates the entities recognised by moderate nominalism:

The 'moderate' nominalist recognises particular quality-instances and a universal connection — exact similarity. (Hochberg 1988, p. 188)

As described here, moderate nominalism seems to be the same position as Segelberg's theory. In spite of the fact that relation-instances (relation-moments) are not mentioned here, they are on the inventory of moderate nominalism. This is obvious from what is stated later in the article. Cf. Hochberg 1988, pp. 191ff.

²⁴ The term 'relation-moment' can be found in Segelberg's works. One such place is Segelberg 1999/1945, p. 53/44 and another is Segelberg 1999/1945, p. 55/46. In the first of these two, Segelberg seems to seriously consider relation-moments. This is an exception though to the general tendency concerning the relational side of his ontology.

that mistake. The internality of the resemblance relation is grounded in the natures of its relata, not the other way around. The important question is whether this can be so without assuming universal qualities as grounding these natures. Put in another way: are individual quality-moments, without universals as some sort of components, really sufficient for there being resemblances holding amongst the quality-moments? I find it difficult to discern any conclusive argument in Segelberg's works concerning this important question.

3.2 Externality

The external relations are those which are neither bilaterally nor unilaterally internal. Segelberg often uses the term 'connection' as a name of the states of affairs which have external relations as components. In an extended sense of 'connection' the external relations themselves are also called by the same name.²⁵ Three examples of connections are given in connection with the definitions of internal relations. The negations of these conditions constitute the conditions for relations being external.

Examples of connections: (1) *Spatial contact*. If x lies spatially next to y and $x \sim x'$, there need not be an object z , congruent to y , which lies next to x' . (2) *Temporal succession*. If the event x takes place before the event y and the event x is exactly similar to the event x' , there need not be an event z , congruent to y , such that x' occurred before z . (3) *The relation between simultaneous experiences in a total consciousness*. If x and y are simultaneous experiences in a total consciousness and $x \sim x'$, there need not be any experience z , congruent to y , such that x' and z are simultaneous moments in a total consciousness. (Segelberg 1999/1945, pp. 41-42/32-33)

Connections as well as ideal relations form unities. In the two states of affairs "x is

²⁵ Correspondingly with reference to 'ideal relation'.

spatially next to y ” and “ x is larger than y ” two relations appear. The unifiers here are explicitly said to be two relations: *spatially next to* and *larger than*. Are the two relations also components of these states of affairs? Considering that Bradley’s regress is supposed to afflict every complex having relational content, the expected answer would be no. This is not so though. According to Segelberg, relations can be components of unities such as states of affairs.²⁶

Perhaps the most important connection in Segelberg’s ontology is elementary connection. It is introduced in his first book accordingly:

A [...] kind of connection is found in a homogenously colored surface. The color and the extension are here connected in a totally different way than, for example, parts of space in contact. If we wish to characterize the relation between color and extension, it is natural to speak of a “fusion” of color and extension or to say that color and extension “permeate” each other or that the color “covers” the extension.

We call this connection an *elementary-connection* or *e-connection*, since it should be evident that other kinds of connections are compound relations, in which the e-connection is a component, and since the e-connection itself does not have any other connection as a component. (Segelberg 1999/1945, p. 54/45)

Thus far things are pretty clear. When the definition of elementary connection is presented, it gets a bit more difficult to understand exactly what is asserted. Ponder on what is stated in the following quotation:

An elementary unity of x and y is an example of an immediate unity of x and y . But not every immediate unity need be an elementary unity. If x is immediately united with y and y is a content of z , x can, in the indicated sense, be immediately united with z , without being elementarily-connected to z . However, the concept of an

²⁶ For example, see Segelberg 1999/1947, pp. 225-226/133-134.

elementary-connection can be defined by means of the concept of an immediate union.

Assume that x and y are immediately united, that x lacks content and that y has a solitary content z .²⁷ It is easily seen that the immediate union between x and y can be of different kinds. If x is immediately united with z , x is, thereby, immediately united with y , but in a different way than if x is immediately united with y without the intermediation of z . We consequently have to distinguish between a *direct* and an *indirect* immediate union. In the above example, the following cases of an immediate union between x and y can be imagined: (1) x is directly united with y but not with z ; (2) x is directly united with z but not with y ; (3) x is directly united with both y and z . If one considers several contents of x and y , the number of alternatives of union quickly gets larger. (Segelberg 1999/1945, pp. 55-56/46-47)

All these cases the unities of x and y can be symbolised ' xy '. The three cases are not congruent with each other though. Call the three complexes in the quotation ' a ', ' b ' and ' c '. In the light of what is stated above, Segelberg proposes a definition of an elementary unity of two objects. The definition is to be found in the following quotation:

In the complex a , x is directly immediately united with y . In b , x is indirectly immediately united with y , which implies that x is directly immediately united with a content of y , but not directly immediately united with y itself.

