that nature—with its condition as a physical thing. . . Focusing on the
physical nature of an object simply offers no clue as to how it can be the
basic subject of the kinds of mentality which the dualist postulates.¹⁴

Perhaps some readers will find these quotations helpful and clarifying;
others may not. In any case, one question we should ask at this point is this: Is
it any easier to understand how thoughts and consciousness can arise in an
immaterial substance, especially if, as Leibniz and many other dualists urge,
such a substance is an absolute "simple" with no constituent parts? How could
immaterial minds, without structure and outside physical space, possess be-
liefs and desires directed at things in the physical world? How could our rich
and complex mental life inhere in something that has no parts and hence no
structure? Isn’t the proposal recommended by Leibniz, and by Plantinga and
Foster, merely a solution by stipulation? What do we know about mental sub-
stances that can help us understand how they could be the bearers of con-
sciousness and perception and thought? Understanding how mentality can
arise in something immaterial may be no easier than understanding how it
could arise in a material system; in fact, it might turn out to be more difficult.

As was mentioned above, it is not easy to make clear the thoughts that lie
behind Argument 8, in particular its crucial third line. However, this is an in-
teresting and influential line of dualist thinking, and readers are urged to re-

**Princess Elisabeth Against Descartes**

As will be recalled, the fourth component of Descartes’s dualism is the thesis
that minds and bodies causally influence each other. In voluntary action, the
mind’s volition causes our limbs to move; in perception, physical stimuli im-
pinging on sensory receptors cause perceptual experiences in the mind. This
view is not only commonsensical but also absolutely essential to our concep-
tion of ourselves as agents and cognizers: Unless our minds, in virtue of having
certain desires, beliefs, and intentions, are able to cause our bodies to move in
appropriate ways, how could human agency be possible? How could we be
agents who act and take responsibility for our actions? If objects and events in
the physical world do not cause us to have perceptual experiences and beliefs,
how could we have any knowledge of what is happening around us? How
could we know that we are holding a tomato in our hand, that we are coming
up on a stop sign, or that a large bear is approaching from our left?
Descartes has something to say about how mental causation works. In the *Sixth Meditation*, he writes:

The mind is not immediately affected by all parts of the body, but only by the brain, or perhaps just by one small part of the brain. . . . Every time this part of the brain is in a given state, it presents the same signals to the mind, even though the other parts of the body may be in a different condition at the time. . . . For example, when the nerves in the foot are set in motion in a violent and unusual manner, this motion, by way of the spinal cord, reaches the inner parts of the brain, and there gives the mind its signal for having a certain sensation, namely the sensation of a pain as occurring in the foot. This stimulates the mind to do its best to get rid of the cause of the pain, which it takes to be harmful to the foot.16

In *The Passions of the Soul*, Descartes identifies the pineal gland as the “seat of the soul,” the locus of direct mind-body interaction. This gland, Descartes maintains, can be moved directly by the soul, thereby moving the “animal spirits” (bodily fluids in the nerves), which then transmit causal influence to appropriate parts of the body:

And the activity of the soul consists entirely in the fact that simply by willing something it brings it about that the little gland to which it is closely joined moves in the manner required to produce the effect corresponding to this desire.17

In the case of physical-to-mental causation, this process is reversed: Disturbances in the animal spirits surrounding the pineal gland make the gland move, which in turn causes the mind to experience appropriate sensations and perceptions. For Descartes, then, each of us as an embodied human person is a “union” or “intermingling” of a mind and a body in direct causal interaction.

In what must be one of the most celebrated letters in the history of philosophy, Princess Elisabeth of Bohemia, an immensely astute pupil of Descartes’s, wrote to him in May 1643, challenging him to explain how the mind of a human being, being only a thinking substance, can determine the bodily spirits in producing bodily actions. For it appears that all determination of movement is produced by the pushing of the thing being moved, by the manner in which it is pushed by that which moves it,
or else by the qualification and figure of the surface of the latter. Contact is required for the first two conditions, and extension for the third. [But] you entirely exclude the latter from the notion you have of the soul, and the former seems incompatible with an immaterial thing.\textsuperscript{18}

(For “determine,” read “cause”; for “bodily spirits,” read “fluids in the nerves and muscles.”) Elisabeth’s demand is clearly understandable. First, see what Descartes has said about bodies and their motion in the \textit{Second Meditation}:

By a body I understand whatever has determinate shape and a definable location and can occupy a space in such a way as to exclude any other body; it can be perceived by touch, sight, hearing, taste or smell, and can be moved in various ways, not by itself but by whatever else comes into contact with it.\textsuperscript{19}

For Descartes, minds are immaterial; that is, minds have no spatial extension and are not located in physical space. If bodies can be moved only by contact, how could an unextended mind, which is not even in space, come into contact with an extended material thing, even the finest and lightest particles in animal spirits, thereby causing it to move? This seems like a perfectly reasonable question.

In modern terminology we can put Elisabeth’s challenge as follows: For anything to cause a physical object to move, or cause any change in one, there must be a flow of energy, or transfer of momentum, from the cause to the physical object. But how could there be an energy flow from an immaterial mind to a material thing? What kind of energy could it be? How could anything “flow” from something \textit{outside space} to something \textit{in space}? If an object is going to impart momentum to another, it must have mass and velocity. But how could an unextended mind outside physical space have either mass or velocity? The question does not concern the intrinsic plausibility of Descartes’s thesis of mind-body interaction; the question is whether this commonsensical interactionist thesis is tenable within Descartes’s dualist ontology of nonspatial immaterial minds and material things in the space-time world.

Descartes responded to Elisabeth in a letter written in the same month:

I observe that there are in us certain primitive notions which are, as it were the originals on the pattern of which we form all of other thoughts, . . . as regards the mind and body together, we have only the primitive notion of their union, on which depends our notion of the mind’s power to move
the body, and the body's power to act on the mind and cause sensations and passions.20

Descartes is defending the position that the idea of mind-body union is a "primitive" notion—a fundamental notion that is intelligible in its own right and cannot be explained in terms of other more basic notions—and that the idea of mind-body causation depends on that of mind-body union. What does this mean? Although on Descartes's view, minds and bodies seem on an equal footing causally, there is an important asymmetry between them: My mind can exercise its causal powers—on other minds as well as on bodies around me—only by first causally influencing my own body, and nothing can causally affect my mind except through its causal influence on my body. But my body is different: It can causally interact with other bodies quite independently of my mind. My body—or my pineal gland—is the necessary causal conduit between my mind and the rest of the world; in a sense, my mind is causally isolated from the world by being united with my body. To put it another way, my body is the enabler of my mind's causal powers; it is by being united with my body that my mind can exercise its causal powers in the world—on other minds as well as on other bodies. Looked at this way, the idea of mind-body union does seem essential to understanding the mind's causal powers.

Elisabeth is not satisfied. She immediately fires back:

And I admit that it would be easier for me to concede matter and extension to the mind than it would be for me to concede the capacity to move a body and be moved by one to an immaterial thing.21

This is a remarkable statement; it may well be the first appearance of the causal argument for materialism (see chapter 4). For she is in effect saying that to allow for the possibility of mental causation, she would rather accept materialism concerning the mind ("it would be easier to concede matter and extension to the mind") than accept what she regards as an implausible dualist account offered by her mentor.

Why should anyone find Descartes's story so implausible? A couple of paragraphs back, it was pointed out that my mind's forming a "union" with my body amounts to the fact that my body serves as a necessary and omnipresent proximate cause and effect of changes in my mind and that my body is what makes it possible for my mind to have a causal influence on the outside world. Descartes, however, would reject this characterization of a mind-body union,
for the simple reason that it would beg the question as far as the possibility of mind-body causation is concerned. That is presumably why Descartes claimed that the notion of mind-body union is a “primitive”—one that is intelligible per se but is neither further explainable nor in need of an explanation. Should this answer have satisfied Elisabeth, or anyone else? A plausible case can be made for a negative answer. For when we ask what makes this body my body, not someone else’s, a causal answer seems the most natural one and the only correct one. This is my body because it is the only body that I, or my desires and volitions, can directly move—that is, without moving or causally influencing anything else, whereas I can move other bodies, like this pen on my desk or the door to the hallway, only by moving my body first. Moreover, to cause any changes in my mind—or my mental states—you must first bring about appropriate changes in my body (presumably in my brain). What could be a more natural account of how my mind and my body form a “union”? But this explanation of mind-body union presupposes the possibility of mind-body causation, and it would be circular to turn around and say that an understanding of mind-body causation “depends” on the idea of mind-body union. Descartes’s declaration that the idea of a union is a “primitive” and hence not in need of an explanation is unlikely to impress someone seeking an understanding of mental causation; it is liable to strike his critics simply as a dodge—a refusal to acknowledge a deep difficulty confronting his approach.

**The “Pairing Problem”: Another Causal Argument**

We will develop another causal argument against Cartesian substance dualism. If this argument works, it will show not only that immaterial minds cannot causally interact with material things situated in space but also that they are not able to enter into causal relations with anything else, including other immaterial minds. Immaterial objects would be causally impotent and hence explanatorily useless; positing them would be philosophically unmotivated.

Here is the argument. To set up an analogy and a point of reference, let us begin with an example of physical causation. A gun, call it A, is fired, and this causes the death of a person, X. Another gun, B, is fired at the same time (say, in A’s vicinity, but this is unimportant), and this results in the death of another person, Y. What makes it the case that the firing of A caused X’s death and the firing of B caused Y’s death, and not the other way around? That is, why did A’s firing not cause Y’s death and B’s firing not cause X’s death? What principle governs the “pairing” of the right cause with the right