In the complex c , x is directly immediately united with both y and z . Hence, c contains both a and b . Consequently, one can distinguish, in c , a unity of x and y which does not contain a unity of x and z , while y contains z , and x is in fact immediately united with z . If one observes this, one can give a definition of the

²⁷ If an object o contains another object o' and o does not contain any other object, which is disparate from o' , then o' is a solitary content of o . Two objects are disparate, in set theoretical terms, if their intersection is empty.

concept elementary unity: By an *elementary unity of x and y* is meant an immediate unity of x and y , which does not contain an immediate unity of x and some content of y or of y and some content of x or of a content of x and a content of y . (Segelberg 1999/1945, p. 56/47)

Thus, the definition of an elementary unity is:

Elementary unity of x and y $\stackrel{\text{Def.}}{=}$ An immediate unity of x and y , which does not contain an immediate unity (i) of x and some content of y , or (ii) of y and some content of x , or (iii) of a content of x and a content of y .

With this definition at hand, Segelberg says concerning the three complexes a , b and c :

The complex a is thus an elementary unity of x and y ; the complex c is not an elementary unity of x and y , but it *contains* such a unity; the complex b ²⁸ neither is nor contains an elementary unity of x and y . If x and y form an elementary unity, x and y are *elementary-connected*. In the complexes a and c , x and y are thus elementary-connected. (Segelberg 1999/1945, p. 56/47)

Judging from what Segelberg asserts here, in the sentence before the last one, a sufficient condition for elementary connectedness between objects seems to be expressed. It does not seem to be a necessary condition though. This is so since also the complex c , according to what is said in the last sentence, constitute a sufficient ground for x and y being elementarily connected. My guess is that these two conditions exhaust the possibilities. The disjunction of the two therefore make up a necessary condition.

²⁸ In the Swedish original this ' b ' is a ' c '. The misprint is corrected in the English translation.

4. Elementary ideal relations

In the last section the elementary connection was discussed. Is there an elementary ideal relation²⁹ Segelberg seems to think that there is. In Segelberg 1945, where congruence and incongruence are introduced, *both* these two (ideal) relations are said to be elementary relations.³⁰ Later in the same work, where he is discussing relations in general, he says:

The phenomenological unity, which exists when a pair of objects stand in a relation to one another, we call a *relational unity*. A relational unity is either *elementary* or *compound*. To say that xRy is a compound relational unity means that it can be analyzed into $xR'z \ \& \ zR''y$ or $xR'z \ \vee \ zR''y$. [...] There is reason to believe, even if it cannot be logically proven, that every compound relational unity can be analyzed into a number of elementary relational unities. So, if xRy is a compound unity, R is said to be a *compound relation*; if xRy is elementary, R is said to be an *elementary relation*. (Segelberg 1999/1945, p. 53/44)

Segelberg does not hold consistent ideas about the matter though. After the message of the last quotation is stated, the assertion that both congruence and incongruence are elementary is contradicted. Segelberg says that negative relations are compound relations. Since one of the two — congruence or incongruence — is negative, they cannot both be elementary. Congruence is the negative one, according to Segelberg. Furthermore, it is reflexive. He says concerning this:

A reflexive relation will always be a compound relation and will always imply congruence in some way or other. As we earlier sought to show, congruence is a

²⁹ The Swedish term would be 'elementarförhållande'. I say 'would be' since Segelberg nowhere uses — nor mentions — this term.

³⁰ Cf. Segelberg 1999/1945, p. 38/29.

negative relation,³¹ that is to say ‘ x congruent y ’ implies that there is no relational unity in which the positive relation incongruence combines x and y . The question about the phenomenological³² nature of negation (absence) will not be taken up here; we will only point out that a negative relation is always a compound relation. That a relation is, or can be, reflexive can therefore be used as a criterion for a relation’s being or containing a negative relation, and that it, consequently, is compound. (Segelberg 1999/1945, pp. 54/44-45)

According to this statement, congruence is not an elementary relation. Incongruence is an elementary (ideal) relation though. Therefore, the ideal relation of incongruence together with the elementary connection are the elementary relations of Segelberg’s ontology.

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³¹ According to Segelberg, congruence is the absence of incongruence. An indication of this is the fact that we look for incongruences when determining whether objects are congruent or incongruent. Since the negative is not observable, in the sense the positive is, we look for the positive — i.e., incongruence. Cf. Segelberg 1999/1945, p. 39/30.

³² ‘Phenomenological’ means the same here as ‘ontological’. The latter having its usual sense.

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